4.3. AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND ENERGY

4.3.1 INTRODUCTION

The Air Quality, Greenhouse Gas Emissions, and Energy chapter of the EIR describes the potential impacts of the proposed project on local and regional air quality and energy. The chapter includes a discussion of the existing air quality and greenhouse gas (GHG) setting, air quality and energy impacts resulting from relocation of Moore Canal and modification of Magnolia Canal as well as mining and material processing, grading and equipment emissions, direct and indirect emissions associated with the project, the impacts of these emissions on both the local and regional scale, demand on energy resources, and mitigation measures warranted to reduce or eliminate any identified significant impacts. This chapter is based on the information, guidance, and analysis protocol provided by the Yolo-Solano Air Quality Management District (YSAQMD) per the *Handbook for Assessing and Mitigating Air Quality Impacts*,[1] as well as emissions projections prepared by Raney Planning and Management,[2] and the Technical Memorandum prepared for the proposed project by ESA.[3] In addition, the section uses information obtained from the Yolo County General Plan[4] and associated EIR,[5] as well as the EIR for the Cache Creek Area Plan (CCAP) update.[6] All emissions modeling prepared for the proposed project is included as Appendix D to this EIR.

In response to the NOP, the County received comments related to air quality, GHG emissions, and energy from a number of residents in the area. These commenters expressed that the Draft EIR should consider the following:

- Increase in criteria pollutants and GHG emissions (Yolo-Solano Air Quality Management District);
- Dust associated with mining operations (Resident);
- Impacts on air quality from the use of heavy-duty mining equipment (Yolo-Solano Air Quality Management District);
- Impacts to animal health from air emissions (Resident);
- Use of renewable energy at project site (Resident);
- Use of electric vehicles to replace heavy-duty equipment (Resident);
- Movement of mined material on railways rather than on-road hauling (Resident);
- Compliance with the Environmental Protection Agency's (EPA) Tier 4 emission standards (Resident);

---

1 Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts*. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

2 BREEZE Software, A Division of Trinity Consultants, in collaboration with South Coast Air Quality Management District and the California Air Districts. *California Emissions Estimator Model User's Guide Version 2016.3.2*. November 2017.

3 ESA. *Teichert Shifler Mining and Reclamation Project Air Quality and Greenhouse Gas Technical Memorandum*. October 2015.

4 Yolo County. *2030 Countywide General Plan.* November 10, 2009.

5 Yolo County. *Yolo County 2030 Countywide General Plan Environmental Impact Report. SCH# 2008102034.* April 2009.

6 Yolo County. *Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH# 2017052069.* December 2019.

- Compliance with the 2016 California Green Building Standards Code (Resident);
- Provision of electric vehicle parking infrastructure (Resident);
- Provision of electrical power to any long-haul heavy-duty trucks parked on-site (Resident);
- Planting of vegetation at border of project site to potentially screen diesel particulate matter (Resident);
- Use of carbon credits to offset potential GHG emissions (Resident);
- Odor impacts from construction and operations of the proposed project (Resident);
- Potential impacts on nearby sensitive receptors, including the school operated by the West Valley Baptist Church, and sensitive receptors along truck routes (Resident, Yolo-Solano Air Quality Management District); and
- Construction of Class I Bicycle infrastructure to the project site (Resident).

The CEQA Guidelines note that comments received during the NOP scoping process can be helpful in "identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating from detailed study issues found not to be important." (CEQA Guidelines Section 15083.) Neither the CEQA Guidelines or Statutes require a lead agency to respond directly to comments received in response to the NOP, but they do require they be considered. Consistent with these requirements, these comments have been carefully reviewed and considered by Yolo County and are reflected in the analysis of impacts in this chapter. Appendix B includes all NOP comments received.

Concepts and Terminology

The following terms are used throughout this section and have important bearing upon properly evaluating air quality, GHG emissions, and energy within the context of the CEQA. As a result, this section begins by providing definitions of key terms, as follows:

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards (AAQS) for common pollutants. Pollutants for which a national AAQS (NAAQS) or a California AAQS (CAAQS) have been established are referred to as a criteria pollutant. The most prevalent criteria pollutants include ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). More information regarding criteria pollutants is presented in Table 4.3-1. Ozone is not emitted directly and instead is considered a secondary pollutant, which forms as a result of a complex chemical reaction between reactive organic gases (ROG) and oxides of nitrogen (NO_X) emissions in the presence of sunlight. In addition to the criteria pollutants, Toxic Air Contaminants (TACs) are also a category of environmental concern. TACs are comprised of a wide range of pollutants that pose a risk to public health when inhaled.

GHGs are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal GHGs that enter the atmosphere due to human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated carbons. Other common GHGs include water vapor, ozone, and aerosols. The increase in atmospheric concentrations of GHG due to human activities has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change.

In the context of this EIR, the term "energy" is used broadly to refer to any electricity or fossil fuels used during project implementation or under the existing setting. The principal fossil fuel

consumed during mining activity is diesel fuel for operation of heavy-duty equipment. Electricity, which is often measures in watts per hour, may either be generated by renewable sources, such as wind turbines, photovoltaic cells, and geothermal sources, or through combustion of fossil fuels, principally natural gas.

4.3.2 EXISTING ENVIRONMENTAL SETTING

The following information provides an overview of the existing environmental setting in relation to air quality within the proposed project area. A description of the regional environment, ambient air quality, the local environment, the geographic and climate setting, climate change, and GHGs are provided below.

Description of Regional Environment

The project region is characterized primarily by continuous agricultural lands within a broad, alluvial valley surrounded by distant rolling hills. Cache Creek generally meanders west to east and runs into the Sacramento Valley, ending in a settling basin east of Woodland, eventually flowing into the Sacramento River. Regional topography is generally flat. Vegetation, other than agricultural crops, is primarily limited to grasslands, ornamental landscaping, and scattered native vegetation.

The region is rural and sparsely populated, with urban development being primarily concentrated within small towns such as Capay, Esparto, and Madison. Rural residences, farm dwellings with various accessory and agricultural structures, and commercial uses sparsely dot the landscape. Roads provide interconnections between agricultural properties having various crops, such as row crops, orchards, and vineyards. Telephone and electricity poles frequently parallel the roadways throughout the region. Aggregate mining operations, inclusive of above-ground structures and equipment, are prevalent throughout the region, in particular, along the banks of Cache Creek, within the CCAP boundaries.

Yolo County is located within the Yolo-Solano portion of the Sacramento Valley Air Basin (SVAB), which is under the jurisdiction of the YSAQMD. Air quality in the SVAB is largely the result of the following factors: emissions, geography, and meteorology (wind, atmospheric stability, and sunlight). The Sacramento Valley is often described as a bowl-shaped valley, with the SVAB being bounded by the North Coast Ranges on the west, the northern Sierra Nevada Mountains on the east, and the intervening terrain being flat.

The winds in the area are moderate in strength and vary from moist, clean breezes from the south to dry land flows from the north. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.[7] The mountains surrounding the Sacramento Valley create a barrier to airflow, which can trap air pollutants in the valley when meteorological conditions are right and a temperature inversion exists. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The lack of surface wind during such periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in the air.

[7] Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts*. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

Table 4.3-1
Summary of Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive gas produced by the photochemical process involving a chemical reaction between the sun's energy and other pollutant emissions. Often called photochemical smog.	• Eye irritation • Wheezing, chest pain, dry throat, headache, or nausea • Aggravated respiratory disease such as emphysema, bronchitis, and asthma	Combustion sources such as factories, automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless, highly toxic gas that is formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream • Impaired vision, reduced alertness, chest pain, and headaches • Can be fatal in the case of very high concentrations	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	A reddish-brown gas that discolors the air and is formed during combustion of fossil fuels under high temperature and pressure.	• Lung irrigation and damage • Increased risk of acute and chronic respiratory disease	Automobile and diesel truck exhaust, industrial processes, and fossil-fueled power plants.
Sulfur Dioxide	A colorless, irritating gas with a rotten egg odor formed by combustion of sulfur-containing fossil fuels.	• Aggravation of chronic obstruction lung disease • Increased risk of acute and chronic respiratory disease	Diesel vehicle exhaust, oil-powered power plants, and industrial processes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	A complex mixture of extremely small particles and liquid droplets that can easily pass through the throat and nose and enter the lungs.	• Aggravation of chronic respiratory disease • Heart and lung disease • Coughing • Bronchitis • Chronic respiratory disease in children • Irregular heartbeat • Nonfatal heart attacks	Combustion sources such as automobiles, power generation, industrial processes, and wood burning. Also from unpaved roads, farming activities, and fugitive windblown dust.
Lead	A metal found naturally in the environment as well as in manufactured products.	• Loss of appetite, weakness, apathy, and miscarriage • Lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract	Industrial sources and combustion of leaded aviation gasoline.

Sources:

- ***California Air Resources Board. California Ambient Air Quality Standards (CAAQS). Available at: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm. Accessed April 2020.***
- ***Sacramento Metropolitan, El Dorado, Feather River, Placer, and Yolo-Solano Air Districts, Spare the Air website. Air Quality Information for the Sacramento Region. Available at: sparetheair.com. Accessed April 2020.***
- ***California Air Resources Board. Glossary of Air Pollution Terms. Available at: http://www.arb.ca.gov/html/gloss.htm. Accessed April 2020.***

The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning, which is regulated through YSAQMD permits, or when temperature inversions trap cool air, fog, and pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds, with the Delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. However, during approximately half of the days from July to September, a phenomenon called the "Schultz Eddy" prevents such transport from occurring. Instead of allowing for the prevailing wind patterns to move north, carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern and pollutants to circle back southward. The Schultz Eddy effect exacerbates the pollution levels in the area and increases the likelihood of violating the federal and State air quality standards.

Ambient Air Quality

Air districts are required to monitor ambient criteria pollutant levels to determine whether the NAAQS and CAAQS are being met. Depending on whether the NAAQS and CAAQS are met or exceeded, the air basin is classified as in attainment or nonattainment of the AAQS.

The NAAQS are divided into primary standards, which are designed to protect the public health, and secondary standards, which are designed to protect the public welfare. The AAQS for each contaminant represent safe levels that avoid specific adverse health effects. Table 4.3-1 identifies the major pollutants, characteristics, health effects and typical sources. The NAAQS and CAAQS are summarized in Table 4.3-2. The NAAQS and CAAQS were developed independently with differing purposes and methods. As a result, the federal and State standards differ in some cases. In general, the CAAQS are more stringent than the NAAQS, particularly for ozone and particulate matter (PM).

Attainment Status and Regional Air Quality Plans

Areas not meeting the NAAQS presented in Table 4.3-2, below, are designated by the USEPA as nonattainment. Further classifications of nonattainment areas are based on the severity of the nonattainment problem, with marginal, moderate, serious, severe, and extreme nonattainment classifications for ozone. Nonattainment classifications for PM range from marginal to serious. The federal Clean Air Act (CAA) requires areas violating the NAAQS to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures for states to use to attain the NAAQS. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, rules, and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA reviews SIPs to determine if they conform to the mandates of the federal CAA amendments and would achieve air quality goals when implemented.

The CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) of 1988. The CCAA classifies ozone nonattainment areas as moderate, serious, severe, and extreme based on severity of violations of CAAQS. For each nonattainment area classification, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment areas, attainment plans are required to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. Air districts with air quality that is in

violation of CAAQS are required to prepare an air quality attainment plan that lays out a program to attain the CCAA mandates.

Table 4.3-2
Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm	-	Same as primary
	8 Hour	0.070 ppm	0.070 ppm	
Carbon Monoxide	8 Hour	9 ppm	9 ppm	-
	1 Hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Mean	0.030 ppm	53 ppb	Same as primary
	1 Hour	0.18 ppm	100 ppb	-
Sulfur Dioxide	24 Hour	0.04 ppm	-	-
	3 Hour	-	-	0.5 ppm
	1 Hour	0.25 ppm	75 ppb	-
Respirable Particulate Matter (PM_{10})	Annual Mean	20 ug/m^3	-	Same as primary
	24 Hour	50 ug/m^3	150 ug/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 ug/m^3	12 ug/m^3	15 ug/m^3
	24 Hour	-	35 ug/m^3	Same as primary
Lead	30 Day Average	1.5 ug/m^3	-	-
	Calendar Quarter	-	1.5 ug/m^3	Same as primary
Sulfates	24 Hour	25 ug/m^3	-	-
Hydrogen Sulfide	1 Hour	0.03 ppm	-	-
Vinyl Chloride	24 Hour	0.010 ppm	-	-
Visibility Reducing Particles	8 Hour	see note below	-	-

ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter

Note: Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: California Air Resources Board. Ambient Air Quality Standards. May 4, 2016. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed April 2020.

Table 4.3-3 below presents the current attainment status of the jurisdictional area of the YSAQMD. As shown in the table, Yolo County is in attainment for all State and federal AAQS, with the exception of ozone, PM_{10}, and $PM_{2.5}$. At the federal level, the area is designated as severe nonattainment for the 8-hour ozone standard, nonattainment for the 24-hour $PM_{2.5}$ standard, unclassified/nonattainment for annual $PM_{2.5}$, and attainment or unclassified for all other criteria pollutants.

At the State level, the project area is designated as a nonattainment area for the 1-hour ozone standard, nonattainment for the 8-hour ozone standard, nonattainment for the PM_{10} and $PM_{2.5}$ standards, and attainment or unclassified for all other State standards. Although the 1-Hour federal ozone standard has been revoked, on October 18, 2012, the USEPA officially determined

that the Sacramento Federal Nonattainment Area (SFNA), which includes Sacramento and Yolo counties, Placer and El Dorado counties (except Lake Tahoe Basin portions), Solano County (eastern portion), and Sutter County (southern portion), attained the revoked 1-hour ozone NAAQS. The determination became effective November 19, 2012.[8]

Table 4.3-3
Attainment Status

Pollutant	Designation / Classification	
	Federal Standards	**State Standards**
Ozone – 1-Hour	Revoked in 2005	**Nonattainment**
Ozone – 8-Hour	**Nonattainment**	**Nonattainment**
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Attainment (Pending)	Attainment
PM_{10}	Attainment	**Nonattainment**
$PM_{2.5}$ – 24-Hour	**Nonattainment**	No State Standard
$PM_{2.5}$ – Annual	**Unclassified/Nonattainment**	**Nonattainment**
Lead	Unclassified/Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility Reducing Particles	No Federal Standard	Unclassified

Sources:
- ***YSAQMD. Ambient Air Quality Standards. Available at: https://www.ysaqmd.org/wp-content/uploads/2016/06/Attainment_Detailed.jpg. Accessed April 2020.***
- ***California Air Resources Board. Air Quality Standards and Area Designations. Available at: https://www.arb.ca.gov/desig/desig.htm. Accessed April 2020.***

Due to the nonattainment designations, the YSAQMD, along with the other air districts in the SVAB region, is required to develop plans to attain the federal and State standards for ozone and particulate matter. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control measures have worked, and show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals. Each of the attainment plans currently in effect are discussed in further detail in the Regulatory Context discussion of this section.

Local Air Quality Monitoring

Air quality is monitored by CARB at various locations to determine which air quality standards are being violated, and to direct emission reduction efforts, such as developing attainment plans and rules, incentive programs, etc. The nearest local air quality monitoring station to the project site is the Woodland-Gibson Road station, located approximately 6.5 miles southeast of the site, near East Gibson Road, within the Yolo County Sheriff's complex. The Woodland-Gibson Road station does not provide data for 1-Hour Nitrogen Dioxide concentrations; thus, the nearest station with such data was used, which was the Davis-UCD Campus station, located along Campbell Road between Hutchinson Drive and Garrod Road in Davis, approximately 10.8 miles south of the project site. Table 4.3-4 presents the number of days that each criteria air pollutant standard was exceeded and/or the annual average mean concentrations for the years 2016 through 2018 for those pollutants for which monitoring data is available from the Woodland-Gibson Road and the Davis-UCD Campus monitoring stations. The USEPA uses such data (air quality monitoring data

[8] U.S. Environmental Protection Agency. *Air Actions in the Sacramento Metro Area*. October 3, 2012. Available at: http://www.epa.gov/region9/air/actions/sacto/index.html. Accessed March 2018.

for the most recent three-year period), as well as a number of other factors, in making final determinations regarding area designations.

Table 4.3-4
Air Quality Monitoring Data Summary for Project Area

Pollutant	Standard	Days Standard Was Exceeded		
		2016	2017	2018
1-Hour Ozone	State	1	0	1
	Federal	0	0	0
8-Hour Ozone	State	4	2	2
	Federal	4	2	2
24-Hour $PM_{2.5}$	Federal	0.0	12.3	12.3
24-Hour PM_{10}	State	12.2	18.4	24.5
	Federal	0	0	6.1
1-Hour Nitrogen Dioxide	State	0	0	0
	Federal	0	0	0

Note: All measurements from the Woodland-Gibson Road Station, with the exception of the 1-Hour Nitrogen Dioxide measurements, which are from the Davis-UCD Campus station.

Source: California Air Resources Board. Aerometric Data Analysis and Management (iADAM) System. Available at http://www.arb.ca.gov/adam/welcome.html. Accessed April 2020.

Criteria Pollutants

A description of each criteria pollutant and its potential health effects is provided in the following section.

Ozone

Ozone is a reactive gas consisting of three oxygen atoms. In the troposphere, ozone is a product of the photochemical process involving the sun's energy, and is a secondary pollutant. As such, unlike other pollutants, ozone is not released directly into the atmosphere from any sources. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation. The primary source of ozone precursors is mobile sources, including cars, trucks, buses, construction equipment, and agricultural equipment.

Ground-level ozone reaches the highest level during the afternoon and early evening hours. High levels occur most often during the summer months. Ground-level ozone is a strong irritant that could cause constriction of the airways, forcing the respiratory system to work harder in order to provide oxygen. Ozone at the Earth's surface causes numerous adverse health effects and is a major component of smog. High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments.

Reactive Organic Gas

ROG is a reactive chemical gas composed of hydrocarbon compounds typically found in paints and solvents that contributes to the formation of smog and ozone by involvement in atmospheric chemical reactions. A separate health standard does not exist for ROG. However, some compounds that make up ROG are toxic, such as the carcinogen benzene.

Oxides of Nitrogen

NO_X are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown

gas that discolors the air and is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of NO_X. NO_X reacts with ROG to form smog, which could result in adverse impacts to human health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage and can cause increased risk of acute and chronic respiratory disease.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. When CO enters the body, the CO combines with chemicals in the body, which prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to CO can result in chest pain, headaches, reduced mental alertness, and death at high concentrations.

Sulfur Dioxide

Sulfur Dioxide (SO_2) is a colorless, irritating gas with a rotten egg odor formed primarily by the combustion of sulfur-containing fossil fuels from mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Similar to airborne NO_X, suspended sulfur oxide particles contribute to poor visibility. The sulfur oxide particles are also a component of PM_{10}.

Particulate Matter

Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health impacts. The USEPA is concerned about particles that are 10 micrometers in diameter or smaller (PM_{10}) because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, the particles could affect the heart and lungs and cause serious health effects. USEPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles ($PM_{2.5-10}$)," which are found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
- "Fine particles ($PM_{2.5}$)," which are found in smoke and haze, are 2.5 micrometers in diameter and smaller. $PM_{2.5}$ particles could be directly emitted from sources such as forest fires, or could form when gases emitted from power plants, industries, and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- “Ultrafine particles (UFP),” are very, very small particles (less than 0.1 micrometers in diameter) largely resulting from the combustion of fossil fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area, deep lung penetration, and transfer into the bloodstream could result in disproportionate health impacts relative to their mass. UFP is not currently regulated separately, but is analyzed as part of $PM_{2.5}$.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants, which are emitted directly to the atmosphere and secondary pollutants, which are formed in the atmosphere by chemical reactions among

precursors. Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include the same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust. Long-term PM pollution, especially fine particles, could result in significant health problems including, but not limited to, the following: increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing; decreased lung function; aggravated asthma; development of chronic respiratory disease in children; development of chronic bronchitis or obstructive lung disease; irregular heartbeat; heart attacks; and increased blood pressure.

Lead

Lead is a relatively soft and chemically resistant metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, and, thus, essentially persists forever. Lead forms compounds with both organic and inorganic substances. As an air pollutant, lead is present in small particles. Sources of lead emissions in California include a variety of industrial activities. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. However, because lead was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) as a result of airborne dispersion and could become re-suspended into the air.

Because lead is only slowly excreted by the human body, exposures to small amounts of lead from a variety of sources could accumulate to harmful levels. Effects from inhalation of lead above the level of the ambient air quality standard may include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms could include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children. Lead also causes cancer.

Sulfates

Sulfates are the fully oxidized ionic form of sulfur and are colorless gases. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. The sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The sulfates standard established by CARB is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide

Hydrogen Sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations, especially in enclosed spaces (800 ppm can cause death).

Vinyl Chloride

Vinyl Chloride (C_2H_3Cl, also known as VCM) is a colorless gas that does not occur naturally, but is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Visibility Reducing Particles

Visibility Reducing Particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Toxic Air Contaminants (TACs)

TACs are present in many types of emissions with varying degrees of toxicity. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases. Common stationary sources of TACs include gasoline stations, dry cleaners, and diesel backup generators, which are subject to YSAQMD stationary source permit requirements. The other, often more significant, common source type is on-road motor vehicles, such as cars and trucks, on freeways and roads, and off-road sources such as construction equipment, ships, and trains. Mining activities may release multiple types of TACs, from multiple sources; the predominant types and sources of TACs attributable to mining activities are discussed below.

Fossil fueled combustion engines, including those used in cars, trucks, and some pieces of construction and mining equipment, release at least 40 different TACs. In terms of health risks, the most volatile contaminants are diesel particulate matter (DPM), benzene, formaldehyde, 1,3-butadiene, toluene, xylenes, and acetaldehyde. Gasoline vapors contain several TACs, including benzene, toluene, and xylenes. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust, DPM, is composed of carbon particles and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of such chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and NO_X. Due to the published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects, the CARB has identified DPM from diesel-fueled engines as a TAC. Although a variety of TACs are emitted by fossil fueled combustion engines, the cancer risk due to DPM exposure represents a more significant risk than the other TACs discussed above.[9]

More than 90 percent of DPM is less than one micrometer in diameter, and, thus, DPM is a subset of $PM_{2.5}$. As a California statewide average, DPM comprises about eight percent of $PM_{2.5}$ in outdoor air, although DPM levels vary regionally due to the non-uniform distribution of sources throughout the State. Most major sources of diesel emissions, such as ships, trains, and trucks, operate in and around ports, rail yards, and heavily-traveled roadways. Such areas are often located near highly populated areas. Accordingly, elevated DPM levels are mainly an urban problem, with large numbers of people exposed to higher DPM concentrations, resulting in greater health consequences compared to rural areas.

[9] California Air Resources Board. *Reducing Toxic Air Pollutants in California's Communities*. February 6, 2002.

Due to the high levels of diesel activity, high volume freeways, stationary diesel engines, rail yards and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Mining activities also have the potential to generate concentrations of DPM from on-road haul trucks and off-road equipment exhaust emissions.

The size of diesel particulates that are of the greatest health concern are fine particles (i.e., $PM_{2.5}$) and ultrafine particles (UFPs), which are a subset of $PM_{2.5}$. UFPs have a small diameter (on the order of 0.1 micrometers).[10] The small diameter of UFPs imparts the particulates with unique attributes, such as high surface areas and the ability to penetrate deeply into lungs. Once UFPs have been deposited in lungs, the small diameter allows the UFPs to be transferred to the bloodstream. The high surface area of the UFPs also allows for a greater adsorption of other chemicals, which are transported along with the UFPs into the bloodstream of the inhaler, where the chemicals can eventually reach critical organs.[11] The penetration capability of UFPs may contribute to adverse health effects related to heart, lung, and other organ health.[12] UFPs are a subset of DPM and activities that create large amounts of DPM, such as the operations involving heavy diesel-powered engines, also release UFPs. Considering that UFPs are a subset of DPM, and DPM is considered a subset of $PM_{2.5}$, estimations of either concentrations or emissions of $PM_{2.5}$ or DPM include UFPs.

Respirable Silica

In addition to concerns regarding DPM and UFPs, silicon dioxide, commonly referred to as silica or respirable silica, is considered a TAC. Silica is a common mineral that is contained naturally in many types of sand and stone, and, thus, can be found in man-made products such as concrete, mortar, glass, pottery, and bricks. From a health risk perspective, the portion of silica dust that is respirable is of principle concern. Activities such as sawing, grinding, and crushing stones, sand, or other silica containing materials can release respirable silica. Inhalation of respirable silica has been linked with chronic lung disease, specifically silicosis, as well as lung cancer, chronic obstructive pulmonary disease, and kidney disease. Due to the health risks posed by silica dust, the United States Occupational Safety and Health Administration has established standards for exposure of workers.[13] The proposed mining activities would have the potential to release silica dust, and, as such, health risks related to the release of silica dust are analyzed within this EIR.

Health Risks from TACs

Health risks from TACs are a function of both the concentration of emissions and the duration of exposure, which typically are associated with long-term exposure and the associated risk of contracting cancer. Health effects of exposure to TACs other than cancer include birth defects, neurological damage, and death. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level. The identification, regulation, and monitoring of TACs is relatively new compared to criteria air pollutants that have established AAQS. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an AAQS or emission-based threshold.

---

10 South Coast Air Quality Management District. *Final 2012 Air Quality Management Plan*. December 2012.
11 Health Effects Institute. *Understanding the Health Effects of Ambient Ultrafine Particles*. January 2013.
12 South Coast Air Quality Management District. *Final 2012 Air Quality Management Plan*. December 2012.
13 U.S. Occupational Safety and Health Administration. *Silica, Crystalline*. Available at: https://www.osha.gov/dsg/topics/silicacrystalline/. Accessed April 2020.

Naturally Occurring Asbestos

Another concern related to air quality is naturally occurring asbestos (NOA). Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. When rock containing asbestos is broken or crushed, asbestos fibers may be released and become airborne. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease which causes scarring of the lungs). Because asbestos is a known carcinogen, NOA is considered a TAC. Sources of asbestos emissions include: unpaved roads or driveways surfaced with ultramafic rock; construction activities in ultramafic rock deposits; or rock quarrying activities where ultramafic rock is present.

According to mapping prepared by the California Geological Survey, Yolo County is not in an area likely to contain NOA.[14] Consequently, NOA is not expected to be present at the project site.

Odors

While offensive odors rarely cause physical harm, they can be unpleasant, leading to considerable annoyance and distress among the public and can generate citizen complaints to local governments and air districts. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative or formulaic methodologies to determine the presence of a significant odor impact do not exist. Adverse effects of odors on residential areas and other sensitive receptors warrant the closest scrutiny; but consideration should also be given to other land use types where people congregate, such as recreational facilities, worksites, and commercial areas. The potential for an odor impact is dependent on a number of variables including the nature of the odor source, distance between a receptor and an odor source, and local meteorological conditions.

One of the most important factors influencing the potential for an odor impact to occur is the distance between the odor source and receptors, also referred to as a buffer zone or setback. The greater the distance between an odor source and receptor, the less concentrated the odor emission would be when reaching the receptor.

Meteorological conditions also affect the dispersion of odor emissions, which determines the exposure concentration of odiferous compounds at receptors. The predominant wind direction in an area influences which receptors are exposed to the odiferous compounds generated by a nearby source. Receptors located upwind from a large odor source may not be affected due to the produced odiferous compounds being dispersed away from the receptors. Wind speed also influences the degree to which odor emissions are dispersed away from any area.

Odiferous compounds could be generated from a variety of source types including both construction and operational activities. Examples of common land use types that typically generate significant odor impacts include, but are not limited to wastewater treatment plants; sanitary landfills; composting/green waste facilities; recycling facilities; petroleum refineries; chemical manufacturing plants; painting/coating operations; rendering plants; and food packaging plants. Asphalt plants are also considered potential sources of odors. The Woodland Plant currently contains an asphalt plant, which could represent an existing source of odors.

[14] California Department of Conservation, Division of Mines and Geology. *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. August 2000.

Description of Local Environment

The central and southern portions of the project site consist primarily of actively managed agricultural land. Crops planted at the site over the past decade have included wheat, alfalfa, tomatoes, cucumbers, canola, sunflower, and safflower. The northeastern portion of the site previously contained a ranch headquarters (Stevens Ranch); however, the structures that comprised the headquarters were burned down as part of a fire department training exercise in the late 1970s or early 1980s. Currently, structures do not exist at the location and the area is currently overgrown by low-lying brush. The northern portion of the site consists of 52 scattered oak trees and ruderal grassland vegetation.

Moore Canal, a concrete-lined water conveyance structure owned and operated by the Yolo County Flood Control and Water Conservation District (YCFCWCD), bisects the central portion of the site from west to east. Magnolia Canal is an unlined water conveyance structure owned and operated by the YCFCWCD that intersects the Moore Canal on the northeastern portion of the project site. An existing groundwater well used for agricultural purposes is located along the western site boundary. In addition, a domestic water supply well is located at the location of the former ranch headquarters. The northern portion of the site also includes an electric conveyor and associated gravel road formerly used to transport mined aggregate from the Teichert Woodland Storz mining site to the Woodland Plant located north of the project site. The natural environment of the immediate vicinity is similarly characterized by agricultural lands, but also includes Cache Creek, immediately north of the project site. Riparian woodland vegetation is located along portions of the banks of Cache Creek.

The environment of the immediate vicinity is dominated by aggregate mining operations to the north; a golf course (Yolo Fliers Club), rural residential, airport (Watts-Woodland), and farm dwellings to the west/southwest; rural residential and cemetery (Monument Hill Memorial Park cemetery) to the south; and farm dwellings to the east. The aggregate mining operations to the west consist of Teichert's Storz mining site and Teichert's Woodland Plant site to the northeast, beyond which is Teichert's Schwarzgruber mining site. The Teichert-Woodland Plant has been in continuous operation for over 50 years.

Local air quality is primarily affected by regional trends; however, certain localized activities such as tilling of fields for crops, can create increased levels of localized dust.

Existing Emissions

The Shifler mining site is currently used for agricultural purposes. Emissions resulting from existing agricultural activities would primarily include PM (from both fugitive dust and equipment exhaust) and ozone precursors (primarily from harvesting equipment exhaust). Existing agricultural activities result in emissions as presented in Table 4.3-5.

Table 4.3-5
Existing Agricultural Emissions

ROG (tons/yr)	NO_X (tons/yr)	PM_{10} (lbs/day)	GHG (tons/yr)
0.0	0.1	3.9	17

See Appendix D for all emissions calculations.

In addition to the agricultural emissions that occur within the Shifler mining site, the project applicant currently processes aggregate material at both the Woodland Plant and the Esparto

Plant. Existing operations at both the Woodland Plant and Esparto Plant are subject to the regulations within Yolo County's Off-Channel Surface Mining Ordinance (OCSMO). Specifically, Section 10-4.414 of the OCSMO includes specific requirements for the control of dust emissions. Therefore, the existing operations at the Woodland Plant and Esparto Plant include implementation of dust control measures. Due to the current use of dust control measures at the Woodland Plant and Esparto Plant, the existing emissions from both plants that are presented in Table 4.3-6 below include consideration of dust control practices.

Table 4.3-6
Existing Controlled Mining Emissions

ROG (tons/yr)	NO_X (tons/yr)	PM_{10} (lbs/day)	GHG (tons/yr)
2.59	45.43	643.69	11,258.53
See Appendix D for all emissions calculations.			

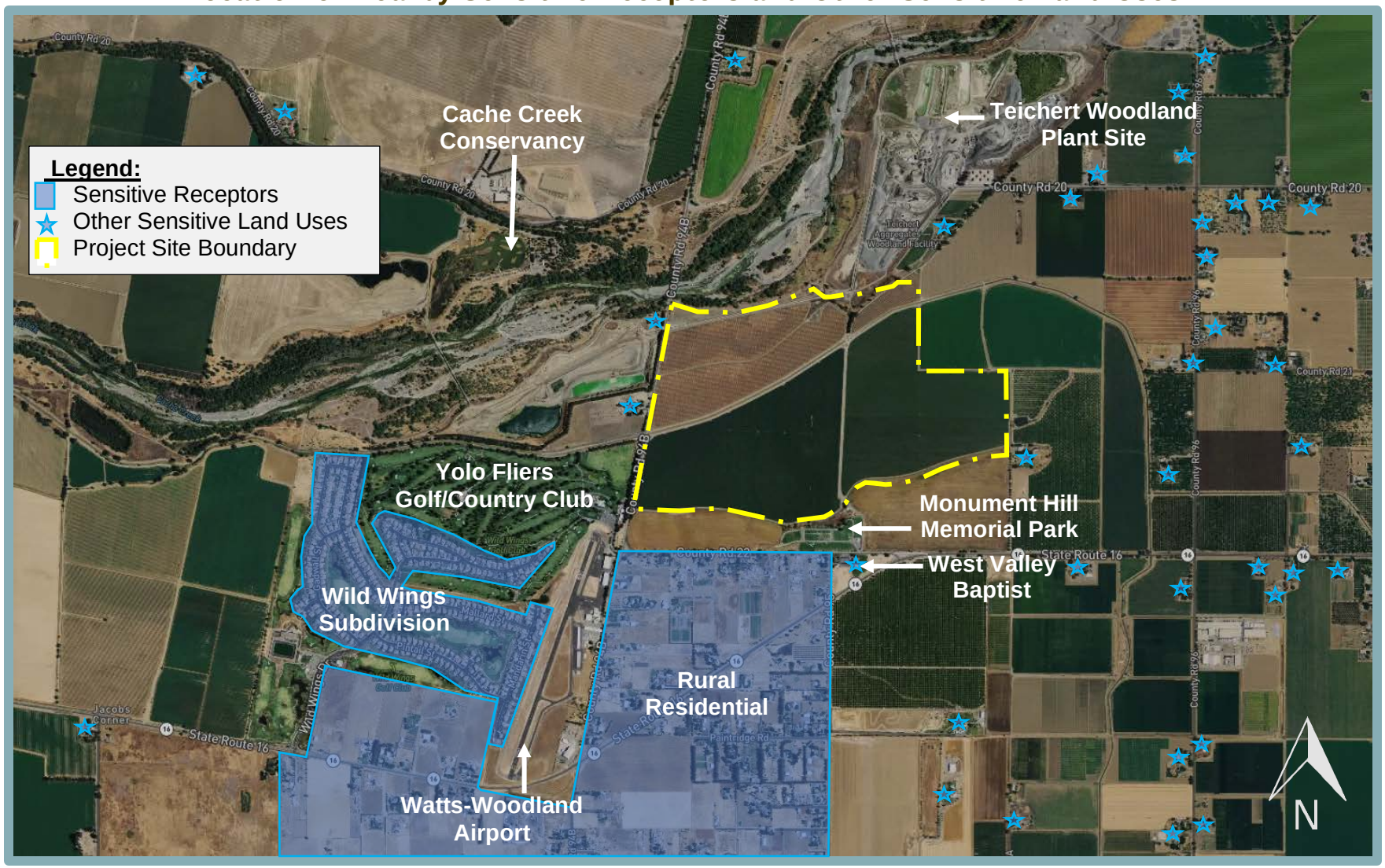
Sensitive Receptors and Other Sensitive Land Uses

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors for the purposes of air quality analyses include residences, schools, day care centers, playgrounds, and medical facilities.

Policy CO-A107 of the Yolo County General Plan provides a County-specific definition of sensitive receptors using the following criteria: residentially designated land uses; hospitals, nursing/convalescent homes, and similar board and care facilities; hotels and lodgings; schools and day care centers; and neighborhood parks. Considering Yolo County's definition of sensitive receptors, the nearest sensitive receptors to the project site are a church-run school located approximately 650 feet south of the Shifler mining site, residences located approximately 430 feet south of the site across County Road 22, and the residences located in the Wild Wings subdivision, which is located approximately 1,180 feet to the southwest of the Shifler mining site (see Figure 4.3-1).

Various farm dwellings exist within areas designated for agricultural uses by Yolo County, which are in close proximity to both the existing Teichert operational areas as well as the proposed Shifler site. For instance, the nearest farm dwelling to the Shifler site is approximately 165 feet to the west, while another farm dwelling approximately 180 feet to the east. Multiple farm dwellings exist in close proximity to the existing Woodland Plant. Figure 4.3-1 presents some of the farm dwelling locations in close proximity to the Woodland Plant and Shifler site. Additional farm dwellings in the vicinity of the project site were also considered in this analysis. All such farm dwellings are considered other sensitive land uses for the purposes of this analysis.

Figure 4.3-1
Location of Nearby Sensitive Receptors and Other Sensitive Land Uses



Note: The analyses prepared for this chapter included consideration of additional farm dwellings not individually identified here.

Greenhouse Gas Emissions and Climate Change

The following section includes a discussion of the geographic and climate setting of Yolo County, climate change, GHGs, as well as GHG sources and inventories.

Geographic and Climate Setting

As noted previously, Yolo County is within the SVAB, which is bounded by the North Coast Ranges on the west, the northern Sierra Nevada Mountains on the east, and the intervening terrain being flat. The Sacramento Valley has a Mediterranean climate, characterized by hot, dry summers and mild, rainy winters. During the year, the temperature may range from 20 to 115 degrees Fahrenheit, with summer highs usually in the 90-degree Fahrenheit range and winter lows occasionally below freezing. Average annual rainfall is approximately 20 inches, with snowfall being very rare.

Climate Change

The United Nations defines climate change as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere.[15] The predominant cause of climate change is through the emission of GHGs, primarily through the combustion of fossil fuels. However, vast array of human activities can contribute to climate change. For instance, the clearing of forests, development of heavily paved cities, and certain agricultural practices can all contribute to climate change through direct and indirect means. The net effect of human activity has been increased concentrations of CO_2 in the atmosphere, an increase in global temperature of 1.9 degrees in Fahrenheit since 1880, a 12.8 percent decrease in the minimum extent of arctic sea ice, and a loss of 413 gigatonnes from global ice sheets each year.[16] Although natural processes have resulted in a changing climate throughout earth's history, the International Panel on Climate Change (IPCC) has determined that the current rate of climate change is unprecedented when compared to natural changes throughout earth's history , and that the current changes in earth's climate being observed are extremely likely to have been caused by human activities.[17]

Greenhouse Gases (GHGs)

As discussed previously, GHGs are gases that absorb and emit thermal infrared radiation, trapping heat in the earth's atmosphere. GHGs are emitted naturally and through anthropogenic sources, and the IPCC considers anthropogenic GHG emissions to be the cause of currently observed climate change.

The primary GHG emitted by human activities is CO_2, with the next largest components being CH_4 and N_2O. A wide variety of human activities result in the emission of CO_2. Some of the largest sources of CO_2 include the burning of fossil fuels for transportation and electricity, industrial processes including fertilizer production, agricultural processing, and cement production. The primary sources of CH_4 emissions include domestic livestock sources, decomposition of wastes in landfills, releases from natural gas systems, coal mine seepage, and manure management. The main human activities producing N_2O are agricultural soil management, fuel combustion in motor vehicles, nitric acid production, manure management, and

---

15 United Nations. *United Nations Framework Convention on Climate Change*. 1992.

16 National Aeronautics and Space Agency. *Global Climate Change*. Available at: https://climate.nasa.gov/. Accessed August 2019.

17 IPCC, Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [pg. 151]. 2014.

stationary fuel combustion. Emissions of GHG by economic sector indicate that energy-related activities account for the majority of U.S. emissions. Electricity generation is the largest single-source of GHG emissions, and transportation is the second largest source, followed by industrial activities. The agricultural, commercial, and residential sectors account for the remainder of GHG emission sources.[18]

Emissions of GHG are partially offset by uptake of carbon and sequestration in trees, agricultural soils, landfilled yard trimmings and food scraps, and absorption of CO_2 by the earth's oceans. Additional emission reduction measures for GHG could include, but are not limited to, compliance with local, State, or federal plans or strategies for GHG reductions, on-site and off-site mitigation, and project design features. Attainment concentration standards for GHGs have not been established by the federal or State government.

Global Warming Potential

Global Warming Potential (GWP) is one type of simplified index (based upon radiative properties) that can be used to estimate the potential future impacts of emissions of various gases. According to the USEPA, the global warming potential of a gas, or aerosol, to trap heat in the atmosphere is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas." The reference gas for comparison is CO_2. GWP is based on a number of factors, including the heat-absorbing ability of each gas relative to that of CO_2, as well as the decay rate of each gas relative to that of CO_2. Each gas's GWP is determined by comparing the radiative forcing associated with emissions of that gas versus the radiative forcing associated with emissions of the same mass of CO_2, for which the GWP is set at one. Methane gas, for example, is estimated by the USEPA to have a comparative global warming potential 21 times greater than that of CO_2, as shown in Table 4.3-7

Table 4.3-7
Global Warming Potentials and Atmospheric Lifetimes of Select GHGs

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50-200[1]	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	230-270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

[1] For a given amount of carbon dioxide emitted, some fraction of the atmospheric increase in concentration is quickly absorbed by the oceans and terrestrial vegetation, some fraction of the atmospheric increase will only slowly decrease over a number of years, and a small portion of the increase will remain for many centuries or more.

Source: USEPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013, April 15, 2015.

[18] U.S. Environmental Protection Agency. *Sources of Greenhouse Gas Emissions*. Available at: https://19january2017snapshot.epa.gov/ghgemissions/sources-greenhouse-gas-emissions_.html. Accessed March 2018.

As shown in the table, at the extreme end of the scale, sulfur hexafluoride is estimated to have a comparative GWP 22,800 times that of CO_2. The "specified time horizon" is related to the atmospheric lifetimes of such GHGs, which are estimated by the USEPA to vary from 50 to 200 years for CO_2, to 50,000 years for tetrafluoromethane. Longer atmospheric lifetimes allow GHG to buildup in the atmosphere; therefore, longer lifetimes correlate with the global warming potential of a gas. The common indicator for GHG is expressed in terms of metric tons of CO_2 equivalents ($MTCO_2e$), which is calculated based on the global warming potential for each pollutant.

Environmental Effects of Global Climate Change

Uncertainties exist as to exactly what the climate changes will be in various areas of the Earth. According to the Intergovernmental Panel on Climate Change's Working Group II Report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*,[19] climate change impacts to North America may include:

- Diminishing snowpack;
- Increasing evaporation;
- Exacerbated shoreline erosion;
- Exacerbated inundation from sea level rising;
- Increased risk and frequency of wildfire;
- Increased risk of insect outbreaks;
- Increased experiences of heat waves; and
- Rearrangement of ecosystems as species and ecosystems shift northward and to higher elevations.

For California, climate change has the potential to cause/exacerbate the following environmental impacts:

- Increased frequency, duration, and intensity of conditions conducive to air pollution formation (particularly ozone);
- Reduced precipitation, changes to precipitation and runoff patterns, reduced snowfall (precipitation occurring as rain instead of snow), earlier snowmelt, decreased snowpack, and increased agricultural demand for water;
- Increased growing season and increased growth rates of weeds, insect pests and pathogens;
- Inundation by sea level rise;
- Increased incidents and severity of wildfire events; and
- Expansion of the range and increased frequency of pest outbreaks.

The Yolo County CAP identifies the following potential environmental impacts that could affect the County as a result of climate change:

- Increased temperature;
- Change in precipitation patters;
- Impacted water resources;
- Increased risk of wildfire events; and

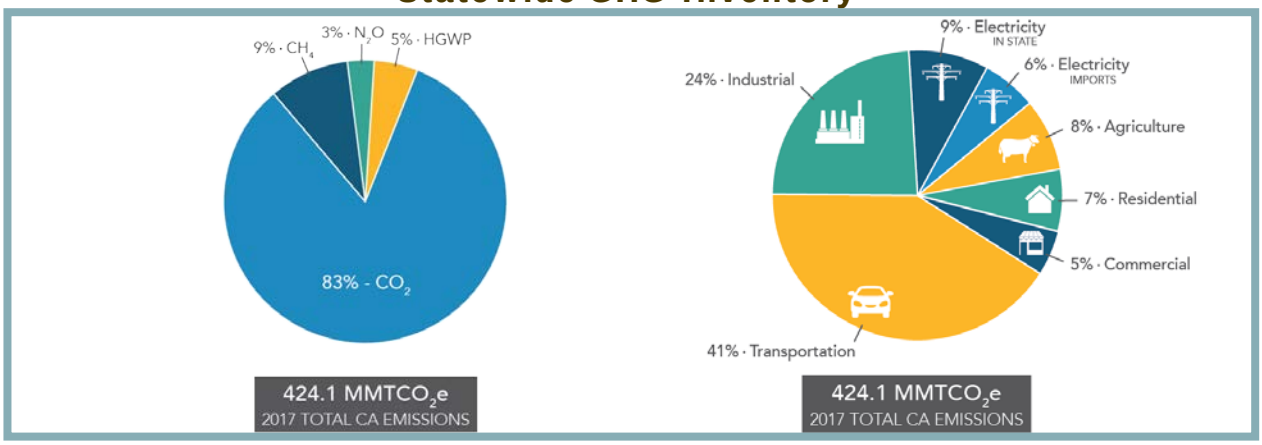
[19] IPCC, Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [pg. 151]. 2014.

- Sea level rise in the Delta.

Greenhouse Gas Sources and Inventories

An annual statewide emissions inventory has been prepared for California since the year 2000. In the most recent year for which inventory data is available, statewide emissions equaled 424.1 million $MTCO_2e$. As shown in Figure 4.3-2, the vast majority of GHG emissions were comprised of CO_2, with smaller proportions of CH_4, N_2O, and other high GWP gases. The predominant source of emissions within the State, representing 41 percent of total emissions, is transportation, which includes sources such as passenger vehicles, public transit, air travel, and freight transportation. Industrial activities represent the second largest source of emissions, at 24 percent of total emissions.

Figure 4.3-2
Statewide GHG Inventory



Source: California Air Resources Board. California Greenhouse Gas Emissions Inventory – 2019 Edition. Available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm. Accessed September 2019.

Project Site

In addition to the existing emissions of criteria pollutants that occur from agricultural operations at the Shifler site, the existing agricultural activities within the Shifler site result in GHG emissions. GHG emissions related to agricultural activities would primarily include CO_2 from the use of combustion engines in agricultural equipment. Emissions from existing operations are estimated to equate to approximately 16.60 $MTCO_2e$ per year (see Appendix D).

Existing operations at the Esparto and Woodland plants and mining sites also result in GHG emissions. Emissions related to existing mining and processing are primarily related to sources such as the use of heavy-duty off-road equipment, hauling of material to and from the site, and the off-site generation of electricity to power the electric machinery on-site. In total, Teichert's existing operations result in approximately 11,258.94 $MTCO_2e$ per year (see Appendix D).

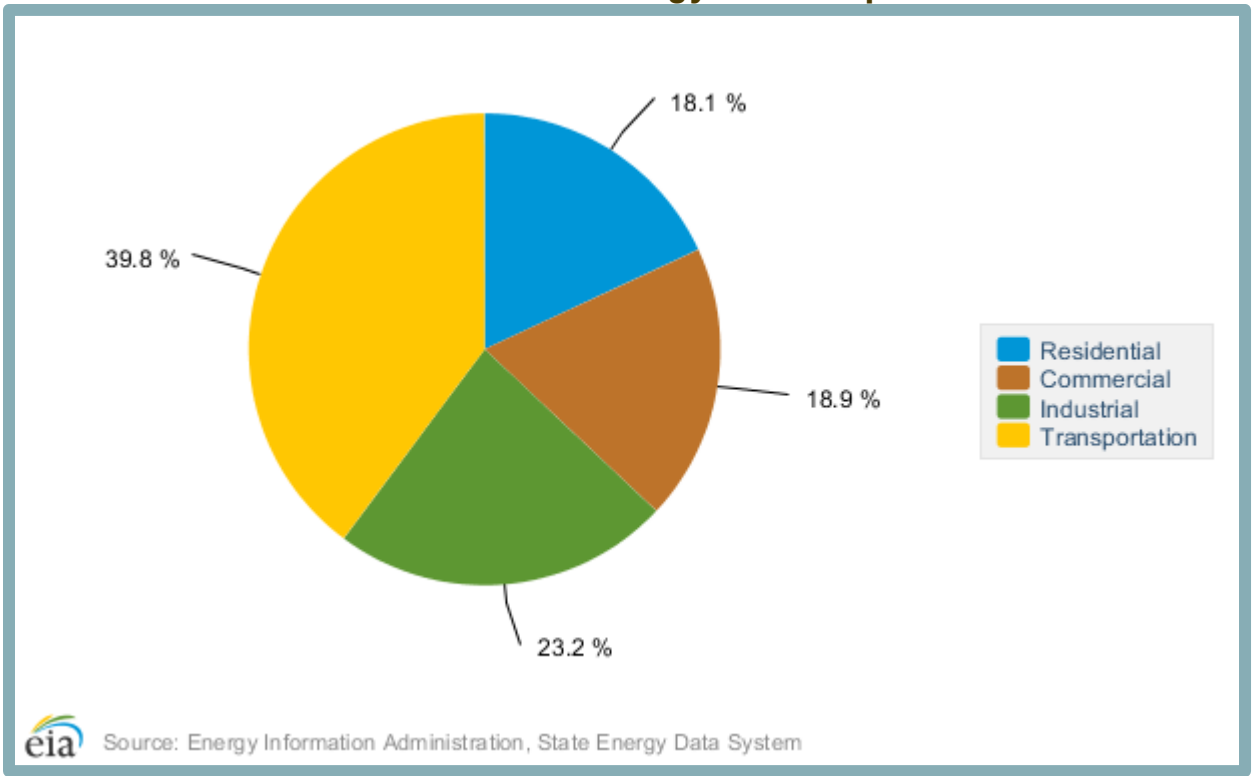
Energy

California is one of the highest energy demanding states within the nation. Activities such as heating and cooling structures, lighting, the movement of goods, agricultural production, and countless other facets of daily life consume a variety of energy sources. Energy within the state is provided primarily by the combustion of fossil fuels such as natural gas, motor gasoline, diesel, jet fuel, and, to a lesser extent, coal. In addition to the fossil fuel-based energy sources, the state is ranked second in the nation in renewable energy generation, which includes solar, geothermal,

wind, and biomass resources. In fact, California leads the nation in solar thermal electricity capacity, with 73 percent of the nation's total solar thermal capacity installed within the state.[20]

As shown in Figure 4.3-3, transportation-related activity consumes the largest share of energy within the State. Within the transportation sector, motor gasoline is the dominate form of energy, with jet fuel, diesel, natural gas, and electricity supplying the remaining portions of California's transportation sector energy demand.

Figure 4.3-3
2018 California Energy Consumption



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Accessible at: https://www.eia.gov/state/index.php?sid=CA. Accessed June 2020.

Electricity is provided to California consumers through a mix of sources including natural gas, hydroelectric, non-hydroelectric renewable sources, nuclear, coal, and petroleum. Of the foregoing sources of electricity, natural gas provided the greatest amount of electricity at approximately 45 percent of California's statewide supply in 2018. Meanwhile, non-hydroelectric based sources of renewable energy provided an additional 35 percent of the state's energy, with hydroelectric and nuclear providing nine and 11 percent respectively. Coal contributed less than 0.2 percent of the State's total electricity supply. The foregoing sources of electricity supply provided for the consumption of a statewide total of 13,103 gigawatt hours (GWh) in the year 2018.[21] Of the total electricity supplied to the State, Yolo County consumed approximately

[20] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed June 2020.
[21] U.S. Energy Information Administration. *California Net Electricity Generation by Source*. Available at: https://www.eia.gov/state/index.php?sid=CA#tabs-4. Accessed June 2020.

1,718.06 GWh, which constitutes approximately 13 percent of the total energy consumed within the State.[22]

California residents and businesses consume petroleum products for various purposes including on-road vehicles, off-road equipment, and air travel. In 2018, 49 percent of all petroleum products consumed within California consisted of motor gasoline. The second largest demand on petroleum products is jet fuel, which represents 19 percent of the petroleum products consumed, while distillate fuel oils, which includes diesel fuel, represents 16 percent of the total petroleum products demanded within the state.[23]

Existing Teichert Energy Consumption

Teichert's existing mining and processing activities require energy inputs. The main sources of energy consumed by Teichert's existing operations at Esparto and Woodland are electricity and diesel fuel. Typical activities that consume energy related to existing mining and processing activities include the use of heavy-duty off-road equipment, which is typically diesel fueled, as well as electricity to transport the mined material on conveyor from the mining site to the processing plants. Processing activities would also require the use of some heavy-duty off-road equipment, as well as electricity for conveyors, crushing machinery, and sorting machinery. In order to meet the existing demand for electricity, Teichert has voluntarily installed a photovoltaic energy system at the Woodland Plant. The electricity generated by the photovoltaic energy system is fed into the grid, and off-sets a portion of the electricity demanded by existing operations.

Electricity at the Esparto Plant is provided by Valley Clean Energy (VCE), while electricity at the Woodland Plant is directly purchased through a Direct Access Provider by Teichert. VCE provides electricity to customers within Woodland, Davis, and in unincorporated portions of Yolo County. Launched in June 2018, VCE purchases energy with a higher renewable energy content, and lower GHG content, as compared to equivalent grid electricity provided by Pacific Gas and Electric (PG&E), which previously provided electricity services to Yolo County. Although VCE purchases the electricity, electricity within the County continues to be transported through PG&E owned equipment. Direct Access Providers are regulated by the California Public Utilities Commission, and allow retail customers to purchase electric power directly from an independent electric service provider rather than solely through investor-owned utilities. While Direct Access allows purchasers flexibility in sourcing electricity from various entities, Direct Access Providers are subject to similar regulations as investor-owned utilities with regard to resource adequacy, renewable portfolio standards, and GHG emissions reductions.[24] Once purchased, electricity from the Direct Access Provider is transmitted over PG&E owned infrastructure to the Woodland Plant.

Based on the existing equipment operated by Teichert at the Woodland Plant, Schwarzgruber mine, Esparto Plant, and Esparto mine, the total fuel consumed by off-road equipment, as well as the total electricity consumed was quantified. With regard to the mining and processing activity in Esparto, a total of approximately 95,500 gallons of diesel fuel and approximately 1,909 megawatt hours (MWh) were estimated to be consumed each year. Activities at the Schwarzgruber mine

[22] California Energy Commission. *Electricity Consumption by County*. Available at: http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed June 2020.

[23] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed June 2020.

[24] California Public Utilities Commission. *Decision 10-03-022, Decision Regarding Increased Limits for Direct Access Transactions*. March 11, 2020.

and Woodland Plant consume an estimated 162,500 gallons of diesel fuel and approximately 4,345 MWh each year.

4.3.3 REGULATORY CONTEXT

Air quality, GHG emissions, and energy are monitored and regulated through the efforts of various international, federal, State, and local government agencies. Agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within the project area and monitoring or reducing GHG emissions are discussed below.

Federal Regulations

The following are the federal regulations relevant to air quality, GHG emissions, and energy.

FCAA and USEPA

The FCAA requires the USEPA to set NAAQS and designate areas with air quality not meeting NAAQS as nonattainment. The USEPA is responsible for enforcement of NAAQS for atmospheric pollutants and regulates emission sources that are under the exclusive authority of the federal government including emissions of GHGs. The USEPA's air quality mandates are drawn primarily from the FCAA, which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990. The USEPA has adopted policies consistent with FCAA requirements demanding states to prepare SIPs that demonstrate attainment and maintenance of the NAAQS. In order to track GHG emissions, the USEPA develops official U.S. GHG inventories each year, which account for emissions and removals of GHG.

On December 7, 2009, USEPA issued findings under Section 202(a) of the CAA concluding that GHGs are pollutants that could endanger public health. Under the so-called Endangerment Finding, USEPA found that the current and projected concentrations of the six key, well-mixed GHGs – CO_2, CH_4, N_2O, PFCs, SF_6, and HFCs – in the atmosphere threaten the public health and welfare of current and future generations. These findings do not, by themselves, impose any requirements on industry or other entities.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act was originally enacted in 1975 with the intention of ensuring that all vehicles sold in the U.S. meet established fuel economy standards. Following congressional establishment of the original set of fuel economy standards the U.S. Department of Transportation was tasked with establishing additional on-road vehicle standards and making revisions to standards as necessary. Compliance with established standards is based on manufacturer fleet average fuel economy, which originally applied to both passenger cars and light trucks but did not apply to heavy-duty vehicles exceeding 8,500 pounds in gross vehicle weight. The fuel economy program implemented under the Energy Policy and Conservation Act is known as the Corporate Average Fuel Economy (CAFE) Standards. Updates to the CAFE standards since original implementation have increased fuel economy requirements and begun regulation of medium- and heavy-duty vehicles.

Energy Policy Act of 2005

The Energy Policy Act of 2005 addressed energy production in the U.S. from various sources. In particular, the Energy Policy Act of 2005 included tax credits, loans, and grants for the implementation of energy systems that would reduce GHG emissions related to energy production.

State Regulations

The following are applicable State regulations related to air quality, GHG emissions, and energy. Only the most prominent and applicable California air quality- and GHG-related legislation is included below; however, an exhaustive list and extensive details of California air quality legislation can be found at the CARB website (http://www.arb.ca.gov/html/lawsregs.htm).

CCAA and CARB

The CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the CCAA. The CCAA requires that air quality plans be prepared for areas of the State that have not met the CAAQS for ozone, CO, NO_X, and SO_2. Among other requirements of the CCAA, the plans must include a wide range of implementable control measures, which often include transportation control measures and performance standards. In order to implement the transportation-related provisions of the CCAA, local air pollution control districts have been granted explicit authority to adopt and implement transportation controls. The CARB, California's air quality management agency, regulates and oversees the activities of county air pollution control districts and regional air quality management districts. The CARB regulates local air quality indirectly using State standards and vehicle emission standards, by conducting research activities, and through planning and coordinating activities. In addition, the CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the USEPA. Furthermore, the CARB is charged with developing rules and regulations to cap and reduce GHG emissions.

Air Quality and Land Use Handbook

CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB Handbook) addresses the importance of considering health risk issues when siting sensitive land uses, including residential development, in the vicinity of intensive air pollutant emission sources including freeways or high-traffic roads, distribution centers, ports, petroleum refineries, chrome plating operations, dry cleaners, and gasoline dispensing facilities.[25] The CARB Handbook draws upon studies evaluating the health effects of traffic traveling on major interstate highways in metropolitan California centers within Los Angeles (I-405 and I-710), the San Francisco Bay, and San Diego areas. The recommendations identified by CARB, including siting residential uses a minimum distance of 500 feet from freeways or other high-traffic roadways, are consistent with those adopted by the State of California for location of new schools. Specifically, the CARB Handbook recommends, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day".[26]

Importantly, the Introduction chapter of the CARB Handbook clarifies that the guidelines are strictly advisory, recognizing that: "[l]and use decisions are a local government responsibility. The Air Resources Board Handbook is advisory and these recommendations do not establish regulatory standards of any kind." CARB recognizes that there may be land use objectives as well as meteorological and other site-specific conditions that need to be considered by a governmental jurisdiction relative to the general recommended setbacks, specifically stating, "[t]hese recommendations are advisory. Land use agencies have to balance other considerations,

[25] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
[26] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.

including housing and transportation needs, economic development priorities, and other quality of life issues".[27]

AB 1807

Assembly Bill (AB) 1807 (Health and Safety Code [HSC] Section 39650), which was legislated as the Toxic Air Contaminant Identification and Control Act by AB 1807 enacted in September 1983, sets forth a procedure for the identification and control of TACs in California. CARB is responsible for the identification and control of TACs, except pesticide use, which is regulated by the California Department of Pesticide Regulation.

AB 2588

HSC Section 44300-44394, which was legislated as AB 2588 the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588), provides for the regulation of over 200 TACs, including DPM, and is the primary air contaminant legislation in California. Under the act, local air districts may request that a facility account for its TAC emissions. Local air districts then prioritize facilities on the basis of emissions, and high priority designated facilities are required to submit a health risk assessment and communicate the results to the affected public.

Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations

In 2002, the Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (Title 17, Section 93105, of the California Code of Regulations) went into effect, which requires each air pollution control and air quality management district to implement and enforce the requirements of Section 93105 and propose their own asbestos ATCM as provided in Health and Safety Code section 39666(d).[28]

Renewable Portfolio Standard (RPS) and SB 100

Established in 2002 under SB 1078 (which added Section 387, 390.1, and 399.25 to the Public Utilities Code and added Article 16 to Chapter 2.3 of Part 1 Division 1 of the Public Utilities Code), accelerated in 2006 under SB 107 (which amended sections 25620.1, 25740, 25741, 25742, 25743, 25746, and 25751 of, added sections 25470.5 and 25744.5, and repealed Sections 25745 and 25749 of, the Public Resources Code, as well as amending sections 87, 399.11, 399.12, 399.13, 399.14, and 399.15 of the Public Utilities code, adding Article 9to chapter 3 of Part 1 of Division 1 of the Public Utilities Code, and to repeal and add Section 399.16 of the Public Utilities Code), and expanded in 2011 under SB 2 (which amended sections 5740, 25740.5, 25741, 25742, 25746, 25747, and 25751 of the Public Resources Code, added section 25519.5 to the Public Resources Code, to add and repeal section 25741.5 of, the Public Resources Code, and to amend Sections 399.11, 399.12, 399.20, and 454.5 of, to amend, renumber, and add Sections 399.13 and 399.16 of, to add Sections 399.18, 399.19, 399.26, 399.30, 399.31, and 1005.1 to, to add Article 11 (commencing with Section 910) to Chapter 4 of Part 1 of Division 1 of, to repeal Section 387 of, and to repeal and add Sections 399.14, 399.15, and 399.17 of, the Public Utilities Code), California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community

[27] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
[28] California Air Resources Board. *2002-07-29 Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations*. June 3, 2015. Available at: http://www.arb.ca.gov/toxics/atcm/asb2atcm.htm. Accessed April 2017.

choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

Since the inception of the RPS program, the program has been extended and enhanced multiple times. In 2015, SB 350 (An act to add Section 44258.5 to the Health and Safety Code, to amend Section 1720 of the Labor Code, to amend Sections 25310 and 25943 of, and to add Sections 25302.2 and 25327 to, the Public Resources Code, and to amend Sections 359, 399.4, 399.11, 399.12, 399.13, 399.15, 399.16, 399.18, 399.21, 399.30, 454.55, 454.56, 701.1, 740.8, 9505, and 9620 of, to amend and repeal Sections 337 and 352 of, to add Sections 237.5, 365.2, 366.3, 454.51, 454.52, 740.12, 9621, and 9622 to, to add Article 17 (commencing with Section 400) to Chapter 2.3 of Part 1 of Division 1 of, to add and repeal Article 5.5 (commencing with Section 359.5) of Chapter 2.3 of Part 1 of Division 1 of, and to repeal Article 5 (commencing with Section 359) of Chapter 2.3 of Part 1 of Division 1 of, the Public Utilities Code) extended the State's RPS program by requiring that publicly owned utilities procure 50 percent of their electricity from renewable energy sources by 2030. The requirements of SB 350 were expanded and intensified in 2018 through the adoption of SB 100 (An act to amend Sections 399.11, 399.15, and 399.30 of, and to add Section 454.53 to, the Public Utilities Code), which mandated that all electricity generated within the State by publicly owned utilities be generated through carbon-free sources by 2045. In addition, SB 100 increased the previous renewable energy requirement for the year 2030 by 10 percent; thus, requiring that 60 percent of electricity generated by publicly owned utilities originate from renewable sources by 2030.

SB 656

In 2003, the Legislature passed Senate Bill (SB) 656, which added to HSC Section 39614, to reduce public exposure to PM_{10} and $PM_{2.5}$ above the State CAAQS. The legislation requires the CARB, in consultation with local air pollution control and air quality management districts, to adopt a list of the most readily available, feasible, and cost-effective control measures that could be implemented by air districts to reduce PM_{10} and $PM_{2.5}$ emissions. The CARB list is based on California rules and regulations existing as of January 1, 2004, and was adopted by CARB in November 2004. Categories addressed by SB 656 include measures for reduction of emissions associated with residential wood combustion and outdoor greenwaste burning, fugitive dust sources such as paved and unpaved roads and construction, combustion sources such as boilers, heaters, and charbroiling, solvents and coatings, and product manufacturing. Some of the measures include, but are not limited to, the following:

- Reduce or eliminate wood-burning devices allowed;
- Prohibit residential open burning;
- Permit and provide performance standards for controlled burns;
- Require water or chemical stabilizers/dust suppressants during grading activities;
- Limit visible dust emissions beyond the project boundary during construction;
- Require paving/curbing of roadway shoulder areas; and
- Require street sweeping.

Under SB 656, each air district is required to prioritize the measures identified by CARB, based on the cost effectiveness of the measures and their effect on public health, air quality, and emission reductions. Per SB 656 requirements, the PCAPCD amended their Rule 225 related to wood-burning appliances to include conditions consistent with SB 656, including such conditions as the prohibition of the installation of any new, permanently installed, indoor or outdoor, uncontrolled wood-burning appliances.

Heavy-Duty Vehicle Idling Emission Reduction Program

On October 20, 2005, CARB approved a regulatory measure to reduce emissions of toxics and criteria pollutants by limiting idling of new and in-use sleeper berth equipped diesel trucks.[29] The regulation established new engine and in-use truck requirements and emission performance requirements for technologies used as alternatives to idling the truck's main engine. For example, the regulation requires 2008 and newer model year heavy-duty diesel engines to be equipped with a non-programmable engine shutdown system that automatically shuts down the engine after five minutes of idling, or optionally meet a stringent NO_X emission standard. The regulation also requires operators of both in-state and out-of-state registered sleeper berth equipped trucks to manually shut down their engine when idling more than five minutes at any location within California. Emission producing alternative technologies such as diesel-fueled auxiliary power systems and fuel-fired heaters are also required to meet emission performance requirements that ensure emissions are not exceeding the emissions of a truck engine operating at idle.

Executive Order S-03-05

On June 1, 2005, then-Governor Schwarzenegger signed Executive Order S-03-05, which established total GHG emission targets. Specifically, emissions are to be reduced to year 2000 levels by 2010, 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency (Cal-EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary is also directed to submit biannual reports to the governor and state legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts.

To comply with the Executive Order, the Secretary of the Cal-EPA created a Climate Act Team (CAT) made up of members from various State agencies and commissions. In March 2006, CAT released their first report. In addition, the CAT has released several "white papers" addressing issues pertaining to the potential impacts of climate change on California.

AB 32

In September 2006, AB 32, the California Climate Solutions Act of 2006, was enacted, which added HSC, section 38500-38599. AB 32 delegated the authority for its implementation to the CARB and directs CARB to enforce the State-wide cap. Among other requirements, AB 32 required CARB to (1) identify the State-wide level of GHG emissions in 1990 to serve as the emissions limit to be achieved by 2020, and (2) develop and implement a Scoping Plan. Accordingly, the CARB has prepared the *Climate Change Scoping Plan* (Scoping Plan) for California, which was approved in 2008 and updated in 2014 and 2017.[30] The following sections present further information regarding plans and programs that have been introduced in order to meet the statutory requirements of AB 32.

California Scoping Plan

The 2008 Scoping Plan identified GHG reduction measures that would be necessary to reduce statewide emissions as required by AB 32. Many of the GHG reduction measures identified in the

[29] California Air Resources Board. *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling*. October 24, 2013. Available at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm. Accessed August 2016.

[30] California Air Resources Board. *AB 32 Scoping Plan*. Accessible at: https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm. Accessed February 2018.

2008 Scoping Plan have been adopted, such as the Low Carbon Fuel Standard, Pavley, Advanced Clean Car standards, RPS, and the State's Cap-and-Trade system.

Building upon the 2008 Scoping Plan, the 2013 and 2017 Scoping Plan Updates introduced new strategies and recommendations to continue GHG emissions reductions. The 2013 Scoping Plan Update created a framework for achievement of 2020 GHG reduction goals and identified actions that may be built upon to continue GHG reductions past 2020, as required by AB 32. Following the 2013 Scoping Plan, the 2017 Scoping Plan sets a path for the achievement of California's year 2030 GHG reduction goals.

California GHG Cap-and-Trade Program

California's GHG Cap-and-Trade Program was originally envisioned in the 2008 Scoping Plan as a key strategy to achieve GHG emissions reductions mandated by AB 32. The Cap-and-Trade Program is intended to put California on the path to meet the GHG emission reduction goal of 1990 levels by the year 2020, and ultimately achieving an 80 percent reduction from 1990 levels by 2050. Under cap-and-trade, an overall limit on GHG emissions from capped sectors has been established and facilities or industries subject to the cap are be able to trade permits (allowances) to emit GHGs. The CARB designed the California Cap-and-Trade Program to be enforceable and to meet the requirements of AB 32.[31] The Program started on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions. On January 1, 2014 California linked the state's cap-and-trade plan with Quebec's, and on January 1, 2015 the program expanded to include transportation and natural gas fuel suppliers.[32] AB 398 was adopted by the State's legislature in July 2017, which reauthorized the Cap-and-Trade program through December 31, 2030. The reauthorization and continued operation of the Cap-and-Trade program represents a key strategy within the State's 2017 Scoping Plan Update for the achievement of California's year 2030 GHG reduction goals.

Executive Order S-01-07

On January 18, 2007, then-Governor Schwarzenegger signed Executive Order S-01-07, which mandates that a State-wide goal be established to reduce carbon intensity of California's transportation fuels by at least 10 percent by 2020. The Order also requires that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing), off-road, heavy-duty diesel vehicles in California.[33] Such vehicles are used in construction, mining, and industrial operations. The regulation is designed to reduce harmful emissions from vehicles by subjecting fleet owners to retrofit or accelerated replacement/repower requirements, imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The idling limits require operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to less than five minutes. The idling requirements are specified in Title 13 of the California Code of Regulations.

---

31 California Air Resources Board. *Overview of ARB Emissions Trading Program*. Available at: https://www.arb.ca.gov/cc/capandtrade/guidance/cap_trade_overview.pdf. Accessed February 2018.

32 California Air Resources Board. *Overview of ARB Emissions Trading Program*. Available at: https://www.arb.ca.gov/cc/capandtrade/guidance/cap_trade_overview.pdf. Accessed February 2018.

33 California Air Resources Board. *In-Use Off-Road Diesel Vehicle Regulation*. December 10, 2014. Available at: http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm. Accessed August 2019.

SB 97

As amended, SB 97 (An act to add Section 21083.05 to, and to add and repeal Section 21097 of, the Public Resources Code), signed in August 2007, acknowledges that climate change is an important environmental issue that requires analysis under CEQA. The bill directed the Governor's Office of Planning and Research (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 directed by SB 97, the OPR amended the CEQA Guidelines to provide guidance to public agencies regarding the analysis and mitigation of GHG emissions and the effects of GHG emissions in CEQA documents. The amendments included revisions to the *Appendix G Initial Study Checklist* that incorporated a new subdivision to address project-generated GHG emissions and contribution to climate change. The new subdivision emphasizes that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis. Under the revised CEQA Appendix G checklist, an agency must consider whether a project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and whether a project conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing emission of GHGs.

Further guidance based on SB 97 suggests that the lead agency make a good-faith effort, based on available information, to describe, calculate, or estimate the amount of GHG emissions resulting from a project. When assessing the significance of impacts from GHG emissions on the environment, lead agencies should consider the extent to which the project may increase or reduce GHG, as compared to the existing environmental setting, whether the project emissions exceed a threshold of significance determined applicable to the project, and/or the extent to which the project complies with adopted regulations or requirements to implement a state wide, regional, or local plan for the reduction or mitigation of GHG emissions. Feasible mitigation under SB 97 includes on-site and off-site measures, such as GHG emission-reducing design features and GHG sequestration.

AB 1007

AB 1007 added Article 6.5 (commencing with Section 43865) to Chapter 4 of Part 5 of Division 26 of the HSC. Titled the State Alternative Fuels Plan (Pavley, Chapter 371, Statutes of 2005), AB 1007 required development and adoption of a State plan to increase the use of alternative fuels. The final *State Alternative Fuels Plan* was adopted on December 5, 2007 and presented strategies and actions California must take to increase the use of alternative, non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. Examples of such strategies include establishment of government incentive programs for alternative fuels, creation of a Low Carbon Fuel Standard to reduce the carbon intensity of transportation fuels, and the allowance of GHG emissions credits to entities using alternatively fueled vehicles. The plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality. The Plan recommended goals for alternative fuel use as well as reductions in the carbon intensities of fuels such as gasoline and diesel, and lays a foundation for building a multi-fuel transportation energy future for California by 2050. As of 2017, decreases in the carbon intensity of conventional fuels have met or exceeded the compliance targets, and the use of alternative fuels has increased by approximately 800 million gallons of gas equivalence units.[34]

[34] California Air Resources Board. *Low Carbon Fuel Standard Data Dashboard*. Available at: https://www.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm. Accessed May 2019.

Executive Order S-13-08

Then-Governor Schwarzenegger issued Executive Order S-13-08 on November 14, 2008. The Executive Order was intended to hasten California's response to the impacts of global climate change, particularly sea level rise, and directs state agencies to take specified actions to assess and plan for such impacts, including requesting the National Academy of Sciences to prepare a Sea Level Rise Assessment Report, directing the Business, Transportation, and Housing Agency to assess the vulnerability of the State's transportation systems to sea level rise, and requiring the Office of Planning and Research and the Natural Resources Agency to provide land use planning guidance related to sea level rise and other climate change impacts.

The order also required State agencies to develop adaptation strategies to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. The adaption strategies report summarizes key climate change impacts to the State for the following areas: public health; ocean and coastal resources; water supply and flood protection; agriculture; forestry; biodiversity and habitat; and transportation and energy infrastructure. The report recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

SB 375

In September 2008, SB 375, known as the Sustainable Communities and Climate Protection Act of 2008, was enacted. The act amended Sections 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, and 65588 of the California Government Code, and to add Sections 14522.1, 14522.2, and 65080.01 to, the California Government Code, and to amend Section 21061.3 of, to add Section 21159.28 to, and to add Chapter 4.2 (commencing with Section 21155) to Division 13 of, the Public Resources Code, relating to environmental quality. The intent of SB 375 was to build on AB 32 by attempting to control GHG emissions by curbing sprawl. SB 375 enhances CARB's ability to reach goals set by AB 32 by directing CARB to develop regional GHG emission reduction targets to be achieved by the State's 18 metropolitan planning organizations (MPOs), including the Sacramento Area Council of Governments (SACOG). Under SB 375, MPOs must align regional transportation, housing, and land-use plans and prepare a "Sustainable Communities Strategy" (SCS) to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its greenhouse gas reduction targets. SB 375 provides incentives for creating walkable and sustainable communities and revitalizing existing communities, and allows home builders to get relief from certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Furthermore, SB 375 encourages the development of alternative transportation options, which will reduce traffic congestion.

AB 1493

California AB 1493, which amended Section 42823 of the HSC and added Section 43018.5 to the HSC, known as Pavley I, was enacted on July 22, 2002. AB 1493 requires that the 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 the CARB to be vehicles whose primary use is noncommercial personal transportation in the state." On June 30, 2009, the USEPA granted a waiver of CAA preemption to California for the State's GHG emission standards for motor vehicles, beginning with the 2009 model year. Pursuant to the CAA, the waiver allowed for the State to have special authority to enact stricter air pollution standards for motor vehicles than the federal government. On September 24, 2009, the CARB adopted amendments to the Pavley regulations (Pavley I) that reduce GHG emissions in new passenger vehicles from 2009

through 2016. The second phase of the Pavley regulations (Pavley II) affected model year vehicles from 2016 through 2020, and was implemented under a 2013 waiver granted by the USEPA. The CARB estimated that the regulation would reduce GHG emissions from the light-duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.

However, on September 19, 2019, the federal government revoked the 2013 waiver. In addition, the federal government is anticipated to roll back the previously instated fuel economy standards, which would have the effect of freezing fuel economy standards at 2020 levels. In response to the September 19th actions, 22 states, the District of Columbia, and two cities filed suit in the US District Court for the District of Columbia requesting the court grant permanent injunctive relief by declaring the preemption portion of the final rule unlawful. At the time of preparation of this environmental analysis, the fate of that injunctive relief and the judicial proceedings had not yet been determined.

AB 197 and Senate Bill 32

On September 8, 2016, AB 197 and SB 32 were enacted with the goal of providing further control over GHG emissions in the State. SB 32 added Section 38566 to the HSC, while AB 197 added Article 7.6, commencing with Section 9147.10 to Chapter 1.5 of Part 1 of Division 2 of title 2 of the California Government Code, amended Sections 39510-39607 of the HSC, and added Sections 38506, 38531, 38562.5, and 38562.7 to the HSC. SB 32 built on previous GHG reduction goals by requiring that the CARB ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by the year 2030. Additionally, SB 32 emphasized the critical role that reducing GHG emissions would play in protecting disadvantaged communities and the public health from adverse impacts of climate change. Enactment of SB 32 was predicated on the enactment of AB 197, which seeks to make the achievement of SB 32's mandated GHG emission reductions more transparent to the public and responsive to the Legislature. Transparency to the public is achieved by AB 197 through the publication of an online inventory of GHG and TAC emissions from facilities required to report such emissions pursuant to Section 38530 of California's Health and Safety Code. AB 197 further established a six-member Joint Legislative Committee on Climate Change Policies, which is intended to provide oversight and accountability of the CARB, while also adding two new legislatively-appointed, non-voting members to the CARB. Additionally, AB 197 directs the CARB to consider the "social costs" of emission reduction rules and regulations, with particular focus on how such measures may impact disadvantaged communities.

Executive Order B-55-18

On September 10, 2018, then-Governor Brown established a statewide goal of carbon neutrality as soon as possible, and no later than 2045. Following achievement of carbon neutrality, net negative emissions should be pursued as the new emissions goal. The executive order directed the CARB to work with relevant state agencies to develop frameworks for implementation and tracking of the new goal, and further directed the CARB to support the carbon neutrality goal through future updates to the State Scoping Plan.

California Energy Commission (CEC)

The CEC is the State's primary energy policy and planning agency. Created by the Legislature in 1974, the Commission has seven major responsibilities: forecasting future energy needs; promoting energy efficiency and conservation by setting the State's appliance and building energy efficiency standards; supporting energy research that advances energy science and technology through research, development, and demonstration projects; developing renewable energy

resources; advancing alternative and renewable transportation fuels and technologies; certifying thermal power plants 50 MW and larger; and planning for and directing State response to energy emergencies.[35]

California Public Utilities Commission

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC is responsible for ensuring that customers have safe, reliable utility service and infrastructure at reasonable rates, regulating utility services, stimulating innovation, and promoting competitive markets.[36]

Local Regulations

The following are the regulatory agencies and regulations pertinent to the proposed project on a local level.

YSAQMD

Various local, regional, State and federal agencies share the responsibility for air quality management in Yolo County. The YSAQMD operates at the local level with primary responsibility for attaining and maintaining the federal and State AAQS in Yolo County. The YSAQMD is tasked with implementing programs and regulations required by the FCAA and the CCAA, including preparing plans to attain federal and State AAQS. The YSAQMD works jointly with the USEPA, CARB, SACOG, other air districts in the region, county and city transportation and planning departments, and various non-governmental organizations to improve air quality through a variety of programs. Programs include the adoption of regulations, policies and guidance, extensive education and public outreach programs, as well as emission reducing incentive programs.

YSAQMD CEQA Guidance

Nearly all development and mining projects in the region have the potential to generate air pollutants that may increase the difficulty of attaining federal and State AAQS. Therefore, for most projects, evaluation of air quality impacts is required to comply with CEQA. In order to help public agencies evaluate air quality impacts, the YSAQMD has developed the *Handbook for Assessing and Mitigating Air Quality Impacts*.[37] The YSAQMD's handbook includes screening methodology and recommended thresholds of significance, including mass emission thresholds for construction-related and operational criteria pollutants. Although the YSAQMD's handbook includes emissions thresholds and analysis methodology for criteria pollutants, the YSAQMD has not yet established or adopted methodology or thresholds for the assessment of impacts related to GHG emissions. In the absence of District-adopted methodology or thresholds for assessing GHG emissions, the YSAQMD is currently recommending GHG analysis consistent with the Sacramento Metropolitan Air Quality Management District (SMAQMD) adopted thresholds of significance.

YSAQMD Rules and Regulations

All projects under the jurisdiction of the YSAQMD are required to comply with all applicable YSAQMD rules and regulations. In addition, YSAQMD permit requirements apply to most

[35] California Energy Commission. *About the California Energy Commission*. Available at: http://www.energy.ca.gov/commission/index.html. Accessed June 2020.
[36] California Public Utilities Commission. *California Public Utilities Commission*. Available at: http://www.cpuc.ca.gov/puc/. Accessed June 2020.
[37] Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts*. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

industrial processes (e.g., manufacturing facilities, food processing), many commercial activities (e.g., print shops, drycleaners, gasoline stations), and other miscellaneous activities (e.g., demolition of buildings containing asbestos and aeration of contaminated soils). The YSAQMD regulations and rules include, but are not limited to, the following:

Regulation II – Prohibition, Exceptions - Requirements

Regulation II is comprised of prohibitory rules that are written to achieve emission reductions from specific source categories. The rules are applicable to existing sources as well as new sources. Examples of prohibitory rules include Rule 2.1 (Control of Emissions), Rule 2.28 (Cutback and Emulsified Asphalts), Rule 2.5 (Nuisance), Rule 2.11 (Particulate Matter Concentration), Rule 2.14 (Architectural Coatings), and Rule 2.40 (Wood Burning Appliances). Considering the relevance of Rule 2.5 and Rule 2.11 to the proposed activities, both rules are discussed in further depth below.

Rule 2.5 – Nuisance

Rule 2.5 prohibits the discharge of sufficient quantities of air contaminants or other materials that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public. The rule further protects the public from being subject to air contaminants and other materials that could endanger the comfort, repose, health, or safety of any persons, or could damage business or property.

Rule 2.11 – Particulate Matter Concentration

Rule 2.11 is intended to protect the ambient air quality within the YSAQMD's jurisdiction by establishing a standard for PM emissions. Per the definitions of Rule 2.11, PM is defined as any material that is emitted as a liquid or solid particles, or gaseous materials that becomes liquid or solid particles when collected at standard conditions. PM meeting the foregoing definition, shall not be released from any single source operation, dust, fumes, or other total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

Regulations III – Permit System

Regulation III is intended to provide an orderly procedure for the review of new sources, and modification and operation of existing sources, of air pollution through the issuance of permits. Regulation III primarily deals with permitting major emission sources and includes, but is not limited to, rules such as General Permit Requirements (Rule 3.1), Exemptions (Rule 3.2), Portable Equipment (Rule 3.3), New Source Review (Rule 3.4), Emission Reduction Credits (Rule 3.5), Emission Statements (Rule 3.7), and Toxics New Source Review (Rule 3.13).

Air Quality Attainment Plans

Each of the attainment plans currently in effect for the SVAB are discussed in further detail below.

2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan[38]

The most recent attainment plan for the ozone NAAQS is the *2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (2013 Ozone Attainment Plan), which demonstrates how existing and new control strategies would provide the

[38] Sacramento Metropolitan Air Quality Management District. *2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan.* September 26, 2013.

necessary future emission reductions to meet the federal NAAQS. The SVAB's attainment deadline is 2027. Because the proposed project is located within the nonattainment area for ozone, the project would be subject to the requirements set forth in the 2013 Ozone Attainment Plan, as enforced by YSAQMD through rules and regulations.

$PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area[39]

The Sacramento federal $PM_{2.5}$ Nonattainment Area attained the federal $PM_{2.5}$ health standards on December 31, 2011. The *$PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area* ($PM_{2.5}$ Implementation/Maintenance Plan) was prepared to show that the region has met the requirements and requests that the USEPA re-designate the area to attainment. The USEPA issued a final rule for Determination of Attainment for the Sacramento Nonattainment Area effective August 14, 2013. The $PM_{2.5}$ Implementation/Maintenance Plan would be adopted by the air districts within the nonattainment area, as well as the CARB, as a revision to the SIP. Contents of the $PM_{2.5}$ Implementation/Maintenance Plan include demonstration that the NAAQS was met and that all requirements have been met for a re-designation to attainment, specification of actions to be taken if the standards are violated in the future, and establishment of regional motor vehicle emission budgets.

Because the proposed project is located within the nonattainment area for $PM_{2.5}$, the project would be subject to the requirements set forth in the $PM_{2.5}$ Implementation/Maintenance Plan, as enforced by YSAQMD through rules and regulations.

2016 Triennial Assessment and Plan Update

In addition to the federal attainment plans discussed above for meeting NAAQS, the CCAA requires air districts to endeavor to achieve and maintain the CAAQS and develop plans for attainment. Yolo County meets the CAAQS for sulfur dioxide, nitrogen dioxide, and carbon monoxide, but is designated nonattainment for the State ozone and particulate matter standards. The CCAA requires districts that do not meet the State ozone standard to adopt an Air Quality Attainment Plan and to submit progress reports to the CARB every three years.[40] In July 2016, the YSAQMD adopted the 2016 Triennial Assessment and Plan Update.[41] The 2016 Triennial Assessment and Plan Update analyzes and summarizes data from the years 2012 through 2014, while also forecasting future emissions and reviewing efforts made by YSAQMD to improve air quality.

The YSAQMD is not required to prepare an attainment plan for PM_{10} or $PM_{2.5}$; however, the YSAQMD continues to work to reduce particulate emissions through rules affecting stationary sources, the construction industry, and the YSAQMD's agricultural burning program. The YSAQMD also works with the CARB to identify measures that can, where possible, reduce both ozone and particulate emissions. The YSAQMD has been proactive in attempts to implement the most readily available, feasible, and cost-effective measures that can be employed to reduce emissions of PM.

---

39 Sacramento Metropolitan Air Quality Management District. *$PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area.* October 24, 2013.

40 Yolo-Solano Air Quality Management District. *State Standards and Planning*. Available at: http://www.ysaqmd.org/planning/state.php. Accessed November 2016.

41 Yolo-Solano Air Quality Management District. *Triennial Assessment and Plan Update*. April 2013. Available at: https://www.ysaqmd.org/plans-data/attainment/state. Accessed November 2016.

Because the proposed project is located within the nonattainment area for State ozone and PM standards, the project would be subject to any requirements set forth in the 2016 Triennial Assessment and Plan Update or YSAQMD efforts related to PM emissions, as enforced by YSAQMD through rules and regulations.

Yolo County General Plan

The following goals and policies related to air quality are from the Yolo County General Plan:

Policy CI-4.4 Support and encourage low emission or non-polluting forms of transportation.

Goal ED-5.4 Economic Sustainability. Support sustainable economic development. Encourage local industry to adapt to the expected effects of climate change and minimize greenhouse gases and other emissions.

Policy ED-5.4 Encourage businesses to exceed clean air standards, whenever possible.

Policy CO-6.6 Encourage implementation of YSAQMD Best Management Practices, such as those listed below, to reduce emissions and control dust during construction activities:

- Water all active construction areas at least twice daily.
- Haul trucks shall maintain at least two feet of freeboard.
- Cover all trucks hauling soil, sand, and other loose materials.
- Apply non-toxic binders (e.g. latex acrylic copolymer) to exposed areas after cut-and-fill operations and hydroseed area.
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles
- Sweep streets if visible soil material is carried out from the construction site
- Treat accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips or mulch.
- Treat accesses to a distance of 100 feet from the paved road with a 6-inch layer of gravel.

Goal CO-8 Climate Change. Reduce greenhouse gas emissions and plan for adaptation to the future consequences of global climate change.

Policy CO-8.2 Use the development review process to achieve measurable reductions in greenhouse gas emissions.

Policy CO-8.4 Encourage all businesses to take the following actions, where feasible: replace high mileage fleet vehicles with hybrid and/or alternative fuel vehicles; increase the energy efficiency of facilities; transition toward the use of renewable energy instead of non-renewable energy sources; adopt purchasing practices that promote emissions reductions and reusable materials; and increase recycling.

Policy CO-8.5 Promote GHG emission reductions by supporting carbon efficient farming methods (e.g. methane capture systems, no-till farming, crop rotation, cover cropping); installation of renewable energy technologies; protection of grasslands, open space, oak woodlands, riparian forest and farmlands from conversion to other uses; and development of energy-efficient structures.

Yolo County OCSMO

Section 10-4.407 of the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) states the following regarding material conveyor systems:

> Section 10-4.407. Conveyor Systems
> Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.

Section 10-4.414 of the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) states the following regarding dust control:

> Section 10-4.414. Dust Control
> Unless superseded by newer more effective standards, the following measures shall be implemented in order to control fugitive dust:
> (a) All stockpiled soils shall be enclosed, covered, or have sufficient moisture to control fugitive dust at all times. Inactive soil stockpiles should be vegetated or adequately watered to create an erosion-resistant outer crust.
> (b) During operating hours, all disturbed soil and unpaved roads shall be adequately watered to keep soil moist.
> (c) All disturbed but inactive portions of the site shall either be seeded or watered until vegetation is grown or shall be stabilized using methods such as chemical soil binders, jute netting, or other Yolo-Solano Air Quality Management District approved methods.

Section 10-4.415 of the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) states the following regarding equipment maintenance:

> Section 10-4.415. Equipment Maintenance
> All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained to minimize the leakage of oils and fuel. No vehicles or equipment shall be left idling for a period of longer than is required by law, recommended by the Air District, or ten (10) minutes, whichever is shorter.
>
> Fueling and maintenance activities of heavy equipment (except draglines and floating suction dredges) are prohibited within one-hundred (100) feet of open bodies of water during mining and

reclamation. All Storm Water Pollution Prevention Plans shall include provisions for releases of fuels during fueling activities for draglines and floating suction dredges.

Section 10-4.429 of the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) states the following regarding setbacks from various uses, including residences:

> Section 10-4.429. Setbacks.
> All off-channel surface mining operations shall comply with the following setbacks:
> (a) New processing plants and material stockpiles shall be located a minimum of one-thousand (1,000) feet from public rights-of-way, public recreation areas, and/or off-site residences, unless alternate measures to reduce potential noise, dust, and aesthetic impacts are developed and implemented.

Section 10-4.414 of the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) states the following regarding soil stockpiles and erosion control, which relates to windborne erosion:

> Section 10-4.433. Soil stockpiles.
> Topsoil, subsoil, and subgrade materials in stockpiles shall not exceed forty (40) feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles, other than aggregate stockpiles, shall be seeded with a native vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Director.
>
> Slopes on stockpiled soils shall be graded to 2:1 (horizontal:vertical) for long-term storage to prevent use by bank swallows. At no time during the active breeding season (May 1 through July 31) shall slopes on stockpiles exceed a slope of 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of each work day where stockpiles have been disturbed during the active breeding season.

Yolo County Climate Action Plan

To fulfill General Plan Action CO-A117, Yolo County prepared a Climate Action Plan (CAP) in 2011. The County's CAP includes an inventory of GHG emissions from unincorporated areas in the County during the years 1990 and 2008 as well as projections of emissions for the years 2020, 2030, 2040, and 2050. With regard to the emissions inventory, the sectors of energy, transportation, agriculture, solid waste, stationary sources, wastewater treatment, as well as construction and mining. Emissions projections for future years were limited to those sources over which the County maintains jurisdiction; thus, the sectors of mining and construction equipment, as well as stationary sources, were excluded from emissions projections.[42] Due to the exclusion of the foregoing sectors, the County's CAP did not include reduction measures specifically related to mining or mining equipment; rather the County relied on State imposed measures for that sector given state authority. These are discussed further below. Although the County's CAP did not include measures specifically related to construction or mining equipment, the County's CAP does contain measures that would affect GHG emissions related to energy generation and consumption throughout the County as well as measures related to reducing emissions from agricultural activities.

With regard to energy resources, Measure E-1 of the County's CAP directs the County to establish a Community Choice Aggregation (CCA) Program. The benefits of a CCA, as articulated in Measure E-1, are local control over the energy sources used by a community, the ability to provide customers with lower cost electricity, and an increased use of renewable energy for electricity

[42] Yolo County. *Yolo County Climate Action Plan: A Strategy for Smart Growth Implementation, Greenhouse Gas Reduction, and Adaptation to Global Climate Change* [pgs. 14-15]. March 15, 2011.

production. In fulfillment of Measure E-1, the County, together with several of its cities, has established the VCE, which has begun providing electricity to customers within unincorporated portions of Yolo County. While Teichert's existing electricity demand at the Woodland Plant is met through Direct Access Providers, the remaining electricity demand, principally the electricity consumed at the Esparto Plant, is provided by VCE.

Following the proposed reclamation of the Shifler project site, agricultural activities would be anticipated to resume within the site. The County's CAP includes six specific measures, as well as multiple supporting measures to reduce direct emissions from agricultural activities within the County and increase carbon sequestration. Implementation of the County's CAP measures during future agricultural activity within the Shifler site would contribute to the GHG emissions reductions identified within the County's CAP.

The County's CAP acknowledges that even in the sectors where the County does not have direct control, such as emissions from construction and mining equipment, actions of other entities would contribute to GHG emissions reductions. For instance, the County's CAP notes that YSAQMD has jurisdiction over stationary-sources, and YSAQMD is charged with implementing statewide emissions reductions programs including those programs intended to reduce GHG emissions. Furthermore, CARB has implemented various rules and regulations, such as the Heavy-Duty Vehicle Idling Emission Reduction Program and the In-Use Off-Road Diesel Vehicle Regulation, which would result in reductions of criteria pollutant emissions as well as GHG emissions. Compliance with the rules and regulations implemented by YSAQMD and the CARB would contribute to emissions reductions that would aid attainment of the GHG reductions goals presented in the County's CAP.

4.3.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to air quality, GHG emissions, and energy. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, are also presented.

Standards of Significance

The significance criteria used for this analysis were developed from Appendix G of the CEQA Guidelines, applicable policies and regulations of Yolo County, and recommendations of YSAQMD. An air quality, GHG emission, or energy impact is considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people;
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;

- Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs; or
- Cause a significant environmental impact due to a conflict with applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating impacts to air quality, GHG emissions, or energy.

Impacts Found Less-than-Significant in Initial Study

The Initial Study prepared for the proposed project (see Appendix A) did not identify any impacts to be less than significant.

Criteria Pollutant Emissions and TAC Emissions

In order to evaluate air pollutant emissions from development projects, the YSAQMD has established significance thresholds for emissions of ROG, NO_X, and PM_{10}. Table 4.3-8 below presents the YSAQMD's recommended thresholds of significance, which are expressed in tons/yr for ROG and NO_X and pounds per day (lbs/day) for PM_{10}. If net emissions from the proposed project would exceed the pollutant thresholds presented in Table 4.3-8, the project could have a significant effect on air quality, the attainment of federal and State AAQS, and could conflict with or obstruct implementation of the applicable air quality plan.

Table 4.3-8
YSAQMD Thresholds of Significance

Pollutant	Construction Threshold	Operational / Cumulative Threshold
ROG	10 tons/yr	10 tons/yr
NO_X	10 tons/yr	10 tons/yr
PM_{10}	80 lbs/day	80 lbs/day

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

In addition to the thresholds of significance presented above for criteria air pollutants, YSAQMD has also developed thresholds for potential exposure of the public to TACs from new stationary sources. Exposure of the public to TACs from new stationary sources in excess of the following thresholds would be considered a significant impact:

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

The nearby SMAQMD and Bay Area Air Quality Management District (BAAQMD) also recommend the industry standard thresholds of an increased cancer risk of 10 in one million and a Hazard Index greater than 1 for project-level TAC impacts from stationary sources. Although the YSAQMD has established thresholds for exposure to TACs from new stationary sources, a threshold for exposure of the public to mobile TAC emissions does not currently exist. In the absence of a specified threshold for assessing impacts of mobile sources of TACs on a sensitive land use, the industry standard is to use the stationary source threshold of an increase in cancer risks of 10 in one million and a Hazard Index greater than 1, which is the standard that has been used throughout the State for similar health risk analyses. Off-road mining equipment and haul trucks would be considered a potential mobile source of TAC emissions. Accordingly, this analysis utilizes the YSAQMD stationary source TAC emissions thresholds listed above for the purposes

of determining cancer risk of exposing sensitive receptors and other sensitive land uses to construction-related mobile source TAC emissions.

The YSAQMD recommends the use of screening thresholds to assess a project's potential to create an impact through the creation of CO hotspots. A violation of the CO standard could occur if either of the following criteria is true of any street or intersection affected by the mitigated project:[43]

- The project would reduce peak-hour level of service (LOS) on one or more streets or at one or more intersections to an unacceptable LOS (typically LOS E or F); or
- The project would increase a traffic delay by 10 or more seconds on one or more streets or at one or more intersections in the project vicinity where a peak hour LOS of F currently exists.

If either or both of the above criteria are met by the mitigated project, YSAQMD recommends performing a full CO Protocol Analysis. If the results of the CO Protocol Analysis indicate a potential impact related to CO could occur, such as in instances where a project would worsen operations at a signalized intersection operating at LOS E or LOS F, YSAQMD directs Lead Agencies to perform CO dispersion modeling analysis using a modeling program such as CALINE-4. The CALINE-4 dispersion model can estimate local CO concentrations at intersections based on traffic estimates and lane configurations. Once the CO concentrations at affected intersections are estimated, the CO concentration must then be compared to the one hour and eight-hour AAQS for CO. If the local CO concentration estimated using CALINE-4 exceeds either the one or eight-hour AAQS for the affected intersection, then a significant impact would result; however, if the localized CO concentrations are shown to be below the applicable AAQS, the project would not result in an impact related to localized CO concentrations.

GHG Emissions

The YSAQMD, in their *Handbook for Assessing and Mitigating Air Quality Impacts*, acknowledges that new emissions generated by development projects could potentially conflict with existing GHG emissions reductions targets, and thus, a need for development of GHG emissions thresholds exists. However, the YSAQMD has not yet established or adopted any such thresholds. The YSAQMD is currently recommending GHG analysis consistent with SMAQMD's adopted thresholds of significance. While SMAQMD recognizes that emissions from a single project cannot be determined to substantially impact overall GHG emissions levels in the atmosphere, an emissions threshold is useful to trigger further project review and assess mitigation. As such, SMAQMD designed emissions thresholds to ensure that 90 percent of new GHG emissions related to land use projects and new stationary sources would be reviewed and assessed for mitigation. Thus, projects exceeding SMAQMD's thresholds would constitute the vast majority of GHG emissions, and exceedance of the thresholds would allow for further project review contributing to the emissions reductions goals of AB 32, SB 32, the Scoping Plan, and relevant Executive Orders. SMAQMD has established a GHG emissions threshold for both construction and operations of stationary sources of 10,000 $MTCO_2e$/yr, and construction of land use projects of 1,100 $MTCO_2e$/yr.

Considering the nature of the proposed relocation of Moore Canal and modification of Magnolia Canal, the SMAQMD threshold of 1,100 $MTCO_2e$/yr for construction phases of proposed project

[43] Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts* [p. 21]. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

is appropriate for use in analyzing the emissions that would result from the relocation of Moore Canal and modification of Magnolia Canal.

Whereas SMAQMD's stationary source threshold is typically applied to non-mobile pieces of equipment such as an emergency generator or industrial boiler, the proposed project involves a variety of sources of GHG emissions including mobile sources. Thus, SMAQMD's 10,000 $MTCO_2e$/yr is not considered applicable to the proposed project. In the absence of YSAQMD adopted thresholds or SMAQMD thresholds appropriate for mining activities, the recently Certified CCAP Update FEIR was consulted to determine the appropriate threshold of significance for use in analyzing potential impacts from the proposed project. The CCAP Update FEIR conservatively considered any net increase in GHG emissions occurring as a result of the CCAP to constitute a significant impact. Consequently, if the project would result in a net increase in GHG emissions as compared to the environmental baseline conditions, the proposed project would be considered to result in a significant impact. A no net increase approach to emissions analysis, similar to the approach applied in the CCAP Update EIR, has previously been taken with regard to other proposed mining an reclamation activities within the County, for instance in the EIR prepared for the Granite Esparto Mining and Reclamation Project.[44]

Energy

Because quantitative thresholds for the analysis of energy related impacts have not been adopted by the County or any other local, regional, or statewide agency, the analysis of potential impacts related to energy that is presented in this EIR is primarily qualitative. Nevertheless, where estimates of existing and future energy demand exist, the quantified level of energy demand is presented and analyzed within this EIR.

Method of Analysis

The analysis protocol and guidance provided by the YSAQMD's *Handbook for Assessing and Mitigating Air Quality Impacts* was used to analyze the air quality impacts of the proposed project, including screening criteria and pollutant thresholds of significance. Details regarding the methodology and assumptions used for the analysis are provided below.

For the purposes of analyzing air quality and energy impacts, the key proposed elements of this project are as follows: 1) relocation of a segment of Moore Canal to the northerly portion of the site and modification of Magnolia Canal to align with the relocated Moore Canal; 2) transfer of tonnage from the Teichert Esparto and Teichert Schwarzgruber operation to the Teichert Shifler operation; 3) continued operation and expansion of the Teichert Woodland Plant facilities (including new equipment and increased processing capacity); 4) excavation at the Shifler site; 5) reclamation of the Shifler site; 6) delayed reclamation at Woodland Plant site; 7) dedication of various reclaimed properties to the County; and 8) completion of an in-channel gravel bar removal project. In addition to the foregoing components of the project, for the purposes of analyzing air quality, GHG emissions, and energy, it is also necessary to consider several other factors. Specifically, the Shifler project site is currently used for agricultural production and agricultural production would continue to occur in a phased manner during mining, and would resume on portions of the site following mining and reclamation. In addition to the on-going and phased agricultural activity on-site, consideration of Teichert's existing mining and processing activity within the CCAP area is warranted. As noted above, the project would include transferring

[44] Yolo County. *Granite Esparto Mining and Reclamation Project Final Environmental Impact Report. SCH# 2009022033*. October 25, 2010.

tonnage from the Teichert Esparto and Teichert Schwarzgruber sites to the Teichert Woodland Plant and Shifler site.

The analysis presented within this chapter seeks to incorporate consideration of all of the foregoing project-related activities and existing conditions to represent a comprehensive approach to analysis. Thus, existing emissions and energy demand from on-site agricultural activities, as well as operations at Teichert Esparto, the Teichert Woodland Plant, and Schwarzgruber are considered to comprise the environmental baseline for analysis. This environmental baseline is used as a whole or in part for the analysis (as described below) of criteria pollutant emissions, TAC emissions, GHG emissions, and energy consumption. Emissions and energy use from implementation of the proposed project would replace emissions and energy use at Teichert Esparto and Teichert Schwarzgruber, and a portion of the emissions associated with agricultural activity within the project site. To represent a worst-case approach to emissions analysis, emissions from project operations were quantified for the most intensive phase of on-site mining activity, which was assumed to include disturbance of the entire site either for mining or reclamation activities. Emissions from the most intensive phase of construction were then compared to the environmental baseline conditions to determine what the net change would be in emissions and energy demand as a result of the project. In practice, the most intensive phase of on-site mining activity would occur for only a portion of the life of the project, while other phases of the project would include reclamation, agricultural production, and future parkway and passive open space uses on portions of the project site, which are generally less emissions intensive activities when compared to mining. Consequently, the majority of the emissions and energy demand figures presented within this chapter represent the most-intensive period of project activity.

Details regarding the methods used to quantify existing and proposed emissions, energy demand, and potential health risks are presented below. Accordingly, emissions related to relocation of the canal could occur simultaneous to emissions related to on-site mining.

Relocation of Moore Canal and Modification of Magnolia Canal

The project proposes relocation of Moore Canal and modification of Magnolia Canal, which would require short-term, construction activities. Emissions from such activities were quantified using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 software, which is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the ITE Manual, vehicle mix, trip length, average speed, etc. Assumptions regarding the construction activity related to the relocation of Moore Canal were provided to ESA by the project applicant. In particular, construction activities were anticipated to occur over two weeks, and an equipment mix of two-633 Scrapers, a D8 Dozer, a Water Truck, and a Blade 14H with a total of 45 hours usage per piece of equipment was assumed. The anticipated construction activity has not changed since the preparation of the analysis by ESA, but CalEEMod has been updated. Consequently, the construction emissions modeling was updated with the most recent version of CalEEMod, using the same assumptions as previously applied by ESA. Considering the existing and proposed alignments of Moore Canal and Magnolia Canal, the majority of the work would be associated with relocation of Moore Canal, while Magnolia Canal would only need limited amounts of construction-type work to create the new point of connection. Due to the scope of work proposed, the equipment used for work on Moore Canal would also be used for work on Magnolia

Canal, and modification of Magnolia Canal would represent a relatively limited amount of the overall short-term related emissions.

Mining of the project site would commence in the northwest corner of the site. Relocation of the canal would occur prior to the commencement of mining within 50 feet of the canal.

Operational Emissions

Operation of the proposed project was assumed to consist of mining and subsequent throughput at the maximum requested annual amount of 2.6-million tons mined at the Shifler project site and processed with 2.2-million tons of aggregate sold at the Woodland Plant. The baseline conditions for the project were formed by combining the actual mined tonnage from both plants and averaging the sum for a period of 10 years. The average combined throughput over the 10-year averaging at the Esparto and Woodland plants equated to approximately 1,137,265 tons of aggregate mining and throughput. With implementation of the proposed project, mining and throughput operations from the Esparto Plant would be transferred to the project site. In addition to existing emissions from the Esparto and Woodland plants as well as emissions from existing mining activity at the Esparto and Schwarzgruber mining sites, the Shifler site is currently used for agricultural purposes, which is also a source of emissions, primarily related to the operation of agricultural equipment. Because emissions are currently released at the Shifler site, as well as the Esparto and Woodland plants and the Esparto and Schwarzgruber mines, the environmental baseline conditions for analysis in this EIR include existing emissions levels from all of the foregoing sources. Consequently, the focus of the analysis presented in this EIR is the net emissions resulting from implementation of the proposed project (i.e., project emissions minus existing emissions). The proposed project would be considered to result in a significant impact if net emissions resulting from project implementation would exceed the applicable thresholds of significance.

Information pertaining to existing operations at the Esparto and Woodland plants was provided to ESA and Raney by the project applicant. The results of the net operational emissions estimations were compared to the standards of significance discussed above in order to determine the associated level of impact. All modeling results are included in Appendix D to this EIR.

The last step in operations at all sites would be reclamation. While the purpose of reclamation is to return the mined sites to a state that can be used for other purposes, for instance as habitat, open water lake, passive recreation, or agricultural, the process of reclaimation involves similar emissions sources as excavation. For instance, off-road equipment would be used to establish proper slopes on the site and to grade portions of the site as needed. The use of off-road equipment for the aforementioned purposes would be similar to the use of equipment and trucks for other phases of project operations. In general, however, the reclamation activity would be less intense than the mining activity, and would require fewer pieces of equipment (for example, crushing and sorting equipment would no longer be needed during reclamation). The emissions analysis prepared for this EIR provides estimates of the worst-case, maximum annual and daily emissions that would result from implementation of the project and average existing baseline operations. Because reclamation activity would be less intense than the proposed and existing mining activity, actual emissions related to reclamation of the project site would be expected to be less than the maximum annual and daily emissions assumed for the analysis presented within this EIR. Post-reclamation recreation, parkway, and passive open space uses on the site would also be less intense than mining and reclamation activities.

The proposed project would reclaim 116.7 acres within the project site to agricultural uses. Ongoing agricultural uses after completion of reclamation would continue to generate emissions. However, the total amount of reclaimed agriculture would be smaller than what currently occurs on-site. In addition, the reclaimed open water lake and surrounding habitat, as well as the Shifler In-Channel property, reclaimed Schwarzgruber property, and reclaimed Woodland Plant site, would be dedicated to the County for public recreation and passive open space uses. Generally, public recreation and passive open space uses would result in emissions equal to or less than agricultural production. Thus, after reclamation is complete, emissions would be reduced relative to existing conditions.

Operational emissions from the existing Esparto and Woodland plants, the Esparto and Schwarzgruber mines, as well as existing on-site agricultural activities and the proposed project would originate from various sources. For the purposes of this analysis, major sources of operational emissions were considered to be off-road equipment related to mining activities (e.g., excavators, haul trucks, etc.), on-road haul trucks, existing agricultural activities at the Shifler site, and fugitive dust emissions from grading, material processing, and travel over unpaved and paved roads. Emissions related to the use of off-road equipment at the existing Esparto and Woodland mines and plants as well as in relation to the proposed project were calculated using the Version 8.0 of the SMAQMD's Construction Mitigation Tool.[45] Emissions from on-road haul trucks at the Esparto and Woodland plants as well as in relation to the proposed project were calculated using the CARB's Mobile Emission Factor (EMFAC) 2017 Model.[46] Emissions related to existing agricultural operations at the project site were modeled by ESA using the CARB's OFFROAD 2007 emissions model.[47] The US EPA's AP-42 emission factors were used to estimate the amount of dust released from travel over unpaved and paved roads.[48] While dust released from mining activity was calculated based on emissions factors contained within the Final EIR prepared for the CCAP.[49] Emissions related to energy consumption at the Esparto Plant were calculated based on VCE emission factors.[50]

Electricity at the Woodland Plant is purchased through a Direct Access Purchaser. Direct Access Purchasers acquire electricity from Electric Service Providers registered with the California Public Utilities Commission. Unlike with investor-owned utilities information related to the exact source of electricity from Electric Service Providers is not readily available. Nevertheless, Direct Access Purchasers are required to meet state mandated RPS. As such, at least 33 percent of the electricity purchased by Teichert in the year 2020 must come from renewable sources, with the required percentage increasing beyond 2030, in which year a total of 60 percent of electricity must be purchased from renewable sources. Although the proportion of renewable energy sources

---

45 Sacramento Metropolitan Air Quality Management District and Ramboll Environ. *Construction Mitigation Tool Version 8.0.* April 2018.

46 California Air Resources Board. *EMFAC 2017 Web Database Version 1.0.2*. Available at: https://www.arb.ca.gov/emfac/2017/?_ga=2.255973128.2097862100.1570128607-371863815.1546447283. Accessed August 2019.

47 California Air Resource Board. *MSEI – Documentation – OFFROAD – Diesel Equipment*. Available at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-offroad-0. Accessed August 2019.

48 U.S. Environmental Protection Agency. *Air Emissions Factors and Quantification; AP-42: Compilation of Air Emissions Factors*. Available at: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors#Proposed/. Accessed August 2019.

49 Yolo County. *Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH# 2017052069.* December 2019.

50 Parks, Jim, Director, Customer Care and Marketing, Valley Clean Energy. Personal communication [email] with Jacob Byrne, Senior Associate/Air Quality Technician, Raney Planning and Management, Inc. June 22, 2020.

required to be included in the electricity purchased by Teichert through the Direct Access Purchasers is known, the exact method of generating the required 33 percent renewable electricity or remaining 67 percent of electricity demand is not known. That is, the renewable electricity could be generated by wind, geothermal, solar, or qualifying hydro-electric, while the remaining 67 percent of electricity provided to the Woodland Plant may be generated by any available source of electricity, whether renewable or non-renewable. Potential sources of non-renewable electricity include coal, natural gas, oil, and nuclear power. The importance of the method used to generate electricity consumed at the Woodland Plant is that the generation of electricity from non-renewable sources (excluding nuclear power), releases GHGs. Thus, the exact breakdown of electricity sources providing electricity to the project site is necessary to quantifying the level of GHG emissions attributable to operations at the Woodland Plant.

Based on the above, without detailed information related to the exact breakdown of electricity generation sources used by the Direct Access Provider for the Woodland Plant, a project-specific emissions factor for each unit of electricity consumed on-site cannot be determined with certainty. In the absence of a project-specific emissions factor, several sources of data were consulted to determine an applicable emission factor. The U.S. Energy information Administration (EIA) publishes data related to electricity generation and emission in each state. For California, the EIA reports that in 2018, the most recent year for which data is available, electricity production in the state resulted in average emission of 491 pounds of CO_2 per megawatt hour (lbs CO_2/MWh). During 2018, the emissions rate per unit of electricity provided by PG&E was below the statewide average, resulting in approximately 349 lbs CO_2/MWh.[51] Another nearby utility provider, the Sacramento Metropolitan Utility District (SMUD) reported that in 2016, the most recent year for which data was readily available, SMUD's emission rate was 492.91 lbs CO_2/MWh.[52] Reductions in energy emission intensity beyond the foregoing levels are possible and have been demonstrated by VCE, which generated electricity at an emission factor of 144 lbs CO_2/MWh in the year 2018 and 224 lbs CO_2/MWh in the year 2019.[53] Comparing the statewide average emissions intensity per unit of electricity to the emissions intensities of local utilities is informative because it demonstrates the emission rate at which local utility providers are able to provide electricity to customers in the vicinity of the project site and the state as a whole. Considering that local utility companies have produced electricity with an emission factor similar to or less than the statewide average, it can be assumed that electricity provided to the Woodland Plant by the Direct Access Provider would achieve the emissions levels equivalent to the statewide average. Although the statewide average emission rate per unit of electricity has probably decreased from the 2018 level of 491 lbs CO_2/MWh, and would continue to decline into the future due to mandated compliance with the RPS, for the purposes of this analysis, electricity provided to the Woodland Plant is assumed to be produced with an emission rate equal to the statewide average in the year 2018 making it a more conservative analysis.

As noted in the Regulatory Context section above, the federal government has recently limited California's ability to establish limitations on vehicle fuel economy standards, and is anticipated to roll back previously adopted fuel economy standards for passenger vehicles. The CARB's EMFAC emissions model is predicated on California's ability to set fuel economy standards, and those standards that were previously adopted by the federal government. Thus, the federal

[51] Bruso, Xantha, Pacific Gas & Electric Company. *Greenhouse Gas Emission Factors Info Sheet*. Last Updated April 8, 2011.

[52] Woodard, Brittany, Sacramento Metropolitan Utility District. Personal communication [email] with Jacob Byrne, Senior Associate/Air Quality Technician, Raney Planning and Management. June 12, 2018.

[53] Parks, Jim, Director, Customer Care and Marketing, Valley Clean Energy. Personal communication [email] with Jacob Byrne, Senior Associate/Air Quality Technician, Raney Planning and Management. June 22, 2020.

government's recent actions to limit California's ability to establish limitations on vehicle fuel economy standards could result in a need to update the fuel economy standards used in the EMFAC model. The EMFAC model allows users to estimate emissions from historic, current, and future vehicle fleets in California. Changes to the vehicle fuel efficiency standards would reduce improvements in vehicle fuel efficiencies through the model year 2025 and beyond, but would not affect the existing emissions rates of vehicles on the road currently. Consequently, the federal government's proposed roll back of vehicle fuel efficiency standards would have the greatest effect on the accuracy of the EMFAC emissions estimations in future years. However, because the federal government actions are subject to legal challenge, the ultimate effect on the accuracy of the EMFAC emissions estimations remains uncertain, and EMFAC may remain accurate if the judicial proceedings are decided against the federal government.

Despite the uncertainty resulting from the judicial proceedings involving the federal government's actions with regard to vehicle emissions standards, the CARB has released off-model adjustment factors that may be used to compensate for discrepancies in the anticipated rate of future emissions. However, there are two important limitations to the off-model adjustment factors. First, because the fuel economy standards concerned light duty vehicles, the adjustment factors released by the CARB are only intended for use in light duty vehicles. Second, the CARB has determined that emissions rates would be impacted starting in the year 2021, and extending to the latest model year available: 2050.[54] To provide a conservative analysis, on-road emissions were estimated based on 2020 emissions. Due to the use of data from the year 2020, changes to vehicle emissions standards would not result in changes to the estimated levels of emissions presented in this EIR. Furthermore, the majority of existing and project-related emissions originate from off-road equipment and heavy-duty haul trucks that would not be affected by the federal government's actions in this case. Consequently, the emissions estimates prepared for this analysis would remain accurate regardless of the outcome of the aforementioned judicial proceedings.

Operational Health Risks

As discussed below, the proposed project would have the potential to result in the emissions of various TACs. In particular, potential health risks could occur due to emissions of DPM, as well as respirable silica from mining activities. As a result, potential health risks posed to nearby existing receptors were analyzed based on existing operations at the Woodland Plant as well as operations of the proposed project. Health risks due to exposure to DPM and respirable silica are dependent upon the amount of pollutant exposure experienced by individual receptors. Local and regional winds serve to disperse and dilute pollutants, and, as a result, the concentrations of pollutants typically decreases with increased distance from the source of a TAC. In the context of the existing and proposed mining and processing activities, sensitive receptors and other sensitive land uses that are closer to a mining or processing site would be expected to experience a higher potential health risk as compared to receptors that are further away from that site. The Esparto and Woodland operations are located in excess of six miles from each other; thus, receptors located close enough to the Woodland Plant, the Schwarzgruber mining site or the Shifler mining site to experience potential health risks from those activities, would be located far enough away from the Esparto Plant and mine that the receptors would not be anticipated to experience any substantial health risks related to the Esparto activities. Furthermore, because the proposed project would involve the cessation of mining activity at the Esparto Plant, the project

[54] California Air Resources Board. *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*. November 20, 2019.

would reduce existing potential health risks at that location. As such, potential health risks related to existing operations at the Esparto Plant were not included in the operational health risk analysis.

The estimation of potential health risks from the aforementioned TACs was completed in a three-step process. First, the total emissions of each pollutant were estimated under existing and proposed conditions. Methods for directly estimating DPM and respirable silica for the proposed operations do not currently exist; therefore, emissions of both pollutants were determined through the use of proxy pollutants. DPM is considered a subset of $PM_{2.5}$ emissions, thus, the estimated concentration of $PM_{2.5}$ was used as a proxy to represent emissions of DPM. Project activities anticipated to result in the emission of DPM include the operation of mobile equipment, such as graders, excavators, backhoes, and forklifts, both in the mining pit and at the Woodland Plant, as well as travel of haul trucks along area roadways. Similarly, respirable silica represents a portion of total PM_{10} emissions. Therefore, a fraction of the total estimated PM_{10} emissions was assumed to represent the total emissions of respirable silica. Silica emissions were assumed to occur from mining activities within the mining pits, as well as material processing at the Woodland Plant. Information related to the emission of DPM and respirable silica was derived from several sources. DPM emissions were determined based on the equipment usage information provided by the project applicant, as well as the trip generation estimates prepared for the proposed project and the existing Woodland Plant. Emissions of respirable silica were determined based on the anticipated area of disturbance, as well as emissions rates derived from information contained in the USEPA's *Compilation of Air Pollutant Emission Factors* known as AP-42,[55] and the CCAP Update Final EIR.[56]

Once the emissions of each pollutant were determined, the concentration of each pollutant at nearby receptors was then estimated using the American Meteorological Society/Environmental Protection Agency (AMS/EPA) Regulatory Model (AERMOD) dispersion model. Finally, the associated cancer risk and non-cancer hazard index were calculated using the CARB's Hotspot Analysis Reporting Program Version 2 (HARP 2) Risk Assessment Standalone Tool (RAST), which calculates the cancer and non-cancer health impacts using the risk assessment guidelines of the 2015 Office of Environmental Health Hazard Assessment (OEHHA) Guidance Manual for Preparation of Health Risk Assessments.[57] The modeling was performed in accordance with the USEPA's User's Guide for the AMS/EPA Regulatory Model – AERMOD[58] and the 2015 OEHHA Guidance Manual. Because emissions of DPM would occur from two distinct types of sources (i.e., off-road equipment and on-road haul trucks), and would occur in geographically separated locations, concentrations of DPM from off-road equipment was modeled in AERMOD separately from concentrations of DPM from haul trucks. Because respirable silica is considered a subset of PM_{10}, unlike DPM which is a subset of $PM_{2.5}$, concentrations of respirable silica were modeled separately as well. The maximum annual average and maximum one-hour average concentrations from each of the aforementioned AERMOD runs were applied to HARP 2 RAST to calculate the cancer risk and non-cancer hazard index, respectively, to the maximally exposed individuals in each scenario. The exposure period in HARP 2 RAST was adjusted depending on

55 U.S. Environmental Protection Agency. *Compilation of Air Pollutant Emission Factors (AP-42), Fifth Edition*. January 1995.

56 Yolo County. *Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH# 2017052069.* December 2019.

57 Office of Environmental Health Hazard Assessment. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments* [pg. 8-18]. February 2015.

58 U.S. Environmental Protection Agency. *User's Guide for the AMS/EPA Regulatory Model (AERMOD).* December 2016.

the existing permit conditions, and the maximum operating times that would be allowed under the proposed permitting conditions.

In order to determine the location of existing residences, aerial images of the surrounding area were used to identify individual residences. Receptor locations were then input into AERMOD using either a single receptor point to represent a single residence, or a grid of receptor points to represent more dense or clustered housing areas. Receptors meeting Yolo County's General Plan definition of sensitive receptors are depicted in Figure 4.3-1. However, following consultation with YSAQMD, the concentration of TACs was calculated at all other sensitive land uses nearby, including farm dwellings, as well as the sensitive receptor locations depicted in Figure 4.3-1.

Due to the dispersed nature of existing residences, and the differing locations of where emissions occur under the existing or proposed scenario (e.g., dust emissions under existing conditions occur at the Schwarzgruber site, but dust emissions under project conditions would only occur at the Shifler site), the location exposed to the highest pollutant concentration under existing settings may not be the same location that is exposed to the highest pollutant concentration under the proposed project. Moreover, the location exposed to the highest pollutant concentration for each source of DPM, may not be the same location exposed to the highest pollutant concentration for respirable silica. As a result, no single receptor would be exposed to the highest concentration of DPM and respirable silica under existing or proposed conditions. Nevertheless, to provide a conservative approach to analysis, the potential health risks experienced by the maximally exposed receptor for each pollutant were summed, under the existing and proposed conditions separately, to represent a worst-case scenario. In practice, the potential health risks experienced by nearby receptors would likely be less than the risks presented in this EIR.

All emissions analyses are included as Appendix D to this EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to air quality, GHG emissions, and energy is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.3-1 Conflict with or obstruct implementation of the applicable air quality plan. The impact would be *less than significant*.

The following discussion presents analysis of potential impacts related to short-term, construction-related impacts due to the relocation of Moore Canal and modification of Magnolia Canal, and, separately, a discussion of long-term impacts due to the proposed mining and reclamation at the project site and processing at the Woodland Plant.

Relocation of Moore Canal and Modification of Magnolia Canal

Implementation of the proposed project would result in short-term emissions related to the relocation of Moore Canal and modification of Magnolia Canal within the Shifler project site. Emissions related to the relocation would be generated from construction equipment, vegetation clearing and earth movement activities, construction workers' commute, and material hauling for the entire period of construction for the relocated canal. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Relocation of

Moore Canal and modification of Magnolia Canal would also result in emissions of fugitive dust, which includes PM emissions. As relocation of Moore Canal and modification of Magnolia Canal would generate emissions of criteria air pollutants, including ROG, NO_X, and PM_{10}, intermittently within the site and in the vicinity of the site, until all relocation and modification activity has been completed, construction is a potential concern, as the proposed project is located in a nonattainment area for ozone and PM.

The maximum unmitigated emissions resulting from relocation of Moore Canal and modification of Magnolia Canal have been estimated using CalEEMod for the proposed project. The modeling assumptions are described in the Method of Analysis section above. The estimated emissions are presented in Table 4.3-9.

As shown in the table, the project's associated short-term emissions related to relocation of Moore Canal would be below the applicable YSAQMD thresholds of significance. Therefore, the short-term emissions resulting from implementation of the proposed project would not result in a significant contribution to the region's nonattainment status of ozone or PM and would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.

Table 4.3-9
Maximum Unmitigated Short-Term Emissions Related to Relocation of Moore Canal and Modification of Magnolia Canal

	ROG	NO_X	PM_{10}
Project Emissions	0.01 tons/yr	0.11 tons/yr	4.45 lbs/day
YSAQMD Significance Threshold	*10 tons/yr*	*10 tons/yr*	*80 lbs/day*
Exceeds Threshold?	**NO**	**NO**	**NO**

Source: CalEEMod, September 2019 (see Appendix D).

All projects within the YSAQMD, including the proposed relocation of Moore Canal, are required to comply with all YSAQMD rules and regulations for construction, including Rule 2.1 (Control of Emissions), Rule 2.28 (Cutback and Emulsified Asphalts), Rule 2.5 (Nuisance), Rule 2.14 (Architectural Coatings), and Rule 2.11 (Particulate Matter Concentration). The CalEEMod software does not fully capture the emissions reductions that would occur due to implementation of aforementioned rules and regulations; therefore, compliance with the YSAQMD rules listed above were not included in the project-specific modeling. In addition, YSAQMD encourages all projects to implement best management practices to reduce dust emissions and avoid localized health impacts. The YSAQMD's best management practices for dust include the following:

- Watering of all active construction sites at least twice daily;
- Maintenance of at least two feet of freeboard in haul trucks;
- Covering of all trucks hauling dirt, sand, or loose materials;
- Application of non-toxic binders to exposed areas after cut and fill operations and hydroseeding of area, as applicable and/or necessary;

- Application of chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days), as applicable and/or necessary;
- Planting of vegetative ground cover in disturbed areas as soon as possible;
- Covering of inactive storage piles;
- Sweeping of streets if visible soil material is carried out from the construction site; and
- Treatment of accesses to distance of 100 feet from the paved road with a six- to 12-inch layer of wood chips, mulch, or gravel.

Compliance with the aforementioned rules and regulations related to construction, as well as implementation of best management practices for dust, would help to minimize emissions generated during construction activities. Section 10-4.414 of the OCSMO requires mining and reclamation projects to implement dust control measures. In compliance with the requirements of the OCSMO, the project applicant currently implements dust control practices, including the use of water trucks to suppress dust from disturbed areas, throughout existing mining operations, and the applicant would continue to implement such measures during relocation of Moore Canal and modification of Magnolia Canal. Nevertheless, it is recommended that the County include, as a Condition of Approval for the proposed project, the requirement that all relevant YSAQMD best management practices for dust suppression be implemented during relocation of Moore Canal and modification of Magnolia Canal. Considering implementation of the dust mitigation measures required by YSAQMD and the OCSMO, emissions of dust (represented as PM_{10} in Table 4.3-9) would be reduced from the levels presented in Table 4.3-9.

As noted previously, the YSAQMD has adopted separate thresholds of significance for construction activities and project operations. Construction-related emissions are a one-time release, whereas operational emissions continue throughout the lifetime of a project. In the case of the proposed project, relocation of Moore Canal and modification of Magnolia Canal would be considered one-time construction activities and, therefore, the YSAQMD construction threshold is the appropriate threshold of significance. For comparison, the ongoing mining activities proposed as part of the project would be considered long-term operational activities and, thus, emissions associated with such activities shall be compared to the YSAQMD operational thresholds of significance.

Due to the anticipated phase timing, construction emissions related to relocation of Moore Canal and modification of Magnolia Canal could occur simultaneously with mining-related operation emissions during the first mining phase of the proposed project. However, such activities shall be considered separately in this analysis and compared to the appropriate thresholds (i.e., construction threshold or operational threshold) depending on the activity type.

Conclusion

Because relocation of Moore Canal and modification of Magnolia Canal would result in short-term emissions below the applicable thresholds of significance, short-term implementation of the proposed project would result in a less-than-significant impact to air quality. Nevertheless, it is recommended that the County include a Condition of

Approval to ensure that relocation of Moore Canal and modification of Magnolia Canal comply with applicable YSAQMD rules, regulations, and best management practices for dust.

Operational Criteria Pollutant Emissions

As discussed above, due to the nonattainment designations of the area, the YSAQMD has developed plans to attain the State and federal standards for ozone and particulate matter. The currently applicable air quality plan is the 2013 Ozone Attainment Plan. Adopted YSAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with the applicable air quality plan. Thus, if a project's operational emissions exceed the YSAQMD's mass emission thresholds for operational emissions of ROG, NO_X, or PM_{10}, a project would be considered to conflict with or obstruct implementation of the YSAQMD's air quality planning efforts.

The existing mining operations at Esparto and the Schwarzgruber site as well as the existing processing activity at Esparto and Woodland generate ROG, NO_X, and PM_{10} from both mobile and stationary sources. Emissions related to existing and proposed operations are primarily sourced from the use of off-road equipment, the use of on-road haul trucks, ground disturbing activity associated with mining activities, vehicle travel on unpaved roads, and dust emissions from material processing. Emissions resulting from existing mining operations at Esparto and the Schwarzgruber site as well as the existing processing activity at Esparto and Woodland form part of the environmental baseline for the analysis presented in this EIR. Consequently, it is appropriate to consider the level of existing emissions as a baseline for the environmental analysis of the proposed project. Therefore, the analysis included in this EIR will focus on the net new emissions that would result from implementation of the proposed project. In order to determine the net new emissions, emissions from the existing operations as well as the proposed project are presented and compared in Table 4.3-10 below. In addition, Table 4.3-10 compares the net new emissions resulting from project operations to the YSAQMD's thresholds of significance.

Table 4.3-10
Maximum Controlled Net New Operational Emissions

	ROG (tons/yr)	NO_X (tons/yr)	PM_{10} (lbs/day)
Existing Emissions (Esparto mine and plant, Woodland Plant, Schwarzgruber mine, and on-site Agricultural Activities)	2.59	45.43	345.82
Proposed Project	2.39	43.75	422.82
Net New Emissions	**-0.19**	**-1.68**	**77.00**
YSAQMD Significance Threshold	*10*	*10*	*80.0*
Exceeds Threshold?	**NO**	**NO**	**NO**
See Appendix D for all emissions calculations.			

Because existing and future operations would be subject to the dust control requirements of Section 10-4.414 OCSMO, the emissions presented in Table 4.3-10 represent the levels of emissions that would occur with incorporation of dust suppression and control techniques. Dust suppression techniques currently include

watering unpaved roads and storage piles, the use of sprayers at conveyors, as well as seeding and revegetation, among other methods.

Emissions of ROG and NO_X presented in Table 4.3-10 are based primarily on the type of off-road equipment and on-road haul trucks used with the various operations, while the PM_{10} emissions are a result of land disturbance, travel over unpaved surfaces, and material storage. Although the emissions presented in Table 4.3-10 reflect the use of all feasible dust suppression techniques as required by Section 10-4.414, the emissions estimates also include the conservative assumption that mining in the existing and proposed conditions occurs in dry conditions. In practice, mining in the Cache Creek area often occurs below the water table through dredging or other means that extract material from below the surface of a lake within the mining pit. Extraction of material from below the water surface eliminates dust emissions (PM_{10}) from the mining process; however, dust emissions from handling and storage would continue. Mining at the Shifler site would eventually occur beneath the water table, which would reduce emissions from the levels presented in Table 4.3-10. Nevertheless, mining completed above the water surface would occur and would occur in combinations with emissions from processing, which would result in the maximum lbs/day and tons/yr of emissions as presented in Table 4.3-10.

As shown in the table above, the proposed project would result in a net decrease in operational emissions of ROG and NO_X during the proposed mining activities. In contrast, implementation of the project would result in an increase in PM_{10} emissions. Although PM_{10} emissions would increase with implementation of the proposed project, the net increase would not exceed the YSAQMD's thresholds of significance. Upon completion of mining activities, the project site would be reclaimed to agriculture, habitat, lake, and open space uses including future recreational use as dedicated properties are deeded to the County. While agricultural uses have the potential to generate criteria pollutant emissions, the total amount of reclaimed agriculture (116.7 acres) would be smaller what currently occurs on-site. Thus, after reclamation is complete, criteria pollutant emissions would be reduced relative to existing conditions.

Considering the above, the proposed project would not result in an increase in emissions in excess of the YSAQMD's thresholds of significance, and long-term operational emissions associated with project implementation would not conflict with or obstruct implementation of the applicable air quality plans, resulting in a ***less-than-significant*** impact.

Although the project has been determined to result in less-than-significant impacts, based on comments received during the NOP scoping period for the project, various potential mitigation measures or conditions of approval were considered that could further reduce emissions from operations of the project. The mitigation measures recommended by commenters are discussed below.

The use of hybrid electric mining equipment or renewable diesel was recommended for the project as a means of reducing emissions. Hybrid electric mining equipment is not yet commercially available and is not considered a feasible option. Although renewable diesel is available, the use of renewable diesel does not eliminate criteria

pollutant emissions, and in some cases may not reduce emissions of NO_X.[59] However, a proven method of reducing criteria pollutant emissions from off-road equipment is by using equipment engines that meet higher engine tier standards. Teichert is required to comply with CARB regulations, such as the In-Use Off-Road Diesel Vehicle Regulation, which require fleet owners and operators to retrofit or replace low tier engines with higher tier engines that are comparatively less polluting. Teichert is in compliance with all existing fleet standards, and continued compliance will be ensured by YSAQMD and the CARB through registration requirements for equipment operated at the Shifler site. Consequently, the suggested mitigation measure would not reduce criteria pollutant emissions beyond the reductions anticipated to occur through Teichert's existing progress towards fleet retrofit and turnover.

Another suggested measure includes the use of rail to ship processed material, under the assumption that shipping by rail would result in fewer emissions as compared to emissions that would occur with the use of on-road haul trucks. As demonstrated in the vehicle miles travelled (VMT) analysis prepared for the project by Fehr and Peers, the average trip length for haul trucks is between 26.4 and 28.9 miles per trip. The relatively short distance of the average haul truck trip indicates that most of the material processed under the existing and proposed conditions would be used locally. Use of the mined material locally would make the use of rail inefficient, as the ultimate length of travel by truck would not be significantly reduced through the use of rail. Consequently, requiring the use of rail would not be considered a feasible means of reducing criteria pollutant emissions, or emissions of GHGs, which are discussed further below.

Mitigation Measure(s)
None required.

4.3-2 Expose sensitive receptors to substantial pollutant concentrations. The impact would be *less than significant*.

The major pollutants of concern are localized CO emissions and TAC emissions, which are addressed below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Implementation of the proposed project would increase traffic volumes on streets near the project site; therefore, the project would be expected to increase local CO concentrations. Concentrations of CO approaching the ambient air quality standards are only expected where background levels are high, and traffic congestion levels are high. The YSAQMD's preliminary screening methodology for localized CO emissions provides a conservative indication of whether project-generated vehicle trips would result in the generation of CO emissions that would contribute to an exceedance of AAQS. Per the YSAQMD screening methodology, if either of the following results at any street or intersection affected by

[59] California Air Resources Board. *CARB Assessment of the Emissions from the Use of Biodiesel as a Motor Vehicle Fuel in California*. October 2011.

a project, after implementation of mitigation,[60] the project has the potential to result in localized CO emissions that could violate CO standards:

- Degrade the peak hour LOS on one or more streets or at one or more intersections in the project vicinity from an acceptable LOS (i.e., LOS A, B, C, or D) to an unacceptable LOS (i.e., LOS E or F); or
- Increase a traffic delay by 10 or more seconds on one or more streets or at one or more intersections in the project vicinity where a peak hour LOS of F already exists.

See Chapter 4.12, Transportation and Circulation, of this EIR. The proposed project would result in the degradation of two intersections from an acceptable to an unacceptable LOS, and would add vehicle traffic to intersections that are already experiencing a peak hour LOS of F. Although the project would add vehicle traffic to intersections that are already experiencing a peak hour LOS of F, the project would not increase a traffic delay by 10 or more seconds. Thus, the project would not have the potential to cause a localized CO impact at intersections already anticipated to operate unacceptably.

With regard to the degradation of LOS from an acceptable to unacceptable level, the degradation of LOS would occur at two the intersections along State Route (SR) 16; specifically, the intersection of SR 16 with County Road 94B and the intersection of SR 16 with County Road 96. In terms of potential impacts related to CO emissions, similarities exist at both intersections. Both intersections are side street stop controlled, with stop signs controlling the northbound and southbound approaches to both intersections. The LOS reported in Chapter 4.12 of this EIR is reported for the worst approach to each intersection, which, for both intersections, is the northbound approach. For both intersections, the remaining approaches operate at acceptable LOS during the peak hour. That is, while vehicles approaching each intersection from the south heading north, would experience levels of delay in excess of the applicable standards, vehicles approaching the intersection from all other approaches would experience acceptable levels of delay. Thus, only a fraction of the total number of vehicles using each intersection during the peak hour would experience extended delay times. In terms of the creation of excess concentrations of CO, high levels of CO occur where large numbers of vehicles are idling for extended periods of time. Although delay times are considered unacceptable under the intersection thresholds being applied, delay times of 74 seconds and 37 seconds, at the intersections of SR 16 and County Road 94B and 96 respectively, are not considered to be substantial periods of idling from a CO emissions standpoint.

In addition to the total idling time being considered insubstantial from a CO emissions perspective, the volume of vehicles idling for that amount of time is also considered insufficient to represent a potentially substantial source of CO emissions. For the intersection of SR 16 and County Road 94B a total of 1,158 vehicles would pass through the intersection during the AM peak hour, while the intersection of SR 16 and County Road 96 would experience 1,029 vehicles during the AM peak hour. The number of vehicles using the impacted approaches to each intersection (i.e.,

[60] Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts* [pg. 21]. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

northbound vehicles approaching from the south of each intersection) is only a fraction of the foregoing total vehicle traffic at each intersection, with 120 vehicles and 16 vehicles accessing the affected intersection approaches at SR 16 and County Road 94B and SR 16 and County Road 96, respectively. For perspective, the nearby BAAQMD recommends CO screening thresholds for intersections experiencing vehicle volumes in excess of 44,000 vehicles per hour under normal conditions, or 24,000 vehicles per hour where air mixing is limited due to features such as bridges, tunnels, or below-grade roadways.[61] Both intersections in question experience vehicle volumes far below the BAAQMD's screening criteria, which indicates that vehicle volumes at both intersections would not be substantial enough to result in substantial CO emissions.

Considering the above, although the project would result in the degradation of two intersections from acceptable to unacceptable LOS, the intersections would not experience vehicle delays or volumes sufficient to result in the creation of localized impacts related to CO. Consequently, the proposed project would not expose sensitive receptors or other sensitive land uses to substantial concentrations of localized CO.

TAC Emissions

As stated above, the proposed project would have the potential to result in increased health risks due to proposed activities. Consequently, a project-specific health risk assessment was prepared. In particular, the proposed project could result in emissions of DPM and respirable silica, both of which are TACs. DPM would be emitted from off-road equipment at existing and proposed mining sites, as well as from the Woodland Plant under both existing and proposed conditions. Under both existing and proposed conditions, haul trucks would access the Woodland Plant, resulting in emission of DPM on roadways in the project area. Respirable silica would be emitted from the existing and proposed mining sites as well as from material stored at the Woodland Plant under both existing and proposed conditions. Potential health risks resulting from the foregoing sources are discussed in the sections below. Results of the health risk analyses prepared for the proposed project are presented in Appendix D.

Health Risk from Off-Road Equipment DPM

Off-road equipment is currently used within the Woodland Plant and at the Schwarzgruber site. With implementation of the proposed project, activity at the Schwarzgruber site would cease following mining and final reclamation, but mining activity at the Shifler project site would subsequently occur. The Shifler project would include relocation of equipment currently operating at the Esparto Plant to the Woodland Plant. Equipment at the Esparto Plant is generally more efficient than the equipment located at the Woodland Plant, and relocation of the Esparto Plant equipment would involve replacement of existing, less-efficient equipment, with more efficient equipment currently operated at the Esparto Plant. The net effect would be increased efficiency of operations at the Woodland Plant and reduced DPM emissions.

The Schwarzgruber site is located northeast of the Woodland Plant, while the Shifler project site is located southwest of the Woodland Plant. As a result, the nearest receptor to each mining site is different, and the maximum pollutant concentrations

[61] Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines* [pgs. 3-3 and 3-4]. May 2017.

would be experienced by different receptors under existing and proposed conditions. To provide a consistent analysis, the potential health risk experienced at the maximally exposed receptor under each project condition (i.e., existing or proposed) has been compared to determine the potential impacts that could result from implementation of the project. Potential health risks related to implementation of the project is presented in Table 4.3-11.

Table 4.3-11
Maximum Cancer Risk and Hazard Index Associated With DPM from Off-Road Equipment

Project Condition	Cancer Risk (per million persons)	Chronic Hazard Index	Acute Hazard Index
Existing Operations	78.26	0.00	0.03
Proposed Project	63.90	0.00	0.01
Difference	**-14.36**	**0.00**	**-0.01**
Thresholds of Significance	*10*	*1.0*	*1.0*
Exceeds Thresholds?	**NO**	**NO**	**NO**

Note: Differences may not sum due to rounding.

Sources: AERMOD, and HARP 2 RAST, April 2020 (see Appendix D).

As shown in Table 4.3-11, the proposed project would result in a reduction in potential health risks experienced by the maximally exposed individual. The reduction in health risks would primarily be attributable to the replacement of less efficient equipment at the Woodland Plant with more efficient equipment relocated from the Esparto Plant. As noted above, the maximum health risks resulting from existing operations and the proposed project would not be experienced by the same receptor. In fact, the maximally exposed receptor under existing conditions could be a receptor located near the Schwarzgruber site, while the maximally exposed receptor for the proposed project would be a receptor nearer to the Shifler site. Another important distinction is that the health risk presented for the proposed project is due to an assumed exposure to the maximum concentration of pollutants over the next 30-years, whereas the health risks presented for existing operations is a result of exposure to pollutants over the remaining life of the existing Woodland Plant permit, which is linked to the cessation of mining at the Schwarzgruber site. For the purposes of this analysis the remaining life of the existing Woodland Plant permit was assumed to be eight years. The health risks for the proposed project presented in Table 4.3-11 are likely an overestimate, as the health risks calculations assume that nearby receptors would be exposed to a constant rate of emissions over the next 30-years. In practice, emissions from off-road equipment at the project site and at the Woodland Plant would decrease into the future as older machinery is replaced or re-powered with modern cleaner running equipment and engines to maintain compliance with the In-Use Off-Road Diesel Vehicle Regulation. Thus, not only would the use of more efficient equipment from the Esparto Plant result in a reduction in health risks compared to the existing Schwarzgruber and Woodland Plant operations, but the ultimate health risks experienced by nearby

receptors would likely be less than the levels analyzed within this EIR as equipment becomes less emitting into the future.

With or without consideration of future emissions reductions resulting from on-going compliance with the In-Use Off-Road Diesel Vehicle Regulation, Table 4.3-11 demonstrates that the proposed project would not result in increased health risks due to off-road equipment as compared to existing conditions.

During the public comment period for the NOP released for this EIR, members of the public noted that planting of vegetation along the boundaries of the proposed mining site and the Woodland Plant site could be used to reduce DPM emissions from leaving the project site and affecting nearby receptors. Understanding of the use of vegetation to screen receptors from sources of DPM is evolving, but in general, if properly planted, vegetation is considered to be useful in reducing exposure of receptors located near sources of DPM such as roadways. The proposed project does not involve installation of a roadway, but rather operation of a mine and continued operation of the Woodland Plant. The dynamics of emissions from mines and a processing plant are drastically different from the dynamics of emissions from a roadway, and scientific studies showing that vegetation would be useful to reduce emissions from mines and processing plants was not available during preparation of this EIR. While vegetation could allow for capture of some DPM emissions within the foliage of the vegetation, vegetation screens can also serve to slow wind speeds. Slower wind speeds could result in a reduced rate of dispersion of pollutants, which would subject nearby receptors to heightened pollutant concentrations as more pollutants remain closer to the mining and processing sites. The health risks presented in Table 4.3-11 reflect the dispersion of pollutants under historic wind conditions as measured in the region of the project site. Because health risks were demonstrated to be below the YSAQMD's thresholds of significance under existing and proposed conditions mitigation in the form of vegetation is not required, and in the absence of widely available research demonstrating the efficacy in vegetation reducing emissions exposures for mines and processing plants, this EIR does not present conclusions related to the use of vegetation to screen emissions from leaving the project site.

Health Risk from Haul Truck DPM

Haul trucks currently access the Woodland Plant by way of the existing roadway network. Operation of haul trucks results in emissions of DPM along the routes travelled by the trucks both on- and off-site. Implementation of the proposed project would be anticipated to increase the number of haul trucks accessing the Woodland Plant as the total throughput at the Woodland Plant would increase through a commensurate reduction in throughput at the Esparto Plant. The reallocation in throughput would divert trips that currently access the Esparto Plant to the Woodland Plant instead. Although the total number of haul trucks accessing the Woodland Plant would likely increase, the designed haul routes used to transport material from the Woodland Plant would remain unchanged. The number of haul trucks accessing the site under existing and proposed conditions, as well as the distribution of haul trucks along the existing roadway network was determined based on information provided in the Traffic Impact Analysis prepared for the proposed project by Fehr & Peers.

Because the Woodland Plant would continue to be the destination for haul trucks, unlike the health risk analysis prepared for off-road equipment presented above, the same receptors would be exposed to health risks under the existing and proposed project conditions. Table 4.3-12 presents the health risks to the maximally exposed individual under existing and project conditions.

Due to the increased volume of haul trucks accessing the Woodland Plant under the proposed project, the cancer risk for the maximally exposed individual would increase by 4.8 cases per million persons, as shown in Table 4.3-12. The health risks presented for existing operations occur over the remaining permitted life of the Woodland Plant (8 years), while the health risks presented for the proposed project would occur over the assumed 30-year project lifespan. Haul trucks used over the next 30-years are anticipated to result in fewer emissions over time as the fleet of on-road haul trucks turns over through replacement of engines and vehicles and on-road vehicles become less emissions intensive through implementation of the statewide LCFS and CARB regulations. Although the federal government has recently taken actions to curtail California's ability to regulate tail pipe emissions from passenger vehicles, the LCFS and relevant CARB regulations affecting emissions from on-road diesel trucks, such as the Truck and Bus Regulations, are not affected by federal actions. Therefore, even in the event that the federal government's actions are upheld and California's ability to regulate tail pipe emissions from passenger vehicles is limited, all existing regulations related to on-road diesel haul trucks and the LCFS would remain in effect.[62] Reductions in haul truck emissions would directly correspond to reductions in health risks; therefore, the increased health risks experienced by nearby receptors could be less than the levels presented within Table 4.3-12. Nonetheless, as shown in Table 4.3-12 the proposed project would not result in an increased health risk in excess of the YSAQMD's thresholds of significance being applied in this analysis.

Table 4.3-12
Maximum Cancer Risk and Hazard Index Associated With DPM from Haul Trucks

Project Condition	Cancer Risk (per million persons)	Chronic Hazard Index	Acute Hazard Index
Existing Operations	2.54	0.00	0.00
Proposed Project	7.38	0.00	0.00
Difference	**4.84**	**0.00**	**0.00**
Thresholds of Significance	*10*	*1.0*	*1.0*
Exceeds Thresholds?	**NO**	**NO**	**NO**

Note: Differences may not sum due to rounding.

Sources: EMFAC 2017, AERMOD, and HARP 2 RAST, April 2020 (see Appendix D).

62 California Air Resources Board. *The Truck Stop: The Trump Administration and the California EPA*. Available at: https://ww3.arb.ca.gov/msprog/truckstop/azregs/waiver.htm. Accessed September 2020.

Health Risk from Respirable Silica

Dust is created during both mining and material processing activities. Accordingly, both the existing mining at the Schwarzgruber site and the material processing at the Woodland Plant produce dust. With implementation of the proposed project, dust emissions would occur at the Shifler project site and would continue at the Woodland Plant. Sources of dust emissions related to mining include the movement of mined materials, land disturbance, and the movement of off-road equipment over disturbed surfaces. Activities at the Woodland Plant that produce dust include material screening, crushing, and conveyor transport, as well as material storage, and the movement of off-road equipment and vehicles over unpaved surfaces. The project applicant currently controls dust in accordance with Section 10-4.414 of the Mining Ordinance which requires control measures be implemented for stockpiled soils, watering of unpaved roads and disturbed soils, and stabilizing of inactive portions of the site. In addition, the project applicant currently implements additional measures such as dust suppressors on conveyors and in crushing and sorting machinery; however, some level of dust emissions is unavoidable. Although dust emissions in general are considered a nuisance, rather than a direct health hazard, dust containing respirable silica does pose a hazard to human health and respirable silica is considered a TAC. Respirable silica represents only a fraction of the total dust emissions. Therefore, while the project may result in a significant amount of dust emissions, the ultimate increase in health effects related to dust emissions may be more limited. To determine the potential health effects resulting from emissions of respirable silica, the concentration of respirable silica at nearby receptors was estimated. Similar to the discussion of health risks related to DPM from off-road equipment, the nearest receptor to each mining site is different, and the maximum pollutant concentrations would be experienced by different receptors under existing and propose conditions. To provide a consistent analysis, the potential health risk experienced at the maximally exposed receptor under each project condition (i.e., existing or proposed) has been compared to determine the potential impacts that could result from implementation of the project. Potential health risks related to implementation of the project is presented in Table 4.3-13.

Table 4.3-13
Maximum Cancer Risk and Hazard Index Associated With Respirable Silica

Project Condition	Cancer Risk (per million persons)	Chronic Hazard Index	Acute Hazard Index
Existing Operations	0.00	0.00	0.03
Proposed Project	0.00	0.00	0.04
Difference	**0.00**	**0.00**	**0.01**
Thresholds of Significance	*10*	*1.0*	*1.0*
Exceeds Thresholds?	**NO**	**NO**	**NO**

Sources: AERMOD, and HARP 2 RAST, April and July 2020 (see Appendix D).

As shown in Table 4.3-13, the proposed project would result in an increase in the acute hazard index for the maximally exposed receptor; however, the increase in acute

hazard index would not exceed the applicable YSAQMD threshold of significance. Furthermore, the proposed project would not result in appreciable cancer or chronic hazards related to the exposure of receptors to respirable silica.

Health Risk to Animals

Comments received on the scope of the EIR identified concern for animal health, including livestock such as horses, resulting from project-related emissions. The CARB's and OEHHA's quantitative methodologies for assessing potential health risks are intended for use in humans, not animals. However, some of the underlying data used to determine health risks to humans is based on laboratory studies of health risks to animals.[63] Although data from health risks to animals was used in determining the potential health risks of some TACs to humans, the methodologies suggested for use in analyzing human health risks by the CARB and OEHHA do not necessarily apply to the analysis of health risks to animals. Animals would not be considered sensitive receptors under the definition of sensitive receptors typically used for air quality assessments or as defined in Yolo County's General Plan. Furthermore, a threshold for health risks to animals does not exist. As discussed in the Biological Resources Chapter of this EIR, a wide variety of animals inhabit the project area and region. The health risks to each type of animal, whether livestock or wildlife, would be unique to each species, and sufficient data does not exist to provide a quantitative analysis for potential health risks. Consequently, analysis of potential health risks to animals from proposed operations is neither required by CEQA nor technically feasible.

Conclusion

The proposed project would not meet the YSAQMD's screening criteria for CO, and, thus, would not result in the exposure of receptors to substantial concentrations of CO. The potential for the proposed project to result in substantial increases in health risks relative to existing mining activity has been further analyzed through the preparation of detailed, project-specific health risk assessments for DPM and respirable silica. As discussed above, the proposed project would not result in substantial increases in health risks related to either of the foregoing pollutants. Consequently, the proposed project would not result in the exposure of receptors to substantial pollutant concentrations, and implementation of the proposed project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

4.3-3 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. The impact would be *less than significant*.

Emissions of pollutants have the potential to adversely affect receptors in the project area. Pollutants of principal concern include emissions leading to odors, visible emission (including dust), or emissions considered to constitute air pollutants. Air

[63] Office of Environmental Health Hazard Assessment. *Part B: Health Risk Assessment for Diesel Exhaust*. May 1998.

pollutants have been discussed in Impacts 4.3-1 and 4.3-2 above. Therefore, the following discussion focuses on emissions of odors and visible emissions.

Odors

According to the YSAQMD, common types of facilities that are known to produce odors include, but are not limited to, wastewater treatment facilities, chemical or fiberglass manufacturing, landfills, composting facilities, food processing facilities, refineries, dairies, and asphalt or rending plants.[64] The existing Woodland Plant includes operation of an asphalt plant.

Odors are generally regarded as an annoyance rather than a health hazard and are often addressed qualitatively rather than quantitatively. The YSAQMD regulates objectionable odors through Rule 2.5 (Nuisance), which prohibits any person or source from emitting air contaminants or other material that result in any of the following: cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; endanger the comfort, repose, health, or safety of any such persons or the public; or have a natural tendency to cause injury or damage to business or property. Rule 2.5 is enforced based on complaints.

YSAQMD has identified one complaint made in 2011 for the existing asphalt plant at the Woodland Plant site. Through investigation by YSAQMD staff, it was determined that the complaint was related to short-term nighttime operation of the existing asphalt plant under special contract with the California Department of Transportation. The 2011 complaint was subsequently closed after investigation by YSAQMD staff and discussion with the complainant.[65]

Although the proposed project would include increased throughput of aggregates at the Woodland Plant, the operations and capacity of the asphalt plant would not be altered with implementation of the proposed project. Because operations of the asphalt plant would not be altered, and existing operations have resulted in only a single complaint, which was resolved, the proposed project would not result in any new or more substantial impacts related to odors from the existing asphalt plant. Notwithstanding the low likelihood of complaints occurring, should complaints occur in the future, YSAQMD has a process for vetting complaints, investigating the complaint, and determining solutions to abate any identified sources of substantial odors.

Diesel fumes from mining equipment and other off-road equipment may be found to be objectionable. However, odors from such equipment would only be produced intermittently, while equipment is actively in use. Proposed mining activity would be limited to the operating hours ultimately permitted by the County, which would limit the duration during which odors from equipment could be emitted. The applicant is requesting that the proposed project be allowed to operate under the same operational hours as the hours currently allowable for the Woodland Plant and the Schwarzgruber mining site, which are defined in the Project Description chapter of this EIR. Also, while the proposed project site is approximately 319 acres in size, the mining boundary is

64 Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts* [pg. 14]. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

65 Obrien, Lacey, Administrative Assistant, Yolo-Solano Air Quality Management District. Personal communication [email] with Jacob Byrne, Senior Associate/Air Quality Technician. May 5, 2020.

277 acres, and mining equipment would be operated over the defined phases of the mining site at any given time. Emissions from diesel engines are highly dispersive, meaning they readily dissipate through air currents and with increased distance from the source; thus, equipment operating on locations of the Shifler mining site that are separated from nearby receptors would be unlikely to result in noticeable odors. Separation of sources of odors from sensitive receptors and other sensitive land uses is recommended by YSAQMD as an effective measure to reduce the potential for projects to expose receptors to odors.[66] In addition, all off-road equipment and operation thereof would be regulated per the In-Use Off-Road Diesel Vehicle Regulation. Off-road equipment operated at the project site would be required to comply with all applicable YSAQMD rules and regulations, particularly associated with permitting of air pollutant sources. These regulations would help to minimize air pollutant emissions, as well as associated odors related to operation of off-road equipment. Considering the scheduled downtime for operation of the mining equipment, the dispersive nature of diesel emissions, and the strict regulation of off-road equipment, diesel powered mining equipment is not anticipated to result in exposure of receptors to substantial odors.

Visible Emissions

Visible emissions may result from the use of internal combustion engines, such as smoke from diesel fueled equipment, the burning of vegetation, or the upset and release of soil as dust. YSAQMD Rule 2.3 prohibits any person from discharging visible emissions of any air contaminant for a period or periods aggregating to more than three minutes in any one-hour time. All mining equipment and any other off-road equipment would be required to meet the visible emissions standards of Rule 2.3, and, considering the regulated nature of off-road equipment, would not be anticipated to result in substantial visible emissions. YSAQMD Rule 2.8 prohibits open burning of vegetation in most situations and the proposed project would not be anticipated to result in visible emissions, such as smoke, related to vegetation burning. Compliance with OCSMO Section 10-4.414 and 10-4.415 would ensure that visible emissions from dust and equipment would be minimized and further aid in compliance with Rule 2.3.

Considering the above, implementation of the proposed project would not be anticipated to result in substantial visible emissions during project construction or operations.

Conclusion

Implementation of the project would not result in substantial emissions of visible pollutants, and project operations would not result in other emissions (such as those leading to odors), which could adversely affect a substantial number of people, therefore this impact would be ***less-than-significant***.

Mitigation Measure(s)

None required.

[66] Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts* [pgs 30-31]. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

4.3-4 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. The impact would be *less-than-significant*.

The proposed mining and processing activities, as well as canal relocation activities, would require the consumption of energy in the forms of fossil fuels and electricity. Operational activities that would require the consumption of fossil fuels would include the operation of machinery, such as excavators, graders, and forklifts, as well as the operation of on-road haul trucks to transport processed material. Electricity would be consumed by on-site equipment such as the proposed material conveyor, as well as crushers, sorters, and other such machinery. Consumption of fossil fuels and electricity represent an on-going cost to the project applicant, which creates an incentive for the applicant to minimize the use of energy on-site through efficient operations. The proposed project would allow for efficient operations by relocating equipment currently operated at the Esparto Plant to the Woodland Plant, and replacement of existing equipment at the Woodland Plant that is relatively less efficient than the equipment used at the Esparto Plant. Thus, the applicant would be able to achieve increased operational efficiency through the use of more efficient equipment. The efficiency gained through relocation and replacement of the existing equipment can be seen by comparing the existing level of diesel fuel consumption with the level of consumption that would occur following implementation of the proposed project. Table 4.3-14 demonstrates that implementation of the proposed project would result in a net reduction in annual fuel consumption.

Table 4.3-14
Fuel Consumption – Woodland Plant

Project Condition	Gallons of Diesel Fuel Consumed per Year
Existing Operations	258,028
Proposed Project	212,942
Difference	**-45,086**

See Appendix D.

All of the off-road equipment operated as part of the project would be subject to the In-Use Off-Road Diesel Vehicle Regulations, which require strict emissions reductions into the future. Emissions reductions are often achieved through the re-powering of equipment with higher tier engines, which emit fewer emissions, partially through increased fuel efficiency. For instance, Tier 4 engines consume approximately five percent less fuel than standard equipment.[67] As such, operational energy demand would diminish into the future as off-road equipment is upgraded to meet increasingly stringent emissions standards.

With regard to electricity, the project applicant has previously installed a photovoltaic renewable energy system at the Woodland Plant, which would continue to provide electricity to the Woodland Plant with implementation of the proposed project. The

[67] Empire Cat. *Tier 4 Emissions Technology*. Available at: http://www.empire-cat.com/Power_Systems/Emissions_Solutions/Tier_4_Technology.aspx. Accessed June 2020.

provision of on-site renewable energy systems represents an efficient means of meeting the project's electricity demand. Moreover, per OCSMO 10-4.407, the proposed conveyor system would be electrically powered, which would provide a more efficient source of energy as compared to diesel powered conveyor systems. Nevertheless, demand for electricity would increase under the proposed project, as presented in Table 4.3-15.

Table 4.3-15
Electricity Consumption – Woodland Plant

Project Condition	Electricity Consumed per year (MWh)
Existing Operations	6,253.95
Proposed Project	9,544.83
Difference	**+3,290.88**
See Appendix D.	

An increase in electricity consumption does not necessarily mean that the project would result in an inefficient or wasteful use of energy. Rather, increased electricity consumption on-site is likely due to increased equipment and throughput within the site. Furthermore, the increase in electricity consumption is balanced with the decrease in consumption of fossil fuels. Considering that fossil fuels are a non-renewable resource, increased consumption of electricity in-lieu of increased consumption of fossil fuels could be considered an efficient means of providing additional energy to the project.

One component of the electricity consumption discussed above is the electricity demand from operation of the existing structures within the Woodland Plant. The electricity demand from the existing structures would be relatively limited compared to the electricity demand from the existing and proposed machinery. Furthermore, the proposed project does not include any proposed changes to the existing buildings or the construction of new buildings within the Woodland Plant; consequently, the project would not result in a net change in electricity demand from the existing buildings. During the NOP comment period for this EIR members of the public noted that new structures should be required to adhere to the tier 1 or tier 2 requirements of the California Green Building Code. However, because renovation of existing buildings or construction of new buildings is not included in the project, a tier 1 or tier 2 requirement would not be applicable to the proposed project.

Based on the above information, the proposed operations would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and a ***less-than-significant*** impact would result.

Mitigation Measure(s)

None required.

4.3-5 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The impact would be *less-than-significant*.

Yolo County has not adopted a dedicated renewable energy or energy efficiency plan. However, the Yolo County CAP does include various measures related to increasing energy efficiency and decreasing GHG emissions related to energy production and consumption. The majority of the energy-related measures within the County's CAP are related to increasing the efficiency of new and existing structures. Existing structures within the Woodland Plant are limited, and the proposed project does not include any substantial changes to the existing structures. In addition to the measures related to building energy efficiency, Measure E-1 of the CAP directed the County to establish a CCA, which was fulfilled through the formation of VCE.

Grid-supplied electricity for Teichert's existing operations is bought either through a Direct Access Provider or from VCE. A photovoltaic energy system has been installed at the Woodland Plant, which off-sets some of the demand of Teichert's existing operations at the Woodland Plant. The existing photovoltaic energy system at the Woodland Plant would be maintained with implementation of the proposed project. The on-site photovoltaic system would continue to support the County's CAP goal of reducing GHG emissions from electricity through increased reliance on renewable energy. In addition, electricity purchased through Direct Access Providers is required to attain the renewable content requirements specified in RPS. For instance, in the year 2020, Direct Access Providers must supply electricity with a renewable content of 33 percent, and that requirement will increase to 60 percent by the year 2030. Compliance with the RPS would ensure that grid-supplied electricity, independent of the on-site photovoltaic systems, would be generated by an increasing proportion of renewable sources.

Teichert has considered the possibility of installing further renewable energy systems to provide the electricity needed to meet the additional electricity demand resulting from project implementation. However, several impediments exist to installation of additional renewable energy systems. With regard to wind power, according to the project applicant, the project site does not experience sufficient wind to make the use of a wind turbine feasible. Installing solar panels at the Shifler site was considered; however, the amount of land needed to install a solar array that would provide an appreciable amount of solar power is prohibitive. For instance, because the Shifler site would experience farming, mining, and reclamation in phases, there would not be sufficient undisturbed space that could be used for solar power generation at any given time. Installation of panels at an off-site location would increase the area disturbed by implementation of the project, which could increase environmental impacts to other areas, such as cultural and tribal cultural resources or biological resources. Accordingly, the project applicant has not included installation of additional renewable energy systems at this time.

Based on the above information, the proposed operations would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and a ***less-than-significant*** impact would result.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

CEQA Guidelines, Section 15130 requires that an EIR discuss the cumulative and long-term effects of the proposed project that adversely affect the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects" (CEQA Guidelines, Section 15355, subd. [a]). "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines, Section 15355, subd. [b]).

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and, thus, significant, when viewed together with environmental changes anticipated from past, present, and probable future projects (CEQA Guidelines, Section 15064, subd. [h(1)], Section 15065, subd. [c], and Section 15355, subd. [b]). Accordingly, particular impacts may be less than significant on a project-specific basis but significant on a cumulative basis if their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable. However, it should be noted that CEQA Guidelines, Section 15064, Subdivision (h)(5) states, "[…] the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, even where cumulative impacts are significant, any level of incremental contribution is not necessarily deemed cumulatively considerable. The lead agency should define the relevant geographic area of inquiry for each impact category (id., Section 15130, subd. [b][3]). The geographic context for the cumulative air quality analysis includes Yolo County and surrounding areas within the portion of the SVAB that is designated nonattainment for ozone and PM_{10}.

Climate change occurs on a global scale, and emissions of GHGs, even from a single project, contribute to the global impact. However, due to the highly regulated nature of GHG emissions within California specifically in a concerted effort to address the issue at a state level through CARB, for the purposes of this analysis the geographic context for the analysis of GHG emissions presented in this EIR is California.

In addition to the focus on the SVAB for cumulative air quality impacts and California for GHG impacts, to maintain consistency with the approach to analysis presented in Chapter 5, Cumulative Impacts and Other Required Sections, of this EIR, the issues of air quality, GHG emissions, and energy are also considered within the context of the CCAP, and the analysis presented within the CCAP Update FEIR.

Further information related to the analysis of cumulative impacts is presented in Chapter 5, Cumulative Impacts and Other Required Sections, of this EIR.

4.3-6 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard. The project's incremental contribution to this significant cumulative impact would be *less than cumulatively considerable*.

The proposed project is within an area currently designated as nonattainment for Ozone, PM_{10}, and $PM_{2.5}$. Air pollution is largely a cumulative impact. Thus, the proposed project, in combination with other proposed and pending projects in the region would significantly contribute to air quality effects within the SVAB, resulting in an overall significant cumulative impact. However, any single project is not sufficient enough in size to, alone, result in nonattainment of AAQS. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's incremental impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, YSAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the significance thresholds, as identified by the YSAQMD and shown in Table 4.3-8 above, that project's emissions would be cumulatively considerable, resulting in a significant adverse air quality impact to the region's existing air quality conditions.[68] As discussed above, under Impact 4.3-1, short-term emissions related to the relocation of Moore Canal and modification of Magnolia Canal would be below the applicable thresholds of significance. Because the environmental baseline for the proposed project includes emissions from mining at the Esparto and Schwarzgruber sites, as well as processing at the Esparto and Woodland plants, the proposed project would result in a continuation of emissions within the County from mining and processing activity. As shown in Table 4.3-10, the relocation of equipment from the Esparto Plant to the Woodland Plant would contribute to a net decrease in operational emissions of ROG and NO_X. As further illustrated in Table 4.3-10, implementation of the proposed project would result in increased emissions of PM, but the increase in emissions would be below the YSAQMD's threshold of significance. Moreover, the anticipated level of dust emissions presented in Table 4.3-10 represents the level of emissions that would occur during dry mining of the Shifler site. Once mining at the Shifler site extends below the water table and wet mining begins to occur at the Shifler site, dust emissions at the Shifler site would decrease from the levels presented in Table 4.3-10.

Upon completion of mining activities, the proposed project would reclaim 116.7 acres within the project site to agricultural uses. Ongoing agricultural uses (and to a lesser extent recreation, parkway, and open space uses) after completion of reclamation would continue to generate emissions. However, the total amount of reclaimed agriculture would be less than what currently occurs on-site. Anticipated recreation, parkway, and open space uses associated with future use of dedicated lands would

[68] Yolo-Solano Air Quality Management District. *Handbook for Assessing and Mitigating Air Quality Impacts* [pg. 7]. July 11, 2007. Available at: http://www.ysaqmd.org/documents/CEQAHandbook2007.pdf. Accessed June 2020.

emit criteria pollutants which are anticipated to be minimal. Thus, after reclamation is complete, emissions would be reduced relative to existing conditions.

The YSAQMD is part of the Sacramento Federal Nonattainment Area (SFNA) for ozone. The YSAQMD, in concert with other air districts within the SFNA, has adopted a regional 8-hour Ozone Attainment and Regional Further Progress Plan to demonstrate the region's attainment of the 2008 federal ozone standard. The plan relies on growth estimates based on various sources of data, including City and County general plans, as well as existing activities and trends within the region. As determined in the CCAP Update FEIR, operations of aggregate mining within the Cache Creek area represent a cumulatively considerable source of criteria pollutants,[69] and, emissions from such activities would have been included in the emissions inventories produced as part of the 8-hour Ozone Attainment and Regional Further Progress Plan. Inclusion of aggregate mining activities in the project area within the 8-hour Ozone Attainment and Regional Further Progress Plan would ensure that cumulative emissions from aggregate mining were considered and addressed as part of the regional strategy to achieve attainment of criteria pollutant CAAQS and NAAQS.

Because the proposed project would result in an overall decrease in ozone precursor emissions (i.e., emissions of ROG and NO_X), the proposed project would contribute to the ozone precursor emissions reductions identified in the 8-hour Ozone Attainment and Regional Further Progress Plan. The FEIR for the CCAP Update found that on a cumulative basis, continued mining operations within the CCAP area would result in increases of emissions within the CCAP area. The proposed project would result in a net decrease in ROG and NO_X emissions, and although emissions of PM_{10} would increase, the net increase in PM_{10} emissions would be below the YSAQMD's thresholds of significance and would decline in the future with wet mining. Consequently, the project would not be expected to result in the creation of a conflict with $PM_{2.5}$ Implementation/Maintenance Pan and Resignation Request for the SFNA in the cumulative setting.

Cumulative Health Risks from TACs

As discussed previously, existing and proposed operations would present several sources of potential health risks to nearby receptors. In particular, mining operations result in the emission of DPM from off-road equipment at mining sites and processing plants, as well as from on-road haul trucks. Additionally, mining activities result in the emission of dust, which can represent a health risk where respirable silica is contained within the dust. Considering the potential sources of TAC emissions related to mining operations, detailed health risk assessments were prepared for the described sources of health risks from existing and proposed activities. Table 4.3-16 below presents a comparison of the cumulative health risks between existing and proposed conditions.

Again, it is important to note that the health risks presented above would not necessarily be experienced by the same receptors under existing and proposed project conditions. For instance, receptors closer to the existing Schwarzgruber mining site may experience the highest risk from existing mining activity, while receptors near the Shifler project site may experience the highest risk from proposed project activities.

[69] Yolo County. *Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH# 2017052069.* December 2019.

Similarly, receptors experiencing risks from dust or haul truck emissions would not necessarily be the same receptors as those experiencing health risks due to off-road equipment. Thus, the subtotal health risks presented in Table 4.3-16 would not be anticipated to be experienced by any single receptor (including, but not limited to, those receptors presented in Figure 4.3-1).

As shown in Table 4.3-16, implementation of the proposed project would reduce health risk as compared to the existing mining activity at the Woodland Plant and Schwarzgruber site. However, because the proposed increase in material throughput would result in increased emissions of fugitive dust, which contains respirable silica, the proposed project could result in comparatively increased health risks related to respirable silica. The net increase in health risks due to silica would not exceed YSAQMD's thresholds of significance for acute health risks from new sources of TACs.

Table 4.3-16
Cumulative Health Risk

Project Condition	Source	Cancer Risk (per million persons)	Acute Hazard Index	Chronic Hazard Index
Existing Operations	DPM From Equipment	78.26	0.00	0.03
	DPM From Hauling	2.54	0.00	0.00
	Respirable Silica	0.00	0.00	0.03
	Subtotal	*80.80*	*0.00*	*0.06*
Proposed Project	DPM From Equipment	63.90	0.00	0.01
	DPM From Hauling	7.38	0.00	0.00
	Respirable Silica	0.00	0.00	0.04
	Subtotal	*71.28*	*0.00*	*0.06*
	Difference	**-9.52**	**0.00**	**0.00**

Note: Differences and subtotals may not sum due to rounding.
DPM = Diesel Particulate Matter

Sources: AERMOD, and HARP 2 RAST, April and July 2020 (see Appendix D).

Health Risks from Criteria Pollutants

Recent rulings from the California Supreme Court (including the *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 case regarding the proposed Friant Ranch Project) have underscored the need for analysis of potential health impacts that could result from the emission of criteria pollutants during operation of proposed projects. Although methodologies for the analysis of project-level health risks related to the emission of CO and TACs have been developed and implemented over a long period of time under CEQA, the project-level analysis of health impacts due to criteria pollutant emissions is a relatively new field that has been under development since the Supreme Court's ruling. The analysis of potential health impacts resulting from criteria pollutant emissions has long been focused on a regional or air basin wide level rather than a project-level. The reason for a wide geographic focus on health impacts from criteria pollutants is that criteria pollutants act on a large, regional scale, whereas TACs and CO act on a more localized level. For instance, according the CARB's *Air Quality and*

Land Use Handbook: A Community Health Perspective, health impacts related to many common sources of TACs are experienced within the first 500 to 1,000 feet from a source of emissions.[70] The localized nature of impacts from TACs allows for dispersion modeling of TACs to be undertaken with a detailed scope of focus and high degree of confidence. In contrast, health risks from criteria pollutants occur over entire air basins, such as the SFNA for ground-level ozone, which encompasses all of Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties.

In many cases, the concern regarding health risks from criteria pollutants is not related to the specific pollutant itself, such as ROG or NO_X, but the potential for the pollutant to undergo reactions within the atmosphere and form secondary pollutants, such as ozone. In such cases, the secondarily formed ozone is the pollutant of concern related to health risk, rather than the pollutant ROG or NO_X itself. The formation of ozone is dependent upon various regional factors, including the presence or absence of chemicals and elements in the atmosphere, geography of the given area, the presence of solar energy, as well as meteorological and climatological conditions. In addition, while PM can be emitted directly to the atmosphere by projects, PM can also be formed secondarily by precursor emissions. Thus, the formation of PM can similarly be dependent on regional atmospheric chemistry, geography, weather, and climate. The complex reactions and conditions that lead to the formation of ozone and PM in the atmosphere can also result in the transport of pollutants over wide areas. The potential for criteria pollutant emissions to be transported over wide areas means that the emissions of ozone precursor pollutants, such as ROG and NO_X, from a single project does not necessarily translate directly into a specific concentration of ozone, or a specific level of health risk, in that area.

Although YSAQMD has not yet released guidance related to addressing the analysis of health risks due to criteria pollutant emissions, in December of 2019, SMAQMD released the *Draft Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District* (Draft Guidance) for the analysis of criteria emissions in areas within the District's jurisdiction.[71] A revision to the draft guidance was released in May and June of 2020 to address issues raised during the public comment period for the Draft Guidance.[72] The Draft Guidance represents SMAQMD's effort to develop a methodology that provides a consistent, reliable, and meaningful analysis in response to the Supreme Court's direction on correlating health impacts to a project's emissions. As part of SMAQMD's efforts to provide guidance on the issue, the district developed tools that could be used within a five-Air District Region, which includes Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties. Thus, while YSAQMD has not yet published guidance related to the analysis of health risks resulting from criteria air pollutants, YSAQMD staff did contribute to the SMAQMD Draft Guidance and SMAQMD's Draft Guidance is intended to aid the analysis of potential impacts of criteria pollutant emissions within the five-Air District Region. Given the regional nature of health impacts from criteria pollutants discussed

70 California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
71 Sacramento Metropolitan Air Quality Management District. *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District*. January 31, 2020.
72 Sacramento Metropolitan Air Quality Management District. *CEQA Guidance & Tools*. Available at http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools. Accessed June 2020.

above, relying on SMAQMD's guidance that is intended for use throughout region is a reasonable approach to analysis in this context.

The Draft Guidance recommends the use of SMAQMD's Strategic Area Project Health Effects Tool for large projects within the five-Air District Region. Based on SMAQMD's draft guidance and the estimated emissions for the existing and proposed mining activity, the operational emissions outputs prepared for the project were input into SMAQMD's Strategic Area Project Health Effects Tool.[73] SMAQMD's Strategic Area Project Health Effects Tool allows for health risks to be estimated for projects in proximity to "Strategic Area Locations," which are distributed throughout the SFNA. Strategic Area Locations were selected by air district personnel based both on historic development trends and prospective planning for likely areas of growth within the SFNA. In order for health risks to be calculated, a Strategic Area Location must be selected. SMAQMD's Strategic Area Project Health Effects Tool includes two Strategic Area Locations within YSAQMD's jurisdiction, one in Woodland and one in Vacaville. The Woodland Strategic Area Location is located on the eastern side of the City of Woodland. The Woodland location represents conditions most similar to the project site and has been used in this analysis.

SMAQMD's Strategic Area Project Health Effects Tool requires that the user input a project's emissions in units of lbs/day.[74] Table 4.3-17 below presents the existing health risks from operations of the combined Woodland and Esparto plants while Table 4.3-18 presents the health risks that would result from implementation of the proposed project. Health risks are presented over the five-Air District Region considered by SMAQMD.

Based on Table 4.3-17 and Table 4.3-18, implementation of the proposed project would increase potential health risks related to $PM_{2.5}$, but decrease health risks related to ozone, as compared to the existing project conditions. Overall, health risks resulting from existing or proposed operations would represent a small fraction of the background rate of health incidences due to cumulative development in region.

YSAQMD has adopted thresholds of significance for health effects from the emission of TACs in terms of increased cancer risk and health indices. However, neither YSAQMD, SMAQMD, nor any other air district in California has yet adopted thresholds of significance for the health risks presented in Table 4.3-17 and Table 4.3-18. Due to the absence of quantitative thresholds for health risks related to criteria pollutants, the health risks presented in Table 4.3-17 and Table 4.3-18 are provided primarily for informational purposes, rather than for the purpose of reaching a quantitative conclusion regarding the significance of the potential health risks. From a qualitative perspective, the project has been shown to result in a net reduction in ROG and NO_X emissions as compared to the environmental baseline. Thus, the project would not contribute to an increase in health risks related to ozone. Although the project would result in a net increase in emissions of PM_{10}, the level of emissions would be below the YSAQMD's thresholds of significance.

---

73 Sacramento Metropolitan Air Quality Management District. *Strategic Area Project Health Effects Tool*. January 28, 2020.

74 Ramboll. *Instructions for Sac Metro Air District Minor Project and Strategic Area Project Health Effects Screening Tools*. January 28, 2020.

Table 4.3-17
Draft SMAQMD Health Effects Tool: Existing Conditions

Health Endpoint	Age Range[1]	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3] (%)	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory $PM_{2.5}$				
Emergency Room Visits, Asthma	0-99	0.34	0.0018	18,419
Hospital Admissions, Asthma	0-64	0.021	0.0012	1,846
Hospital Admissions, All Respiratory	65-99	0.11	0.00056	19,644
Cardiovascular $PM_{2.5}$				
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65-99	0.057	0.00024	24,037
Acute Myocardial Infarction, Nonfatal	18-24	0.000028	0.00075	4
Acute Myocardial Infarction, Nonfatal	25-44	0.0024	0.00079	308
Acute Myocardial Infarction, Nonfatal	45-54	0.0058	0.00078	741
Acute Myocardial Infarction, Nonfatal	55-64	0.0097	0.00078	1,239
Acute Myocardial Infarction, Nonfatal	65-99	0.035	0.00070	5,052
Mortality PM2.5				
Mortality, All Cause	30-99	0.72	0.0016	44,766
Respiratory Ozone				
Hospital Admissions, All Respiratory	65-99	0.12	0.00060	19,644
Emergency Room Visits, Asthma	0-17	0.67	0.011	5,859
Emergency Room Visits, Asthma	18-99	1.1	0.0084	12,560
Mortality Ozone				
Mortality, Non-Accidental	0-99	0.076	0.00025	30,386

1 Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.
2 Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the 5-Air-District Region.
3 The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.
4 The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

Source: SMAQMD, Draft Strategic Area Project Health Effects Tool. Published June 2020.

Table 4.3-18
Draft SMAQMD Health Effects Tool: Project Conditions

Health Endpoint	Age Range[1]	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3] (%)	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory $PM_{2.5}$				
Emergency Room Visits, Asthma	0-99	0.48	0.0026	18,419
Hospital Admissions, Asthma	0-64	0.030	0.0016	1,846
Hospital Admissions, All Respiratory	65-99	0.15	0.00079	19,644
Cardiovascular $PM_{2.5}$				
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65-99	0.079	0.00033	24,037
Acute Myocardial Infarction, Nonfatal	18-24	0.000040	0.0011	4
Acute Myocardial Infarction, Nonfatal	25-44	0.0034	0.0011	308
Acute Myocardial Infarction, Nonfatal	45-54	0.0082	0.0011	741
Acute Myocardial Infarction, Nonfatal	55-64	0.014	0.0011	1,239
Acute Myocardial Infarction, Nonfatal	65-99	0.050	0.00098	5,052
Mortality PM2.5				
Mortality, All Cause	30-99	1.0	0.0023	44,766
Respiratory Ozone				
Hospital Admissions, All Respiratory	65-99	0.11	0.00058	19,644
Emergency Room Visits, Asthma	0-17	0.65	0.011	5,859
Emergency Room Visits, Asthma	18-99	1.0	0.0081	12,560
Mortality Ozone				
Mortality, Non-Accidental	0-99	0.073	0.00024	30,386

1 Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.
2 Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the Reduced Sacramento 4-km Modeling Domain and the 5-Air-District Region.
3 The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.
4 The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

Source: SMAQMD, Draft Strategic Area Project Health Effects Tool. Published June 2020.

Because net emissions resulting from project implementation would not exceed the YSAQMD's thresholds of significance, and a quantitative threshold for potential health risks related to criteria pollutants has not been adopted, the proposed project's incremental contribution to health risks from criteria pollutants would be less than significant.

Conclusion

Implementation of the proposed project would result in a net decrease in ozone precursor emissions, including ROG and NO_X, and a net increase in emissions of PM_{10}. The net decrease in ozone precursor emissions would aid in the attainment of CAAQS and NAAQS for the region, and the net increase in PM_{10} emissions would be below YSAQMD's thresholds of significance, indicating that the increase in PM_{10} emissions would not interfere with attainment of the CAAQS and NAAQS. The CCAP Update FEIR determined that implementation of the CCAP would result in a cumulatively considerable impact related to criteria pollutant emissions. However, because the net emissions occurring with project implementation would not exceed the YSAQMD's thresholds of significance, the project's incremental contribution to this impact would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

4.3-7 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The project's incremental contribution to this significant cumulative impact would be *cumulatively considerable*.

Implementation of the proposed project would result in short-term GHG emissions related to the relocation of Moore Canal and modification of Magnolia Canal, as well as long-term GHG operational emissions.

Short-Term GHG Emissions

Relocation of Moore Canal and modification of Magnolia Canal would involve the use of off-road equipment, which would likely be fossil-fuel powered, most likely through the use of diesel fuel. As such, relocation of the Moore Canal and modification of Magnolia Canal would result in short-term GHG emissions. Potential emissions resulting from relocation of Moore Canal and modification of Magnolia Canal were quantified using CalEEMod, and determined to equate to 11.84 $MTCO_2e$ for the entire relocation process. As noted previously, YSAQMD has not yet established or adopted any GHG thresholds, and is instead recommending analysis of GHGs consistent with SMAQMD's adopted thresholds of significance. For typical land use projects, SMAQMD recommends use of a construction threshold of 1,100 $MTCO_2e$/yr threshold of significance to determine whether construction would result in the generation of GHG emissions sufficient to result in a significant impact on the environment. Emissions from relocation of the Moore Canal and modification of Magnolia Canal would be well below SMAQMD's applicable threshold, and, as such, the relocation of Moore Canal and modification of Magnolia Canal would not be considered to result in

generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Long-Term GHG Emissions

Existing mining operations at the Esparto and Schwarzgruber sites, as well as processing activity at the Esparto and Woodland plants, currently result in emissions of GHGs from various sources that are primarily the result of combustion of fossil fuels and the consumption of electricity. Electricity is provided from solar power and the electrical grid. Emissions of GHGs occur on-site due to the use of off-road equipment, as well as off-site due to the off-site generation of energy and hauling of material. Operation of the proposed project would result in similar sources of GHG emissions.

According to CEQA Guidelines Section 15064.4(b), the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting should be considered when assessing the significance of impacts from GHG emissions on the environment. Therefore, in accordance with CEQA Guidelines Section 15064.4(b), to determine the significance of project-related GHG emissions, Table 4.3-19 presents the net GHG emissions that would result from implementation of the project as compared to GHG emissions occurring due to existing agricultural and mining activities. Due the absence of YSAQMD adopted thresholds of significance for GHG analysis, and considering the conservative approach to analysis recently applied in the CCAP Update FEIR and the Granite Esparto Mining and Reclamation Certified FEIR, any net increase in GHG emissions would be considered a significant impact.

Table 4.3-19
Net New Operational GHG Emissions

	GHG Emissions ($MTCO_2e$/yr)
Existing Emissions (Esparto, Woodland, and on-site Agricultural Activities)	11,601.01
Proposed Project	13,489.45
Net New Emissions	**1,887.84**
See Appendix D for all emissions calculations.	

As shown in Table 4.3-19, the proposed project would result in a net increase in GHG emissions of approximately 1,887.84 MTCO2e/yr. Upon completion of reclamation, the proposed 116.7 acres of reclaimed agricultural land, as well as recreation, parkway, and open space uses of dedicated lands, would generate GHG emissions. However, given that the total acreage of agricultural land would be smaller than what currently exists on-site, agriculture-related GHG emissions would be reduced relative to existing conditions. GHG emissions associated with future recreational, parkway, open space uses are also expected to be minimal because the Cache Creek Parkway will fulfill area demand for open water and passive recreation opportunities not available locally and currently filled elsewhere in the region, primarily outside the County.

Because emissions are anticipated to increase with implementation of the proposed project, the project would result in a *cumulatively considerable* contribution to the significant cumulative impact analyzed in the CCAP Update FEIR.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.3-7 would ensure that operational GHG emissions are reduced to levels that are equal to or less than existing emissions. By ensuring that implementation of the proposed project would not result in a net increase in GHG emissions, the incremental contribution of the project to the significant cumulative impact identified in the CCAP Update FEIR would be *less than cumulatively considerable*.

4.3-7 *Prior to initiation of mining activity at the Shifler mining site, the project applicant shall submit, for review and approval, a Greenhouse Gas Reduction Plan (GHGRP) to the Yolo County Department of Community Services. In order to demonstrate that implementation of the proposed project would not result in a net increase in GHG emissions from baseline conditions, the GHGRP shall demonstrate how operational emissions of the proposed project would be reduced by at least 1,887.84 $MTCO_2e$/yr. Strategies to achieve emissions reductions may include, but are not limited to, the following:*

- *Replacement of existing fossil fueled equipment with hybrid or electrically powered equipment;*
- *Installation of additional renewable energy systems on-site;*
- *Purchase of an increased proportion of electricity from renewable sources;*
- *Purchase carbon credits to offset Project annual emissions. Carbon offset credits shall be verified and registered with The Climate Registry, the Climate Action Reserve, or another source approved by CARB, YSAQMD, or Yolo County.*

If purchase of off-site mitigation credits is selected as a means of meeting the requirements of this mitigation measure, purchase of off-site mitigation credits shall be negotiated with the County and YSAQMD at the time that credits are sought. Off-site mitigation credits purchased as part of this mitigation measure shall be real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in Health and Safety Code section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols that are consistent with the criteria set forth in subdivision (a) of Section 95972 of Title 17 of the California Code of Regulations, and shall not allow the use of offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by Yolo County and/or the YSAQMD. The credits must be purchased through one of the following: (i) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; (ii) any registry approved by CARB to act as a registry under the California Cap and Trade program; or (iii) through the CAPCOA GHG Rx and the YSAQMD.

4.3-8 Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. The project's incremental contribution to this significant cumulative impact would be *cumulatively considerable*.

The emissions inventory prepared for the Yolo County CAP included existing emissions levels due to mining activity within the County. However, because Yolo County does not maintain control over the equipment used in mining activities, which is a principal source of mining-related emissions, the County's CAP did not include emissions from mining-related equipment in the emissions forecasts prepared as part of the County's CAP. Rather, the County's CAP acknowledges that state, federal, and YSAQMD regulations and permitting requirements would serve to reduce emissions from mining equipment into the future. In particular, the LCFS, the In-Use Off-Road Diesel Vehicle Regulation, and the statewide RPS requirements would serve to reduce emissions from mining activity associated with implementation of the proposed project. The LCFS would reduce emissions related to the consumption of diesel fuel on-site as well as the consumption of fuel in employee vehicles and haul trucks. The In-Use Off-Road Diesel Vehicle Regulations includes requirements for retrofitting and repowering low tier engines to achieve emissions reductions. Emissions reductions for higher tier engines can be achieved through increased fuel efficiency which reduces both criteria pollutant emissions as well as GHG emissions. Finally, the State's RPS requirements would ensure that any grid-supplied electricity provided to the project site would be composed of an increasingly greater proportion of renewably supplied electricity.

Although emissions related to mining equipment were not included in the County's CAP, emissions associated with transportation-related activity were included in other sectors analyzed under the County's CAP. With regard to the proposed project, transportation-related emissions would include employee commutes to and from the project site as well as material hauling through the use of on-road haul trucks.

Considering the approach to emissions projections and reductions taken in the County's CAP, several aspects of the County's CAP relate to the proposed project or can be supported by implementation of the project. In particular, consolidation of the existing mining activities at the Esparto Plant to the Woodland Plant would allow for the use of more efficient equipment currently located at the Esparto Plant at the Woodland Plant. The increased efficiency achieved by consolidation of the existing operations to the Woodland Plant has been demonstrated through anticipated reductions in ozone precursors, as presented in Table 4.3-10.

Although the emissions modeling presented in this chapter represents operations of the proposed project at the maximum permitted capacity, a project-specific analysis of the VMT considered multiple operational scenarios. As discussed further in the VMT analysis, if production levels under the proposed project equal the existing production levels at the Esparto and Woodland Plant (which would represent a continuation of the existing level of demand for aggregate material, rather than an increase in aggregate demand to the maximum permitted levels as analyzed in this section of the EIR), the consolidation of aggregate mining at the Woodland Plant would result in an overall

reduction in VMT.[75] Reducing VMT would directly result in reduced GHG emissions through a decrease in consumption of fossil fuels. Thus, despite the increase in production assumed for this analysis, the GHG emissions per unit of aggregate produced would decrease with implementation of the project, as the production and distribution process would become more efficient as a result of the project. Given that the CCAP Update FEIR determined that the CCAP is consistent with the County's CAP, and the proposed project is consistent with the CCAP, the proposed project would likewise not conflict with the County's CAP.[76]

Yolo County's CAP identifies increased energy efficiency within the industrial sector as a supporting means of achieving the CAP's reduction goals.[77] Furthermore, the County's CAP seeks to reduce embodied energy content of construction materials as a means of reducing lifecycle emissions related to development within the County. Continued provision of a local source for aggregate material, as would be provided with implementation of the project, would support the County's goal of using local materials, and could support the County in any effort to establish requirements for locally made or extracted materials in new developments. Thus, while emissions related to mining and material extraction are assumed to be addressed through state regulations and not expressly included in the County's CAP projections, the proposed project would support measures within the County's CAP by providing a more efficient, local source of aggregate materials.

Based on the above, the proposed project would be generally consistent with the applicable portions of the County's CAP. Nevertheless, additional steps could be taken to ensure that the proposed project does not inhibit the emissions reductions goals established in the County's CAP, and/or contributes to further reductions.

For instance, while the project would result in reduced GHG emissions per unit of aggregate processed, the project would continue to result in the generation of GHG emissions related to transportation. Commenters on the NOP released for this EIR noted that transportation-related emissions could be reduced through the following means: provision of a Class I bicycle route to the site, installation of electric vehicle charging stations, provision of electric power to any truck rest areas, and support of renewable energy systems through on-site installations of renewable energy systems or purchase of renewably sources electricity from utility providers. The foregoing comments are addressed in further detail below.

Between 30 and 50 employees would work at the project site and Woodland Plant with implementation of the project. Considering the location of the project site, few if any future employees would be anticipated to commute by bicycle to the project site even if a Class I bicycle route was provided. As shown in the project-specific VMT analysis, the VMT per unit of material processed would decrease with implementation of the proposed project; consequently, the project would not result in an impact related to VMT or transportation-related GHG that would necessitate the construction of

75 Fehr & Peers. *Shifler Mining Project Vehicle Miles Traveled Impact Evaluation*. February 4, 2020.

76 Yolo County. *Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH# 2017052069* [pg 4.7-14]. December 2019.

77 Yolo County. *Yolo County Climate Action Plan: A Strategy for Smart Growth Implementation, Greenhouse Gas Reduction, and Adaptation to Global Climate Change* [pg. 61]. March 15, 2011.

additional bicycle infrastructure. Also, the *County of Yolo Bicycle Transportation Plan* does not identify the need for a Class I bicycle path to the project site.[78]

Although the use of bicycles to commute to the project site is speculative, future employees could use electric passenger vehicles to access the project site. The proposed project does not currently include the installation of electric vehicle charging infrastructure at either the Woodland Plant or the Shifler mining site. Installation of electric vehicle charging infrastructure would support the use of electric vehicles by employees or visitors to the project site and would contribute to reductions in transportation-related GHG emissions within the County associated with the project.

Currently, provision of on-site electrical power for haul trucks is only needed where long-haul trucks are used. Long-haul trucks typically include accessories that require either use of an on-board diesel generator or hook-ups to supplemental electrical power. The existing mining and processing operations as well as the proposed project would primarily serve the aggregate material needs of nearby project sites. Consequently, long-haul trucks would be atypical at the project site and would not be anticipated to be used in the future. Due to the lack of use of long-haul trucks, installation of infrastructure to supply electrical power to long-haul trucks would be an inefficient use of resources. Although electrical power for long-haul trucks may not be needed at the project site, the CARB has recently adopted regulations requiring that truck manufacturers transition from diesel trucks and vans to electric zero-emissions trucks beginning in 2024, with all new trucks sold in California being zero-emission vehicles by the year 2045.[79] Given the anticipated lifespan of the proposed project, trucks accessing the Woodland Plant in the future may require electric vehicle charging infrastructure.

An existing photovoltaic system exists at the Woodland Plant, and would be retained with implementation of the proposed project. Installation of additional renewable energy systems has been investigated by the project applicant but was determined to be infeasible or impractical. Because the Woodland Plant is currently served by a renewable energy system, further mitigation is not considered necessary with regard to on-site electricity generation.

Conclusion

Because the project, as currently proposed, does not include electric vehicle charging infrastructure, the project would not reduce transportation-related emissions to the maximum extent possible, and may be considered to conflict with the County's CAP, which is the applicable plan adopted for the purpose of reducing the emissions of GHGs. Thus, the project would be considered to result in a ***cumulatively considerable*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would ensure that the proposed project would comply with the County's CAP to the fullest extent possible. In order to ensure compliance with the County's CAP, the County may wish to condition the

[78] Yolo County. *Bicycle Transportation Plan, Bicycle Routes and Priorities* [Figure 4]. March 2013.

[79] California Air Resources Board. *California takes bold step to reduce truck pollution*. Available at: https://ww2.arb.ca.gov/news/california-takes-bold-step-reduce-truck-pollution. Accessed September 2020.

project to require appropriate infrastructure to provide charging capacity for at least one employee, and, at the discretion of the Yolo County Department of Community Services at the time that the plan is submitted for review and approval, may also include infrastructure to provide for charging of electric haul trucks or machinery. Thus, following implementation of the mitigation measure, and similar to the conclusions of the CCAP Update FEIR, the proposed project would result in a *less than cumulatively considerable* impact.

4.3-8 Within the first three years of initiation of mining activity at the Shifler Project site, the project applicant shall submit to the County an Electric Vehicle Parking Plan for the Woodland Plant, that shall specify the number and location of electric vehicle charging installations.

4.3-9 Cause a significant environmental impact due to a conflict with applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating impacts to air quality, GHG emissions, and energy. This impact would be *less than significant*.

Table 4.3-20 below provides an analysis of the proposed project's consistency with applicable policies and regulations that have been adopted for the purpose of avoiding or mitigating environmental effects related to air quality, GHG emissions, and energy.

As shown in the table, the proposed project is anticipated to be generally consistent with applicable standards related to air quality, GHG, and energy. Thus, a ***less-than-significant impact*** would occur.

Table 4.3-20
Consistency with Applicable Standards

Policy / Regulation	Consistency Discussion
Yolo County General Plan	
Policy CI-4.4 Support and encourage low emission or non-polluting forms of transportation.	Mitigation Measure 4.3-8 requires that the project applicant develop and implement an electric vehicle charging program. The electric vehicle charging program is intended to provide infrastructure necessary to support the use of electric vehicles for employee or hauling uses. Thus, with implementation of Mitigation Measure 4.3-8, the project would comply with this measure.
Goal ED-5.4 Economic Sustainability. Support sustainable economic development. Encourage local industry to adapt to the expected effects of climate change and minimize greenhouse gases and other emissions.	See Impact 4.3-1. The proposed project would result in net reductions in ROG and NO_X emissions. Although the project would be anticipated to increase emissions of PM_{10}, compliance with Dust Control requirements in the Mining Ordinance would reduce these emissions to the greatest feasible extent. See also Impact 4.3-7. The project would provide a continued local source of building aggregates, which would be considered to support the County's CAP. Therefore, the project would be consistent with this policy.

(Continued on next page)

Policy ED-5.4 Encourage businesses to exceed clean air standards, whenever possible.	See Impact 4.3-1. The proposed project would result in net reductions in ROG and NO_X emissions. Although the project would be anticipated to increase emissions of PM_{10}, compliance with Dust Control requirements in the Mining Ordinance would reduce these emissions to the greatest feasible extent.
Policy CO-6.6 Encourage implementation of YSAQMD Best Management Practices, such as those listed below, to reduce emissions and control dust during construction activities: • Water all active construction areas at least twice daily. • Haul trucks shall maintain at least two feet of freeboard. • Cover all trucks hauling soil, sand, and other loose materials. • Apply non-toxic binders (e.g. latex acrylic copolymer) to exposed areas after cut-and-fill operations and hydroseed area. • Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days). • Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land. • Plant vegetative ground cover in disturbed areas as soon as possible. • Cover inactive storage piles • Sweep streets if visible soil material is carried out from the construction site • Treat accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips or mulch. • Treat accesses to a distance of 100 feet from the paved road with a 6-inch layer of gravel.	Section 10-4.414 of the OCSMO requires mining and reclamation projects to implement dust control measures. Furthermore, it is recommended that the County include, as a Condition of Approval for the proposed project, the requirement that all relevant YSAQMD best management practices for dust suppression be implemented during relocation of Moore Canal and modification of Magnolia Canal. Therefore, the proposed project would be consistent with this policy.
Goal CO-8 Climate Change. Reduce greenhouse gas emissions and plan for adaptation to the future consequences of global climate change.	Mitigation Measure 4.3-7 requires that GHG emissions reductions strategies be implemented sufficient to ensure that implementation of the proposed project would not result in a net increase in emissions. Accordingly, direct operations of the project would not result in increases to GHG emissions that could conflict with this goal. The purpose of the project is to provide a local source of aggregate materials. Aggregate materials are used in a wide variety of applications, and provision of a local source of such materials reduces the need for aggregate materials to be hauled into the area from other more distant locations. Thus, the project supports the provision of aggregate material with a low level of imbedded GHG emissions (i.e., aggregate material provided by the project would

(Continued on next page)

	result in a relatively lesser amount of GHG emissions per unit of material as compared to material hauled in from a more distant source). Accordingly, the project would be consistent with this goal.
Policy CO-8.2 Use the development review process to achieve measurable reductions in greenhouse gas emissions.	Mitigation Measure 4.3-7 requires the project to achieve a total reduction in GHG emissions of 1,887.84 $MTCO_2e$/yr, as compared to estimated unmitigated project operations. The inclusion of Mitigation Measure 4.3-7 within this EIR would result in a measurable reduction in GHG emissions, thus fulfilling this policy.
Policy CO-8.4 Encourage all businesses to take the following actions, where feasible: replace high mileage fleet vehicles with hybrid and/or alternative fuel vehicles; increase the energy efficiency of facilities; transition toward the use of renewable energy instead of non-renewable energy sources; adopt purchasing practices that promote emissions reductions and reusable materials; and increase recycling.	The Woodland Plant currently features an installation of renewable energy systems to provide solar energy to existing operations. The fleet of off-road equipment operated within the project site is subject to statewide regulations such as the In-Use Off-Road Diesel Vehicle Regulation, which required off-road equipment fleets to meet stringent emissions standards. Accordingly, the proposed project would comply with this policy.
Policy CO-8.5 Promote GHG emission reductions by supporting carbon efficient farming methods (e.g. methane capture systems, no-till farming, crop rotation, cover cropping); installation of renewable energy technologies; protection of grasslands, open space, oak woodlands, riparian forest and farmlands from conversion to other uses; and development of energy-efficient structures.	The Woodland Plant includes on an existing solar system that generates power for a portion of the plant's electricity demand. The solar system would remain in use with implementation of the proposed project. Reclamation activities would allow for agricultural activities to resume on 117 acres of the project site, following the cessation of mining activities. The remaining portions of the site would be reclaimed as an open water lake, which would include riparian woodland along the fringes/shoreline. Thus, the project would comply with this policy.
Off-Channel Mining Plan	
None applicable.	
Off-Channel Surface Mining Ordinance	
Sec. 10-4.407 Wherever practical and economically feasible, portable or movable conveyor systems shall be used to transport raw materials and overburden.	On-site conveyor systems would be electrically powered. Thus, the project would comply with this requirement.
Sec. 10-4.414. Dust Control. Unless superseded by newer more effective standards, the following measures shall be implemented in order to control fugitive dust: (a) All stockpiled soils shall be enclosed, covered, or have sufficient moisture to control fugitive dust at all times. Inactive soil stockpiles should be vegetated or adequately watered to create an erosion-resistant outer crust.	Existing operations at the Woodland Plant comply with the applicable dust control measures, and implementation of the proposed project would involve continued implementation of all such measures. Furthermore, it is recommended that the County include, as a Condition of Approval for the proposed project, the requirement that all relevant YSAQMD best management practices for dust suppression be implemented during relocation of Moore Canal and modification of Magnolia Canal. Therefore, the proposed project would be consistent with this regulation.

(Continued on next page)

(b) During operating hours, all disturbed soil and unpaved roads shall be adequately watered to keep soil moist. (c) All disturbed but inactive portions of the site shall either be seeded or watered until vegetation is grown or shall be stabilized using methods such as chemical soil binders, jute netting, or other Yolo-Solano Air Quality Management District approved methods.	
Section 10-4.415 All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained to minimize the leakage of oils and fuel. No vehicles or equipment shall be left idling for a period of longer than is required by law, recommended by the Air District, or ten (10) minutes, whichever is shorter.	Off-road equipment used during implementation of the proposed project would be required to comply with the In-Use Off-Road Diesel Vehicle Regulation, which includes restrictions on idling time as well as standards for reducing emissions from off-road equipment. One means of reducing emissions is to keep equipment tuned according to the manufacturer's specification. Furthermore, the proposed mining and reclamation activities would comply with OCSMO standards related to fueling and maintenance of equipment in the vicinity of the proposed mining pit. Thus, the project would comply with this measure.
Section 10-4.429 All off-channel surface mining operations shall comply with the following setbacks: (a) New processing plants and material stockpiles shall be located a minimum of one-thousand (1,000) feet from public rights-of-way, public recreation areas, and/or off-site residences, unless alternate measures to reduce potential noise, dust, and aesthetic impacts are developed and implemented.	Based on submitted plans for the project, all material stockpiles would be located in compliance with the requirements of this section (see Figure 3-10, Proposed Stockpile Locations, in Chapter 3, of this EIR).
Section 10-4.433 Topsoil, subsoil, and subgrade materials in stockpiles shall not exceed forty (40) feet in height, with slopes no steeper than 2:1 (horizontal:vertical). Stockpiles, other than aggregate stockpiles, shall be seeded with a native vegetative cover to prevent erosion and leaching. The use of topsoil for purposes other than reclamation shall not be allowed without the prior approval of the Director. Slopes on stockpiled soils shall be graded to 2:1 (horizontal:vertical) for long-term storage to prevent use by bank swallows. At no time during the active breeding season (May 1 through July 31) shall slopes on stockpiles exceed a slope of 1:1, even on a temporary basis. Stockpiles shall be graded to a minimum 1:1 slope at the end of	The applicant must comply with these requirements as a standard condition of approval. Compliance with this section would reduce the potential for windborne erosion of stockpiled material, which would be considered a source of PM emissions.

(Continued on next page)

each work day where stockpiles have been disturbed during the active breeding season.	