Draft Initial Study and Mitigated Negative Declaration

Aries Fairfield Bioprocessing Project

Prepared for:

Fairfield-Suisun Sewer District
1010 Chadbourne Road
Fairfield, CA 94534

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COMMITMENT & INTEGRITY DRIVE RESULTS

Fairfield-Suisun Sewer District
February 2022

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Acronym List

AB	Assembly Bill
AFB	Air Force Base
BAAQMD	Bay Area Air Quality Management District
Caltrans	California Department of Transportation
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAP	Clean Air Plan
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CTP	Comprehensive Transportation Plan
CWA	Clean Water Act
dBA	Decibel, a-weighted
EV	electric vehicle
GHG	greenhouse gas
District	Fairfield-Suisun Sewer District
DTSC	(California) Department of Toxic Substances Control
FEMA	Federal Emergency Management Agency
FGD	flue gas desulfurization
FSSD	Fairfield-Suisun Sewer District
H_2O	water
HAP	hazardous air pollutant
I-80	Interstate 80
I-680	Interstate 680
IS/MND	Initial Study/Mitigated Negative Declaration
KOH	potassium hydroxide
LED	light-emitting diode
Lystek	Lystek International Limited
MGD	million gallons per day
MT	metric ton

MT/yr	metric tons per year
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NaOH	sodium hydroxide
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NIC	Northwest Information Center at Sonoma State University
OMRC	Organic Materials Recovery Center
ORC	organic Rankine cycle
PFAS	per- and polyfluoroalkyl substances
PG&E	Pacific Gas and Electric Company
PM	particulate matter
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SFBAAB	San Francisco Bay Area Air Basin
SMSHCP	Solano Multi-Species Habitat Conservation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
STA	Solano Transportation Authority
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	volatile organic compound
WWTP	wastewater treatment plant

1. INTRODUCTION

1.1 Purpose of this Document

The Fairfield-Suisun Sewer District (FSSD or District) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) to provide the public and Responsible and Trustee Agencies reviewing the proposed Project with information about the potential impacts on the environment. This IS/MND was prepared in compliance with Sections 15070 to 15075 of the California Environmental Quality Act (CEQA) Guidelines of 1970 (as amended), and California Administrative Code, Title 14, Division 6, Chapter 3. In accordance with Section 15070, a Mitigated Negative Declaration (MND) shall be prepared if the initial study shows that either:

- There is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment; or
- If the initial study identifies potentially significant effects, but revisions to the project would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur.

FSSD as the CEQA lead agency has determined that an IS/MND should be prepared for the proposed Project.

1.2 CEQA Process

In accordance with Section 15073 of the CEQA Guidelines, this document is being circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the report. FSSD has circulated the IS/MND to the State Clearinghouse for distribution and a 30-day public review (February 2 to March 4, 2022). FSSD will evaluate comments received on the draft IS/MND and will prepare responses to address any substantial evidence that the proposed Project could have a significant impact on the environment. If there is no such substantial evidence, FSSD as lead agency will adopt the MND in compliance with CEQA.

Written comments should be submitted to FSSD by 5:00 PM, March 4, 2022. Submit comments to:

Talyon Sortor
General Manager
Fairfield-Suisun Sewer District
1010 Chadbourne Road
Fairfield, CA 94534

This IS/MND and any comments received during the public review process will be considered by the FSSD Board of Directors at a public hearing. Consistent with AB 361 regarding public meetings during the COVID-19 Emergency, Directors may attend the meeting telephonically or by teleconference and the meeting may be accessible telephonically or otherwise electronically to members of the public.

Fairfield-Suisun Sewer District
Monday March 28, 2022
6:00 p.m.
1010 Chadbourne Road
Fairfield, CA 94534

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2. PROJECT DESCRIPTION

2.1 Project Overview

FSSD is proposing to lease land at the District's wastewater treatment plant (WWTP) to Aries Fairfield LLC to allow construction and operation of a biomass processing facility that would assist the District in the processing and reduction of biomass (wet biosolids and wood waste) to produce renewable thermal energy, renewable electricity, and carbon products (herein referred to as the Project).

2.2 Purpose and Need for Project

2.2.1 District Background

FSSD is a special district, a legally constituted governmental entity established to fulfill a specific function – in the District's case, wastewater and stormwater management in a multi-jurisdictional environment. An act of the California Legislature in 1951 created the District to perform wastewater collection and treatment (including biosolids handling and reuse/disposal) and water recycling services for all properties within the boundaries of Fairfield, Suisun City, and Travis Air Force Base. The District also operates a drainage maintenance utility that performs specified stormwater management services in conjunction with the cities in its service area. Establishment of the District has enabled well-coordinated management of local wastewater and stormwater.

FSSD serves more than 140,000 residential, commercial and industrial customers in central Solano County, about 40 miles northeast of San Francisco (see Figure 2-1). Households, retail businesses, major food and beverage producers, light industries, manufacturers, and vital military operations depend upon the District's service. The District has been able to accommodate the growth and evolving needs of the region by remaining flexible, dedicated to customer service, and mindful of the trust placed in them to protect public health and the natural environment. The current WWTP replaced two older plants in 1977 and underwent major renovations and expansions in 1982, 1987, 1989, and 2010 to keep pace with population growth, economic expansion of the region, and technological advancements. The WWTP draws from a collection system that consists of 12 wastewater pump stations and a 70-mile network of sewers.

2.2.2 Project Location

The approximately 7-acre Project site is located on the southeast side of the WWTP property, as shown on Figure 2-2. The WWTP, located at 1010 Chadbourne Road, Fairfield, CA 94534, occupies about 150 acres [1] and is located in the southern portion of the City of Fairfield in Township 04 North Range 02 West (Figure 2-1). The site is located south of the Interstate 80 (I-80) interchange with California State Highway 12. The site is adjacent to open space to the east and south, a sod farm to the west, and an industrial park to the north.

[1] The District also owns an additional 380 acres mostly to the east and the north of the fenced wastewater treatment plant boundaries.

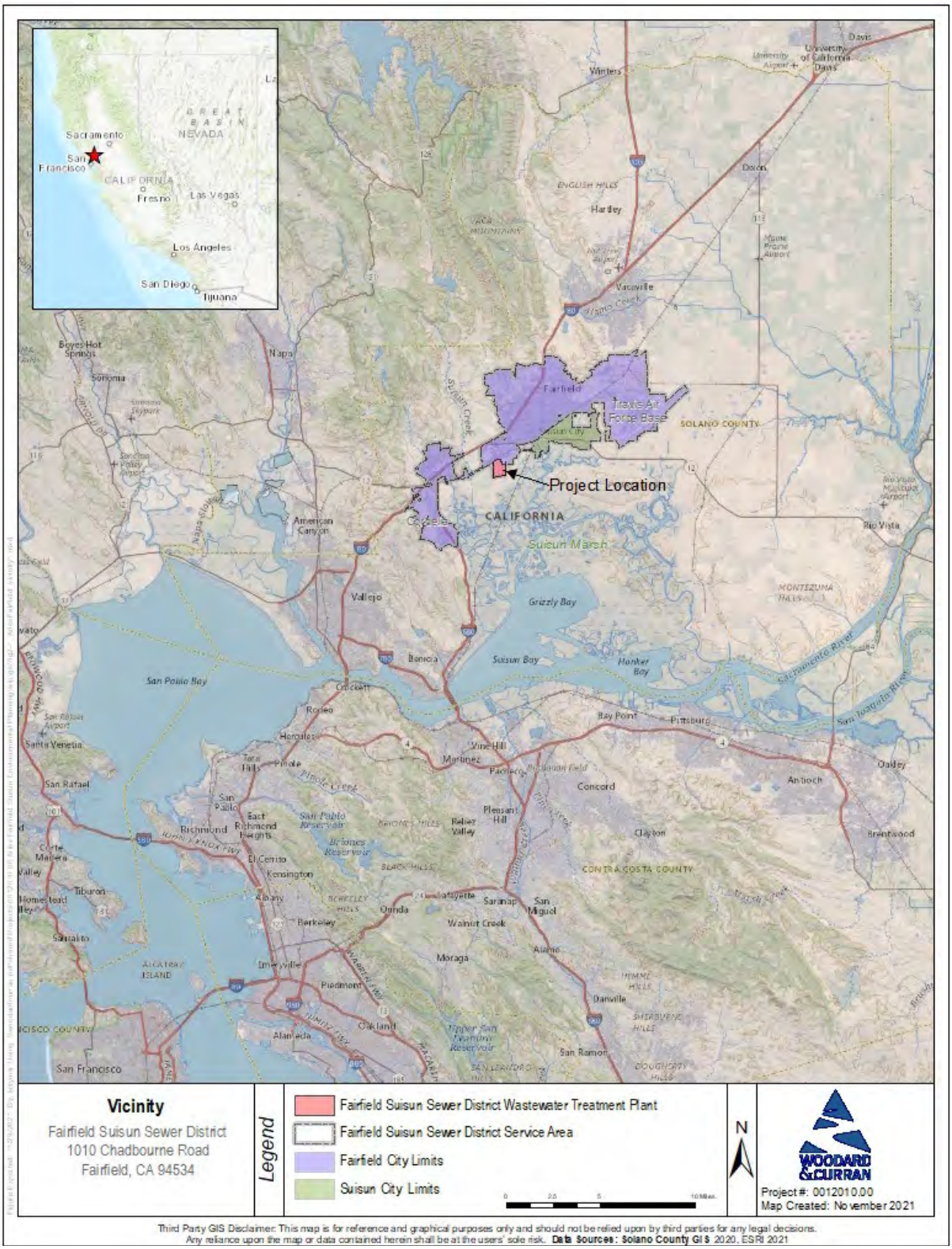


Figure 2-1: Project Vicinity

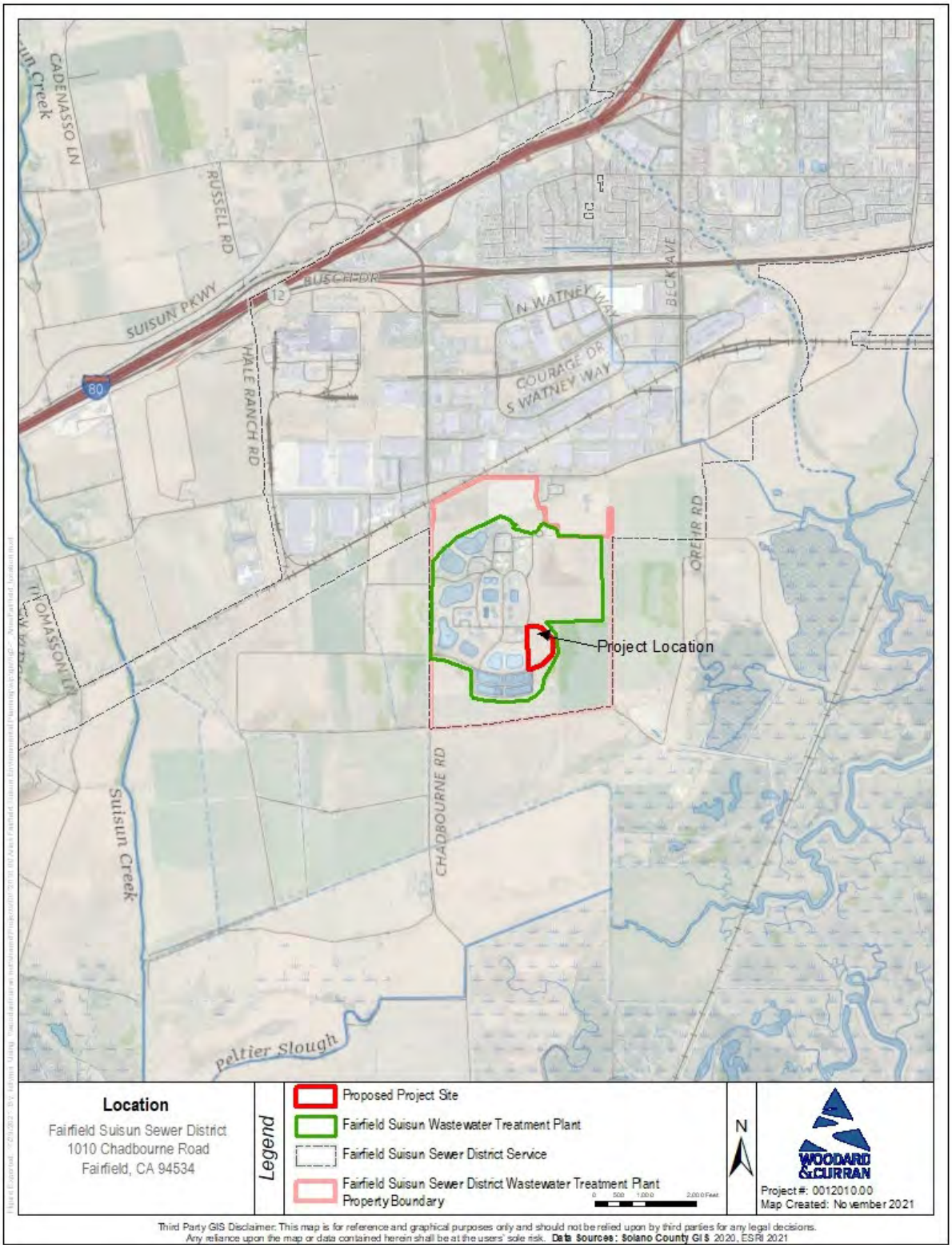


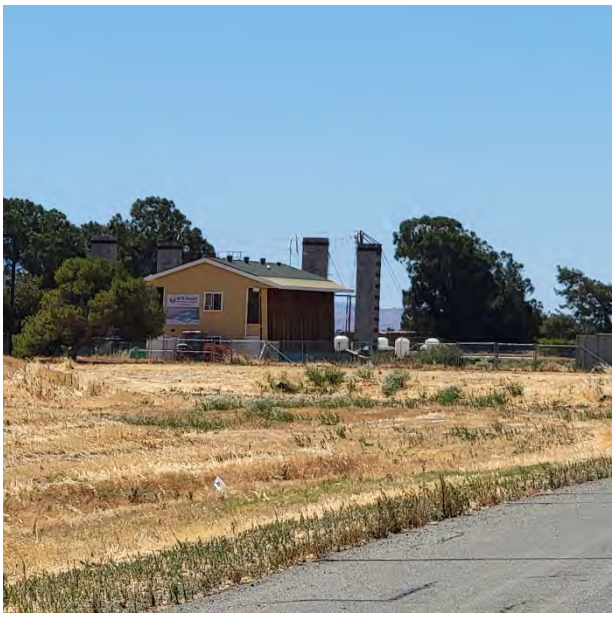
Figure 2-2: Location of Fairfield-Suisun Sewer District WWTP

2.2.3 Existing Facilities

The WWTP currently has a dry weather flow capacity of 23.7 million gallons per day (MGD). Treatment processes at the WWTP include screening and grit removal, primary clarification, optional fixed film roughing filters and intermediate clarification, biological activated sludge, secondary clarification, temporary storage of secondary effluent in flow balancing reservoirs, dual-media filtration, and disinfection using ultraviolet light. Methane gas produced as a natural byproduct of the digestion process is used to produce electrical energy, which supplies a portion of the power requirements for the WWTP.

Photograph 2-1 Dewatering Building and Organic Materials Recovery Center

Biosolids[2] are concentrated using gravity belt thickeners, anaerobically digested, and biosolids are either mechanically dewatered or dewatered in open-air solar drying beds or lagoons, in case the mechanical dewatering process is out of service. The dewatering building also houses an Organic Materials Recovery Center (OMRC), operated by Lystek International Limited (Lystek), which processes these dewatered biosolids. The dewatered biosolids are processed to produce a pathogen-free and nutrient-rich fertilizer product that is appropriate for land application or enhanced anaerobic digester efficiency. The fertilizer product is marketed to area farmers. Currently, Lystek processes all the biosolids from the WWTP; however, if chemicals of emerging concern (at concentrations of concern) were to be identified within the biosolids, alternative biosolid disposal methods would be required. The District's current alternative biosolids disposal is at the Potrero Hills Landfill as alternative daily cover. The presence of chemicals of emerging concern, landfill capacity issues and organic material landfill diversion regulations can adversely affect the current District biosolid management approaches; hence the value of the biomass processing facility being added within the WWTP property has become apparent.



Photograph 2-2 Existing Algae Facility on Project Site

Adjacent to the OMRC, the Project site was previously an algae growing operation, but that lease expired and will not be renewed. The algae facility consists of a lab building, some concrete pillar-based wood frame structures, and some above ground tanks that formerly housed water and algae. An aerial image of the existing site and facilities is shown on Figure 2-3.

[2] Biosolids are the solids separated from wastewater during the wastewater treatment process. Those solids are then treated physically and chemically to produce a semisolid, nutrient-rich product known as biosolids.

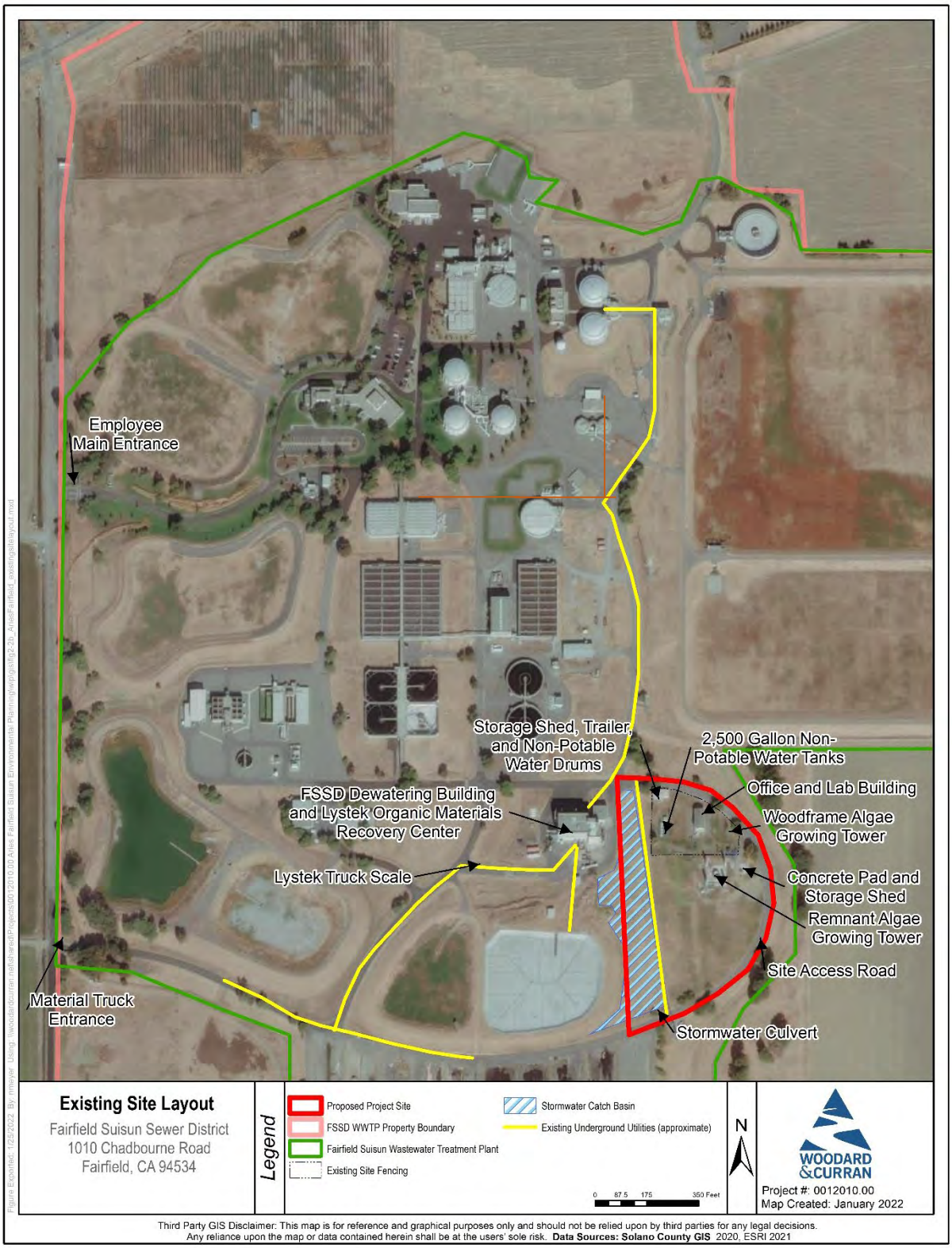


Figure 2-3: Existing Site Layout

2.2.4 Need for Project

In the San Francisco Bay region and surrounding northern California area, significant quantities of biosolids and woody biomass are produced by wastewater treatment plants and other commercial, industrial, municipal, forestry and agricultural operations. The majority of this material is sent to landfills or applied to land seasonally with some or no additional treatment. Recent legislation has mandated reduction in the amount of organic waste that is disposed of in landfills, requiring these facilities to evaluate and implement alternative methods of managing biosolids and woody biomass materials. This need is especially pronounced in the winter when biosolids cannot practically be applied to land.

Additionally, management of biosolids has received heightened focus due to the potential for aggregation of chemicals of emerging concern in biosolids. These chemicals include Per- and Polyfluoroalkyl Substances[3] (PFAS) and other microplastics, and pharmaceuticals. The associated potential for regulation poses a challenge for wastewater treatment and biosolids management. While PFAS has not yet been designated as a hazardous substance, and effluent limitations and pretreatment standards have not yet been adopted, on-going study and future regulation of PFAS and other chemicals of emerging concern in the waste stream are expected to require biosolids managers to modify their management practices to adapt to more stringent requirements.

2.2.5 Purpose of Project

The District's purpose in implementing the Project, through leasing a portion of its property to and collaborating with Aries Fairfield LLC, who would build, own, and operate the biomass processing facility, is to sustainably improve biomass management options and expand renewable energy alternatives available to the WWTP. Specific project objectives are as follows:

- Provide alternative biosolids management options to treat for potential chemicals of emerging concern and meet landfill diversion targets. Proactively prepare the District for upcoming and potential regulatory changes and requirements that affect biosolids management.
- Generate rental revenue for the District.
- Meet net neutral or net positive energy goals by providing an alternative renewable source of energy and heat generation that may help offset District operating costs and meet sustainability goals.
- Support alternative effluent disposal options and compliance with future nutrient discharge limits by establishing additional onsite use of recycled water.
- Meet local, State of California, and Bay Area Air Quality Management District air quality, climate change, and sustainability goals by supporting actions that reduce carbon emissions and help sequester carbon.

[3] PFAS are a large group of human-made substances that do not occur naturally in the environment and are resistant to breakdown into benign compounds under ambient conditions. PFAS are persistent in the environment, can accumulate within the human body over time, and are toxic at relatively low concentrations. Exposure to unsafe levels of PFAS may result in adverse health effects including developmental effects to fetuses during pregnancy, cancer, liver effects, immune effects, thyroid effects, and other effects (such as cholesterol changes).

2.3 Proposed Project

The District proposes to execute its lease agreement with Aries Fairfield LLC, who proposes the construction and operation of a biomass processing facility located on approximately 2.5 acres of the 7-acre leased site at the WWTP. The Project would be able to process and convert a variety of biomass streams (e.g., biosolids from the District or other wastewater treatment plants in the area and woody biomass from local industrial or municipal producers/aggregators), diverting these biomass streams from landfills, and converting them into usable renewable thermal energy, renewable electrical energy, and carbon products (that have beneficial uses in building, manufacturing, industrial, and agricultural material inputs and also can sequester carbon).

Photograph 2-3 Biosolids Fluidized Bed Gasification Facility in Linden New Jersey

The Project would involve two gasification technologies using high temperatures in a thermochemical process to convert the biomass into renewable producer gas and carbon products (known as biochar and Bio-Fly-Ash™). The renewable producer gas would then be used for the production of renewable heat and power to serve applications within the facility, with excess being sold to the District to serve its needs, to other District WWTP tenants to serve their needs, or to power vehicles used to transport the biomass to the site and carbon products from the site. The carbon products would be sold for a variety of uses ranging from concrete/asphalt additives, bioproduct manufacturing inputs, filtration media, or soil amendments. (Note: These carbon products, having come from biomass, represent captured carbon from the atmospheric cycle that is terrestrially sequestered when not used in a combustion application, creating an environmentally beneficial negative carbon impact associated with the process.). The Project layout is shown on Figure 2-4. The Project would generally be paved with structures averaging approximately 55 feet tall and a maximum height of the stack (similar to the existing windmills on site) at approximately 125 feet. Existing and potential utility connections are shown on Figure 2-5.

Photograph 2-4 Woody Biomass Downdraft Gasifier Facility in Lebanon, Tennessee

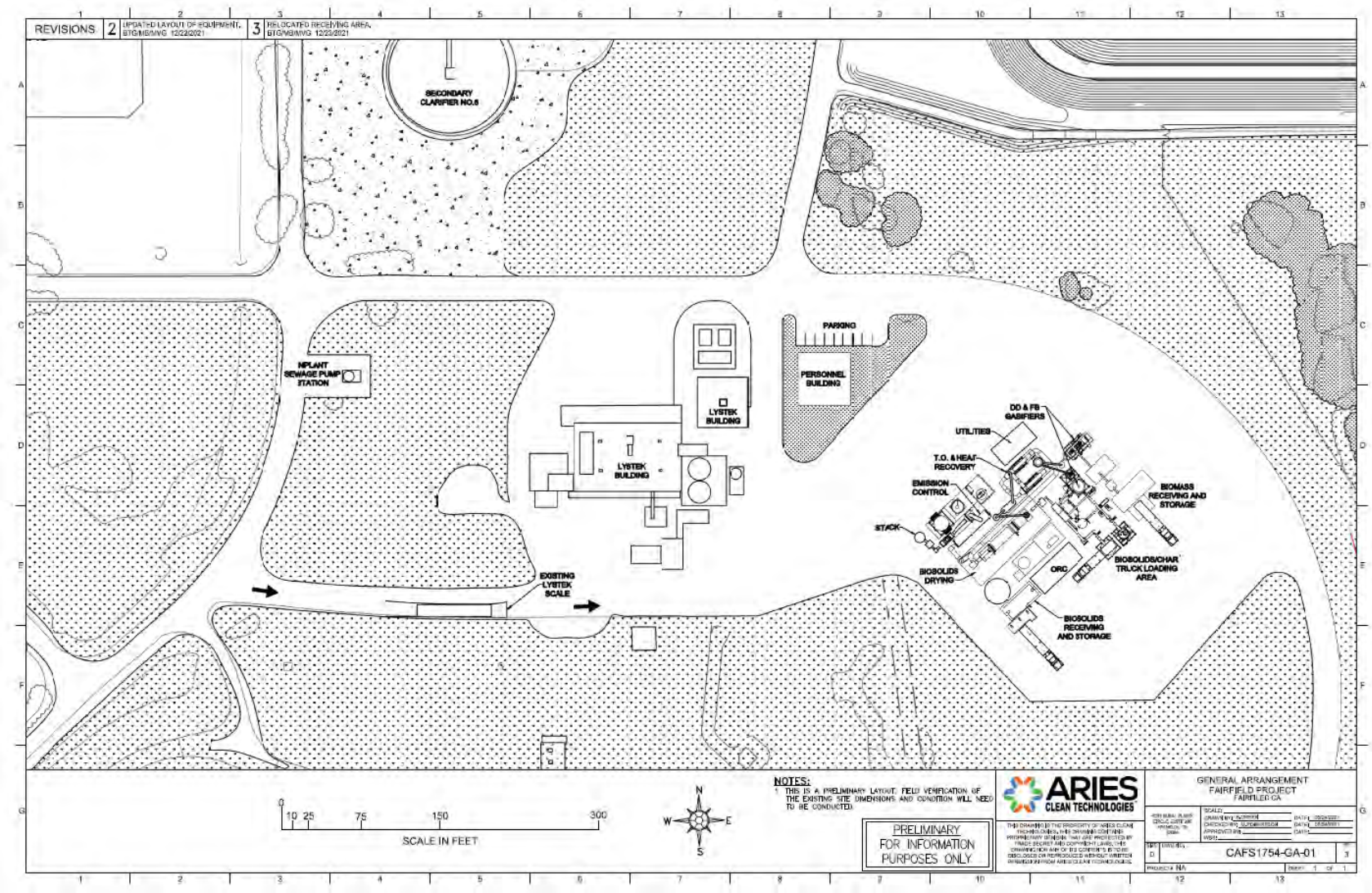


Figure 2-4: Project Site Plan

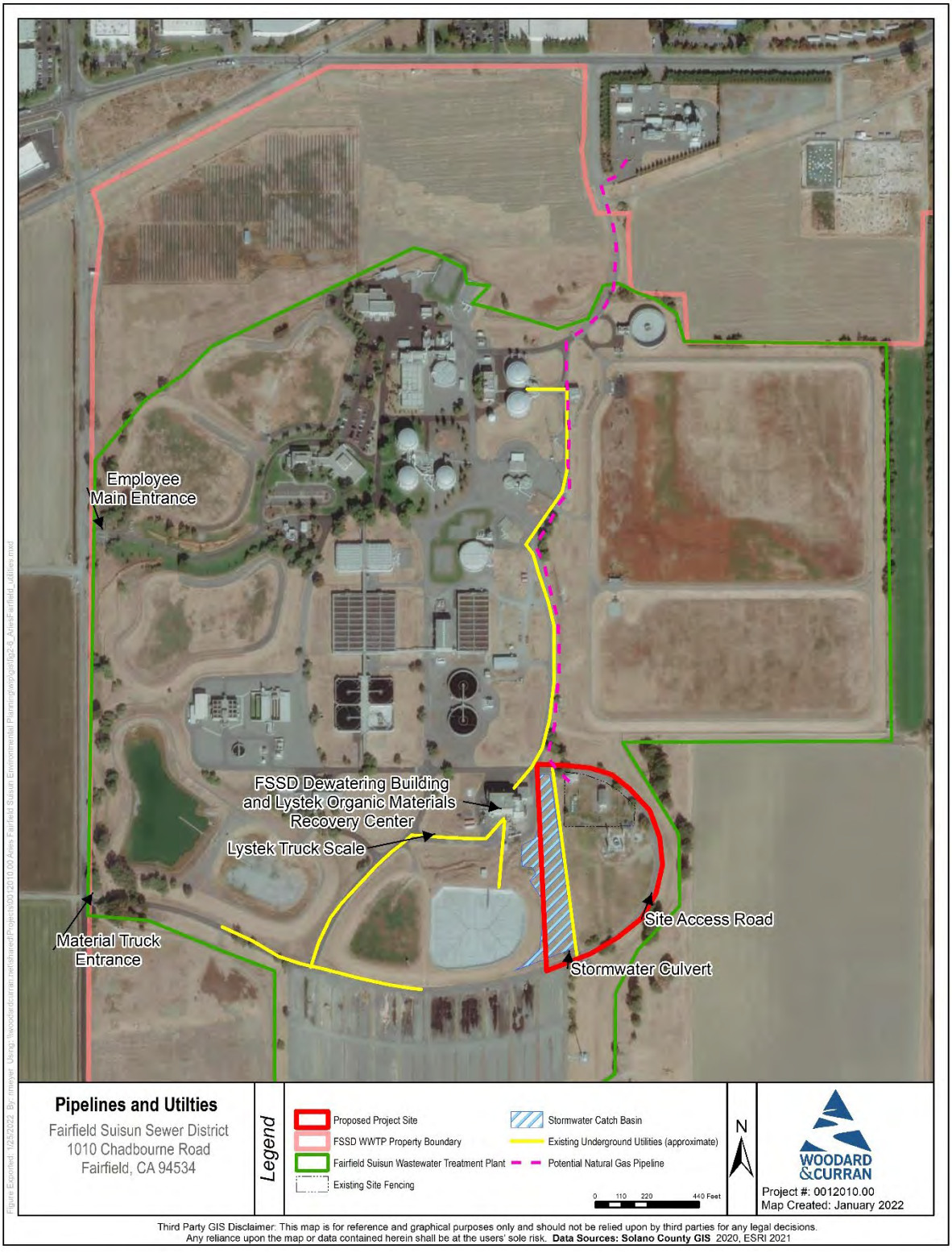


Figure 2-5: Pipelines, Utility Connections, Access, and Ancillary Features

2.3.1 Project System Operations

When the biomass feedstock is received at the Project site it would be conveyed, stored, and processed through the gasification system. A summary of Project inputs and outputs is provided in Table 2-1. The sections following the table describes that process and the associated equipment required to operate the facility. Figure 2-6 provides a simple illustration of the process and how the components and systems interrelate.

Table 2-1: Project Operations Summary

Operation	Total Amount
Biosolid Feedstock	165 tons per day wet biosolids (15% solids)
Woody Biomass Feedstock	65 tons per day wood chips (85% solids)
Gross Thermal Output	26 Metric Million British Thermal Units per hour
Thermal Output to Dryer	13 Metric Million British Thermal Units per hour
Thermal Output to ORC	10.5 Metric Million British Thermal Units per hour
Thermal Output to Lystek	2.5 Metric Million British Thermal Units per hour
Power Generation (Gross)	775 kilowatts
Power Generation (Net)	Up to 250 kilowatts
Fluidized Bed Gasifier Carbon Production	8 tons per day
Downdraft Gasifier Carbon Production	5 tons per day

The following is an overview of the key process components described in greater detail in the subsequent sections.

- Feedstocks and Materials Receiving: includes truck receiving bays with receiving and storage bins that receive and initially store woody biomass and biosolids until they are transferred to the respective gasification process. Biosolids would also be transferred via pipeline from FSSD's dewatering building.
- Fluidized Bed Gasifier: includes a wet biosolid dryer, a dried biosolid fluidized bed gasifier, associated cyclone for pre-oxidation particulate removal, and a carbon product recovery unit.
- Downdraft Gasifier: includes the woody biomass downdraft gasifier with the associated cyclone for pre-oxidation particulate removal, and carbon product recovery unit.
- Thermal Oxidizer: includes a producer gas oxidation system that ensures a complete oxygen reaction to minimize the formation of criteria air pollutants within the exhaust gas and to produce heat for recovery.
- Exhaust Gas, Heat Recovery, Cooling Water, and Power Generation: includes a merged exhaust gas and heat recovery system that supports the biosolid dryer, a power generation system that uses the organic Rankine cycle (ORC)[4], and an economizer[5].
- Emission Controls: includes the cyclone process, the thermal oxidation process, and an air filtration system. Dust control filters would remove fugitive emissions associated with material handling.

[4] An ORC generator operates within the closed loop system similarly to steam power generation systems but uses organic fluids instead of water as working fluid, which enables the system to convert lower temperature heat sources into power.
[5] An economizer is a mechanical device that captures waste heat and uses it to preheat fluids before they enter the boiler of the ORC generator.

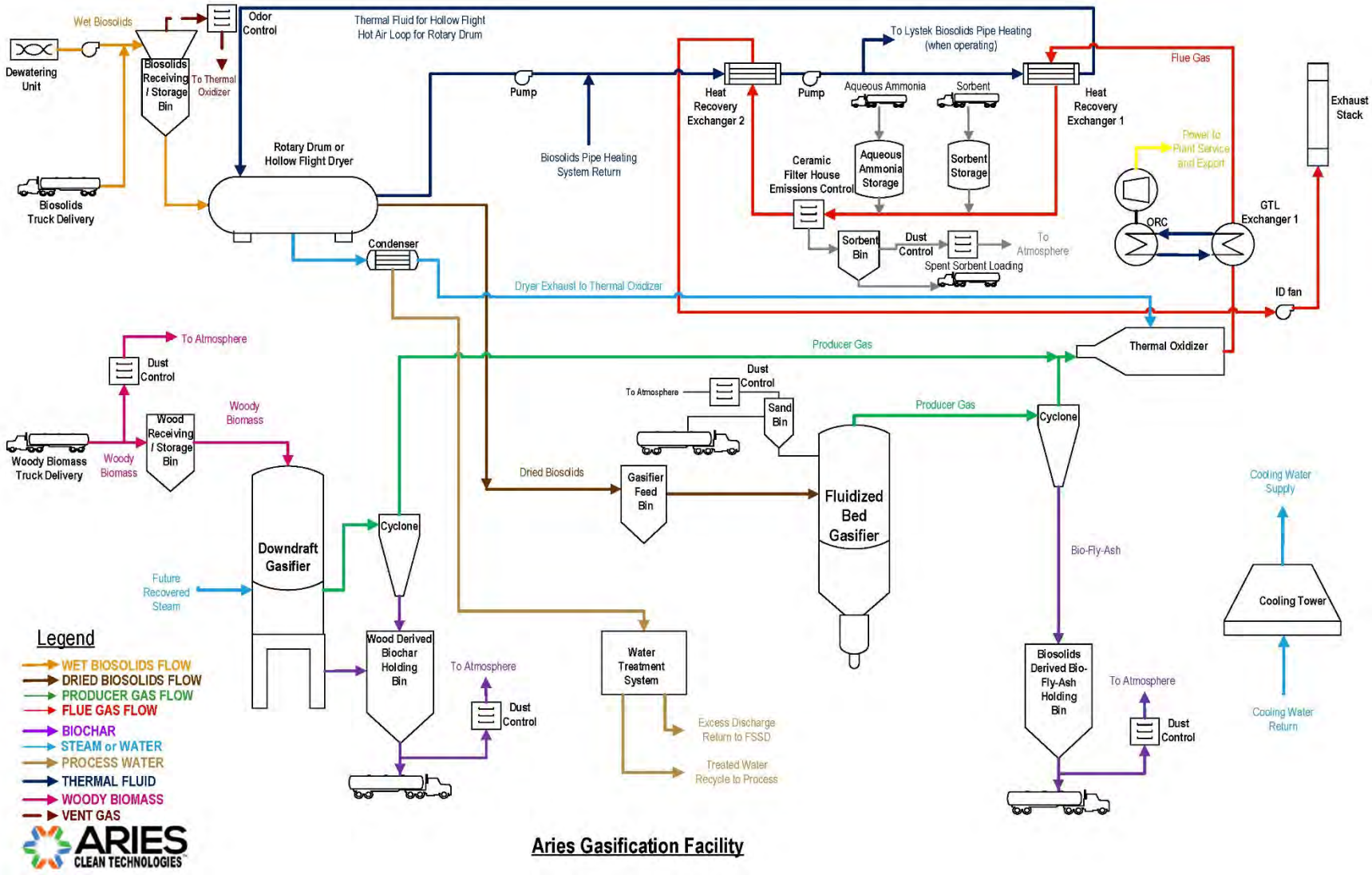


Figure 2-6: Process Flow Diagram

2.3.1.1 Feedstocks and Biosolid Materials Receiving Process

The Project would receive a maximum 165 tons per day of wet biosolids and 65 tons per day of woody biomass. Wet biosolids would be composed of 15 percent solids and 85 percent liquid. Biosolids would arrive as "cake" via truck/self-unloading trailer from nearby wastewater treatment plants and deposited into a receiving vessel or would be pumped over from the FSSD dewatering building and directed to wet biosolid feedstock storage. Woody biomass with an 85 percent solids composition would be received as pre-sorted and sized wood chips about ¼ inch to 4 inches in size via truck/self-unloading trailer, deposited into a receiving vessel and directed to woody biomass storage. Feedstocks are expected to be sourced from the San Francisco Bay Area, within a 200-mile radius of the Project. Table 22- provides details about the composition of proposed feedstock.

Table 2-2: Proposed Biomass Feedstocks

Feedstocks for Downdraft Gasifier	Feedstocks for Fluidized Bed Gasifier

• Agricultural/Forestry/Urban Wood Material
  o Branches/Vines
  o Stumps
  o Whole Trees
  o Construction Debris - (untreated board waste)
  o Wood Processing Debris – (untreated mill or board processing wood waste)
• Non-recyclable paper waste
• Other Agricultural Material
  o Cannabis and Hemp Waste
  o Pistachio, Walnut and Almond Shells and Hulls
  o Other Plant Matter
• Biosolids or other small amounts of organic matter
• Limited amounts of plastics or petroleum products
	• Class A Wastewater Treatment Plant Biosolids
	• Class B Wastewater Treatment Plant Biosolids
	• Digestates

The receiving bins would be located in an enclosed receiving area adjacent to the storage bins, with dust collection systems. The trucks would back into one of two driveways, (one for biosolids and one for woodchips) as directed, to offload the materials into newly constructed receiving areas from which biosolids and biomass would then be conveyed to two (2) bins nominally sized for two days' worth of volume input storage . The receiving bins would be located below grade while the storage bins and all associated equipment (e.g., pumps, live bottoms) would be above grade. The receiving bins would need to be at least 12 feet wide to accommodate the trucks.

2.3.1.2 Fluidized Bed Gasification Process

As shown on Figure 2-6, the Project would receive wet biosolids, dry them to produce Class A dried biosolids and recycle them into producer gas and carbon products by heating the biosolids in an oxygen starved vessel (fluidized bed gasifier). Gasification is not incineration; it is a process that uses high temperatures in an oxygen deprived environment, below the oxygen level required for combustion, to decompose biomass into producer gas. That producer gas can then be used to make chemicals, fuels or in this circumstance to generate renewable co-heat and power. The process also converts the biomass into dried carbon products that have multiple potential uses (described below). In the Project's wet biosolids process, the producer gas is cleaned of particulate matter utilizing a cyclone (a cylindrical or conical container that uses high speed rotating airflow to separate particulate matter from gas), producing the carbon product. The producer gas is then sent to the thermal oxidizer.

2.3.1.3 Downdraft Gasification Process

The fluidized bed gasifier is complemented by inclusion of a downdraft gasifier that can be used to meet the energy demands of the fluidized bed gasifier. Figure 2-7: also illustrates the downdraft gasification process and how it works with the fluidized bed gasifier for net energy consumption. Figure 2-7: is provided as an example profile of a downdraft gasifier. The downdraft gasifier receives woody biomass from the variety of feedstocks listed in Section 2.3.1.1 and converts them into producer gas and carbon products by heating the woody biomass in an oxygen starved vessel (downdraft gasifier) similar to the operation of the fluidized bed gasifier. The producer gas is cleaned of particulate matter in the cyclone, recovering the material as a beneficial use carbon product. The producer gas is then sent to the thermal oxidizer. Carbon products are also recovered from the downdraft gasifier grate. The carbon products would be sold commercially for multiple uses (described below).

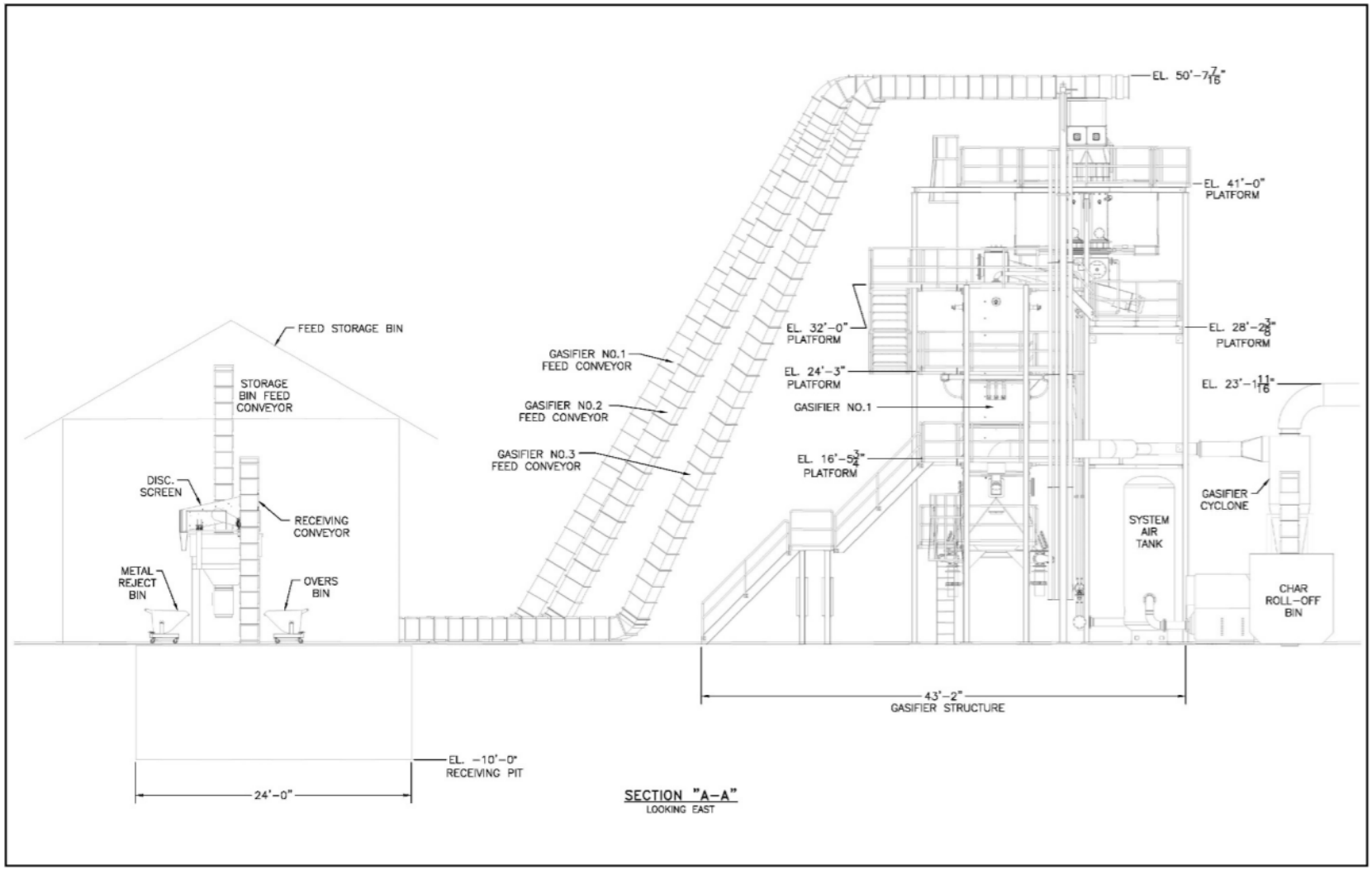
2.3.1.4 Thermal Oxidizer

The thermal oxidizer serves two key functions in the facility processes. The first is generation of renewable thermal energy as hot exhaust gas that is sent to the heat recovery process (described under the next heading). The second, is as an air pollution control device, as the thermal oxidizer creates optimal conversion of producer gases, which destroys criteria pollutants and other hazardous air pollutants (HAPs) from the producer gas air stream, reducing the potential for pollutants in the exhaust gases (described under the Pollution Control heading).

In the thermal oxidizer, the producer gases from the gasifiers are merged together and heated to high temperatures and oxygen is added, causing the producer gas to undergo optimal combustion and oxidation, which produces renewable thermal energy in the form of hot exhaust gas. The thermal oxidizer operation allows proper mixing of the gases and sufficient residence time and temperature to destroy VOCs, CO, and odor causing contaminants, breaking the producer gas down into an innocuous exhaust gas byproduct composed of carbon dioxide (CO_2) and water vapor (H_2O) with a trace amount of criteria pollutants remaining. The thermal oxidizer is equipped with a dual burner with producer and natural gas injection ports. The thermal oxidizer can operate with either producer gas or natural gas and can co-fire both gases but would operate in non-emergency conditions on producer gas generated from the gasification process once the unit is started and the facility is operating. Figure 2-8 is provided as an example profile of a thermal oxidizer.

The heat from the oxidized gases (exhaust gas) is used in the heat recovery exchangers to heat air for the biosolids dryers while also functioning to cool the exhaust gas before it enters the emissions control unit. The exhaust gases are all contained and exhausted to the stack assisted by an induction fan to ensure exhaust flow. The feed to the thermal oxidizer also includes the purge streams from the dryer and the vents from the biosolids handling equipment.

Air volume into the thermal oxidizer is controlled through the oxidizer fan system. An oxygen sensor is used to ensure that sufficient air is being added in the thermal oxidizer to facilitate control to complete combustion. Temperature sensors are mounted at the end of the thermal oxidizer to control the volume of air required to maintain a pre-set exit temperature of 1,800 degrees Fahrenheit.



Note: For illustrative purposes only, the Project would only have one downdraft gasifier rather than the three shown and may call for some additional design deviations.

Figure 2-7: Example Profile of a Downdraft Gasification Process

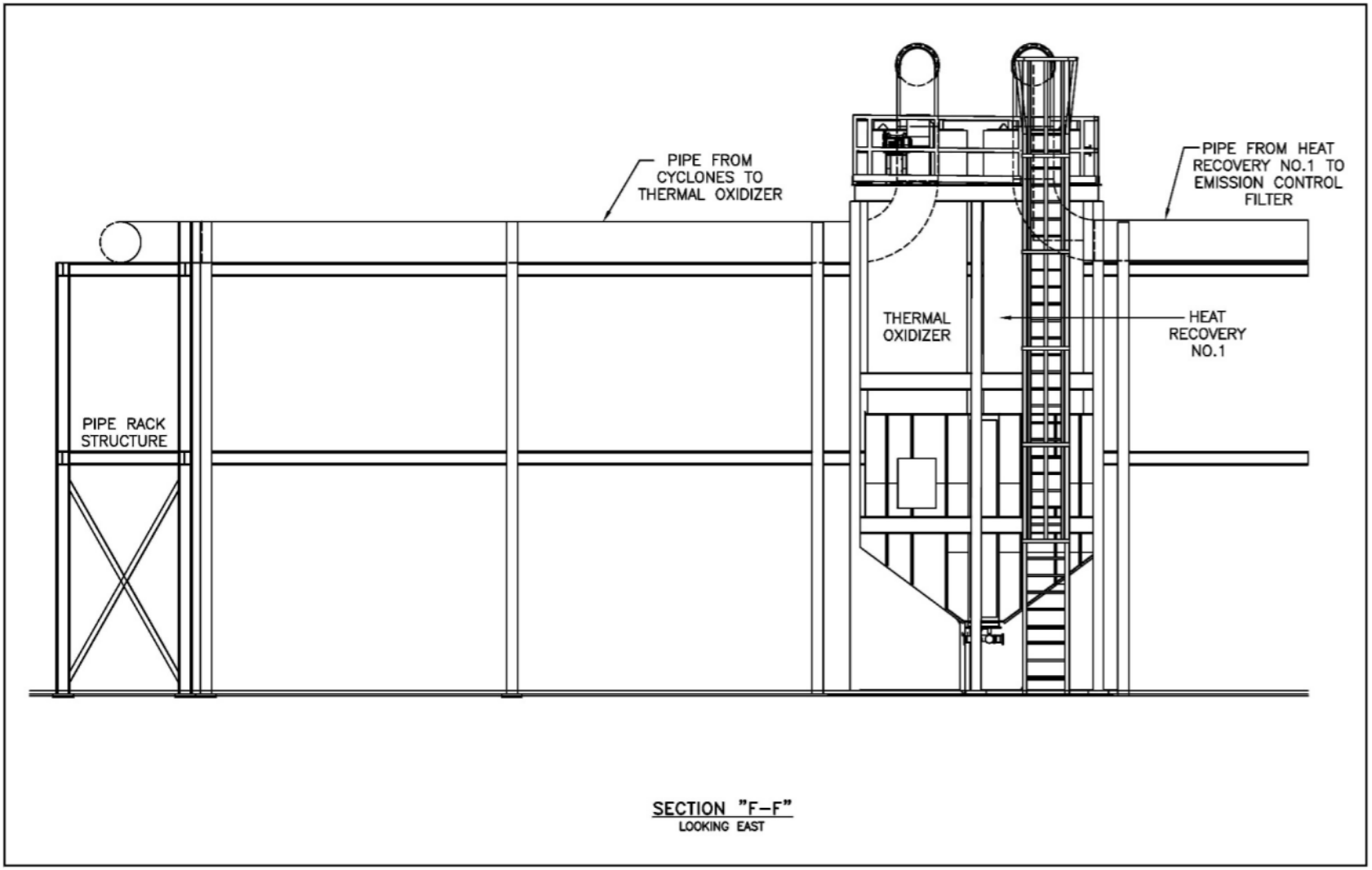


Figure 2-8: Example Profile View of Thermal Oxidizer and Heat Recovery Process

2.3.1.5 Exhaust Gas, Heat Recovery, and Power Generation

The hot exhaust gas from the thermal oxidizer is directed through the Project's thermal recovery system and pollution control system. The exhaust gas from the thermal oxidizer (at a temperature of 1,800 degrees Fahrenheit) is directed to a gas to liquid heat exchanger which facilitates the recovery of a portion of that heat to serve the ORC power generation unit (described further in the next paragraph). Next the exhaust gas is routed to a second gas to liquid exchanger process to recover more of the heat to serve the biosolid dryer's thermal load, dropping the exhaust gas temperature to the optimal temperature to go through the emission control unit (700 degrees Fahrenheit). Following pollution control the exhaust gas is direct to another gas to liquid heat exchanger, which would serve to meet Lystek's thermal needs by pre-heating the thermal liquid going to the exchanger serving the dryer.

The ORC generator works by using an organic working fluid in a closed and sealed system. Heat transferred from the exhaust gas, via the heating oil, would be used to vaporize the organic working fluid, which would drive a turbine connected to a generator. The organic working fluid leaving the turbine would be condensed in a water-cooled condenser with cooling water from the cooling tower and pumped back to the closed loop. The ORC generator would produce 775 kilowatts of electricity. The electricity generated from the ORC would be used internally to power the Project with any excess up to 250 kilowatts either being sold over the fence to FSSD behind its utility meter for its use or its other tenants' use or used to fuel EV trucks.

2.3.1.6 Emissions Controls

The Project facility includes a three-tiered emissions control system that controls point source emissions from the exhaust stack. The Project facility also includes fugitive dust emissions treatment and controls that provide filtration and abatement from truck loading and unloading.

1. Cyclone - Pre-oxidation particulate removal of producer gas occurs in cyclones, removing particulates from the producer gas before it enters the thermal oxidizer. Cyclones are separation devices (dry scrubbers) that use the principle of inertia to remove particulate matter from flue gases. Cyclone separators are one of many air pollution control devices known as precleaners because they generally remove larger pieces of particulate matter.
2. Thermal Oxidation – the thermal oxidizer completely oxidizes the producer gas to minimize the formation of criteria air pollutants and produce hot exhaust gas for heat recovery, as described in Section 2.3.1.4.
3. Filter System – the Tri-Mer UltraCat Catalytic Filter Systems removes particulate matter, sulfur dioxide (SO_2), hydrogen chloride (HCl), mercury and heavy metals at high temperatures up to 1,650°F, in one single system. Simultaneously, the ceramic catalyst filters destroy nitrogen oxide compounds (NOx), cement organic hazardous air pollutants (HAPs), and dioxins. This hot gas filtration system is completely dry, with no water consumption. Disposal of the dry collected waste is straightforward. Large gas flow volumes can also be accommodated. UltraCat also has an add-on component called a SorbSaver to eliminate burdens associated with dry sorbent injection (sorbent is the material that captures pollutants). This dry sorbent injection is widely used to reduce a range of pollutants, particularly SO_2 and NOx, and is controlled based on meeting emission limits at the outlet. The sorbent injection process is accomplished by injecting the sorbents (hydrated lime sorbent and aqueous ammonia) into the producer gas stream as it flows into the ceramic filter. NOx emissions are further reduced with some control of the gas temperatures and the use of vanadium pentoxide as a catalyst embedded in the ceramic filters. Figure 2-9: through Figure 2-11: illustrate the sorbent and filtration process.

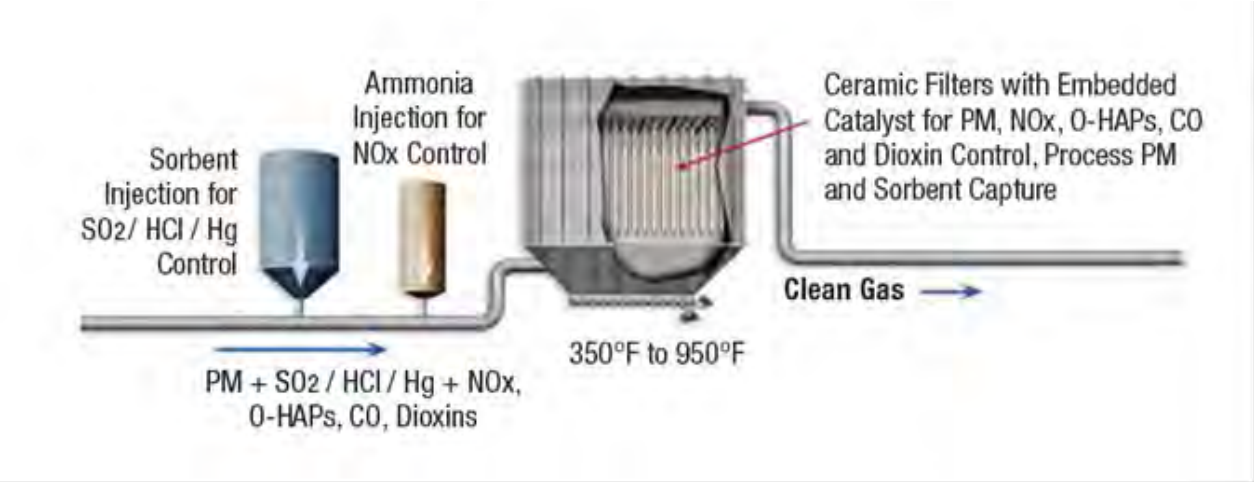


Figure 2-9: Process Flow Tri-Mer Emissions Control System

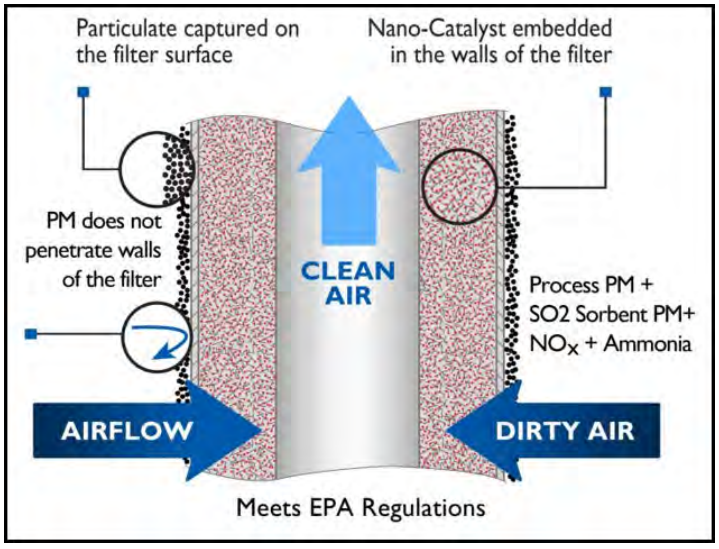


Figure 2-10: UltraCat Ceramic Filter

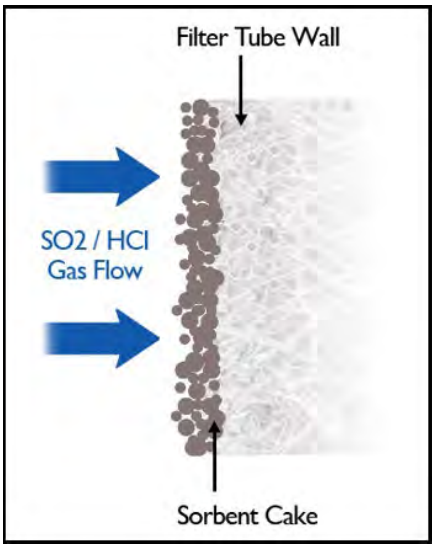


Figure 2-11: Filter Sorbent Cake

2.3.1.7 Process Exports

As described in the Process discussions for each key system, the Project facility processes a large variety of materials and converts them into carbon product, exhaust gas, and energy. It is anticipated the Project would produce enough thermal energy to meet the dryer's heat load and generate enough electricity to meet the Project's electrical needs. The Project would also interconnect a 2.5 MMBtu/hr closed loop heat transfer media pipeline and liquid to liquid heat exchanger with the WWTP's digestate pipeline system to indirectly pre-heat digestate on its way to Lystek with recovered heat from the Project's exhaust. When ambient conditions allow, the Project may also be able to produce up to 250 kilowatts of export power to be sent to FSSD or other FSSD WWTP tenants or to be used for electric vehicle (EV) fueling at FSSD's electric charging stations. The Project would also produce carbon products, which would be sold to a variety of commercial, industrial, agricultural, or other uses as an alternative to activated carbon or used as a building material, concrete additive, or soil additive; one such use may include gas or liquid filtration media that can serve the District's WWTP anaerobic digestion, water recycling, and discharge water purification operations. Process Exports in quantities shown in Table 2-1 would be used on site, sold on site to FSSD or its other tenants, or sold to the commercial, industrial, municipal, or other types of operations that may use carbon based products like activated carbon type products or building material and supply. It is estimated that sales and associated deliveries of products would, at least initially, be accomplished within 200 miles of the Project site.

2.3.2 Operation and Maintenance

The Project is anticipated to start commissioning in January 2024 and would operate continuously. Project Staff would operate the Project to ensure safety and to prevent occurrence of nuisance conditions. In addition to the key process equipment, the Project would include three key areas for operational control: a maintenance and utility building, a control building, and a motor control center. Ancillary systems and structures associated with the process and operations of the facility would include:

- Biomass receiving bins and storage area;
- Instrument and Project Air System;
- Firewater and fire protection system;
- Potable water system;
- Process water system and tank;
- Cooling Towers;
- Condenser
- Condensate water treatment
- Safety showers;
- Nitrogen generator and liquid Nitrogen storage area;
- Class A biosolids storage and loadout silo;
- Carbon product loadout silos;
- Natural gas metering and supply;
- Storm water drainage;
- Utility connections;
- Wastewater collection and reuse area;
- Process area drains and sump(s); and
- Fuel and chemical receiving, unloading, and storage areas.

The following subsections describe the required operations and maintenance for the Project facility.

2.3.2.1 Project Operating Hours

The Project would be designed to operate 24 hours per day, 365 days per year. The operations of the Project would be engineered to provide baseload electricity to service the Project and, if available, to service FSSD or EV vehicle fleet charging operations. Truck deliveries would be primarily scheduled for daytimes on weekdays.

2.3.2.2 Employees

The Project would staff approximately 12 employees with one operator per shift, a plant manager, one laborer per shift, mechanic/maintenance tech, and administrator, and truck drivers and forklift operators. Daily commutes to the facility would be divided into three 24-hour shifts, offsetting peak hour commute times. Employees would access the facility at the existing Main WWTP entrance along the west side of the site on Chadbourne Road.

2.3.2.3 Vehicle Limits

The Project would accept up to 10 trucks per day for the delivery of feedstock materials and up to 2 trucks per day for the removal of carbon products from the Project to be sold off site. The WWTP Facility has a truck scale that would be used for Project operations. Other operational vehicle trips would be related to operations and maintenance deliveries such as chemicals and equipment replacement parts. The 12 employees would have daily commute trips estimated to be an average of 30 miles roundtrip. Periodic additional trips associated with occasional employees for miscellaneous business activities and laboratory services would also be required.

Photograph 2-5 Existing Truck Scale

2.3.2.4 Equipment

Operation of the Project would require biomass and carbon product handling equipment, as well as equipment for the gasification process and production of electricity. Hoppers used for biomass storage would also be installed.

2.3.2.5 Lighting

The Project facility would operate 24 hours per day. The tallest light fixtures in the facility would be placed on the stack and each of the gasifier structures, at an elevation of approximately 50 feet from grade. Outdoor lighting would consist of floodlights to illuminate large operating areas relatively free of shadow-casting obstructions, which may be supported by process equipment structures or light poles. Light-emitting diode (LED) lighting would be provided for outdoor lighting design. Battery-powered emergency lighting would be provided within the process units, at landings and stairwells, and for safe egress in case of a unit power failure. Outdoor lighting controls would include photocells and local hand switches.

Lighting would be consistent with FSSD lighting standards and designed and installed to minimize nighttime light pollution while maintaining safe operations of the facility. Where feasible warm shade bulb colors and downward directed lighting would be implemented.

2.3.2.6 Operational Water Use

Potable water would be supplied from the existing FSSD potable water connection. Raw water would be provided by FSSD effluent water. This water would be delivered via pipeline to the site and may require storage in an on-site raw water tank. The raw water tank would maintain the minimum water inventory required for emergency firewater requirements in addition to water required for daily use. The facility would utilize air-blown downdraft gasifier and air-blown fluidized bed gasification technology, which do not require steam injection into the gasifiers; an ORC to generate power, which would not require the water supply and treatment systems required for more conventional steam cycle power plants; and would employ an evaporative cooling water system with water filtration to process cooling tower blowdown to water make-up requirements. These design features would significantly reduce the raw water demand for the facility. In addition, the facility design would allow for recovery and reuse of suitable quality (clean) wastewater, after testing, filtration, and minimal treatment to the raw water tank, to further reduce the water demand for the bioenergy facility. Worst-case water demand for the facility, not accounting for any wastewater reuse, is provided in Table 2-3.

Table 2-3: Estimated Water Demand

Water Usage	Gallons Per Day
Safety Shower Testing (Average) [1]	25
Firewater Pump Testing (Average) [2]	250
Hose Stations [3]	375
Other [4]	130

1. Four safety showers (40 GPM) tested once per week, for 1 minute each.
2. 2,000-GPM firewater pump tested once per year for 45 minutes.
3. 25-GPM hose usage for 15 minutes per day.
4. Includes potable water usage (25 GPD/person x 5 persons), 2 GPD water tank evaporative losses and demineralizer water makeup (3 GPD).

2.3.2.7 Utilities

Utilities for the Project, including potable water (for potable and firefighting uses) and electricity, would primarily be provided through connections with existing utilities within the FSSD treatment plant. The site is served by underground and above ground service utilities that would provide electrical, potable water and sewage connections. Non-potable effluent water would be provided through a connection to FSSD's effluent discharge system. Wastewater from facility processing would either be treated on site and recycled or would be connected to the FSSD sanitary sewer for treatment. Sewage, including sanitary wastewater and any untreated process wastewater, would be directed to FSSD for treatment. A natural gas supply would need to be constructed to connect with the existing gas line on Chadbourne Road or at the PG&E substation on the northeast corner of the WWTP site. A new transformer may be required to support the site electrical power supply. Stormwater flows would remain similar to existing conditions and would follow existing drainage patterns but may be directed to an on-site retention pond for initial storage before being fed into the existing FSSD stormwater drainage system. Figure 2-5 illustrates potential utility connections and existing utility locations.

2.3.2.8 Odor Controls

The materials receiving bins would be in an enclosed area that would be under negative pressure to prevent odors from escaping. The waste biosolids and woody biomass to be processed by the Project would be received in closed trailer trucks or through a closed pipeline from FSSD. The trucks would be unloaded (dumped) into receiving bins and would only be opened for the duration that it takes to unload a truck, estimated to be 15 to 20 minutes each hour. Once the truck is unloaded, the receiving bins would immediately be closed to contain odors.

Vents from the bins and the process are routed to and discharged into the Project's own thermal oxidizer and treated through combustion. Odors that might be present because of biosolids handling would be consistent with those of the surrounding WWTP and would be managed using the FSSD's odor control procedures.

2.3.2.9 Solid and Nonhazardous Waste

During operation, the Project facility would produce approximately 13 tons per day of carbon product, 2 tons per day of feedstock rejects, and approximately 1.5 tons per day of spent sorbent from the air pollution control equipment flue gas desulfurization (FGD) system. Carbon product would be tested and characterized in accordance with U.S. Environmental Protection Agency (USEPA) requirements. The carbon product would be sold for commercial, industrial, or municipal use within a 200-mile radius of the facility. Filter cake would also undergo testing and characterization, but it is anticipated that it could be disposed of at the Potrero Landfill safely as non-hazardous waste. Feedstock reject material would primarily consist of rocks, dirt, and miscellaneous tramp materials (metallic scrap) included in the incoming feedstock materials and would be disposed of at the landfill safely as non-hazardous waste.

Solid waste, if generated during operation, would be subject to applicable disposal methods. Construction waste and other sources of solid waste would be separated for recycling where possible/available. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill.

2.3.2.10 Hazardous Materials Transport, Storage, Use, and Disposal

The Project would require the transport, storage, and use of fuels and other fluids for fueling/servicing of construction and operation equipment. As an existing WWTP, this practice is already in place for current operations. The Project facility would require approximately 10,000 gallons of (19 percent) aqueous ammonia, to be stored on site. The ammonia would be delivered to the site via trucks and unloaded into a 10,000-gallon storage tank. Additional materials needed for operation of the Project facility include the ORC working fluid, heating oil, nitrogen and Sorbacal SP (a high surface area hydrated lime). The hydrated lime sorbent would be delivered by truck to the site and unloaded into a sorbent storage silo. Liquid nitrogen will be delivered by truck and/or generated and stored on site using an air separation membrane system with the tail gas, oxygen rich air, being directed to the gasifiers as their air input, to the thermal oxidizer as its air input, or vented. Transportation, storage, and disposal/recycling of such products is extensively regulated at the Federal, State, and local levels. Current and future construction activities associated with the Project would be required to comply with these regulations.

2.3.3 Construction Activities

Construction of the Project would take approximately 15 months to complete after detailed engineering and the environmental review process is complete, and all permits necessary to construct and operate the Project are obtained. Construction is expected to begin in January 2023, and project commissioning is planned to begin in January 2024 with the Project being operational in spring of 2024, depending on permitting, equipment shipping and installation schedules. Construction of the Project would include site preparation, demolition, excavation and grading, facility construction, utility installation, electrical and instrumentation work, insulation, startup/testing, paving, and final landscaping. Construction activities would be conducted in accordance with applicable local noise standards (i.e., construction activities would not take place before 7:00 a.m. or after 10:00 p.m.).

2.3.3.1 Construction Equipment

Construction equipment is anticipated to include on and off-road equipment including a backhoe, wheel loaders, front-end loaders, rollers and compactors, excavator, crane, forklift, welders, man-lifts, concrete trucks, concrete pump truck, dump trucks, paving equipment, and trucks for materials hauling and deliveries, and an average of approximately 30

workers each day (working 40-hour work weeks) with peak periods requiring up to 50 workers. Up to 15 truck trips per day would be needed to deliver material and equipment to the site, with a typical average of 3 to 4 truck trips per day.

2.3.3.2 Site Preparations

The Project would be sited on previously disturbed land currently used as an algae processing facility. Site preparation would include demolition of existing facilities, vegetation removal, grading, installation of a solid surface such as gravel, concrete, or asphalt, establishment of construction roads, installation of construction trailers, establishment of temporary power, mobilization of temporary sanitary facilities, installation of silt fences for stormwater and erosion control protections in accordance with the Stormwater Pollution Prevention Control Plan (SWPPP), and installation of gravel laydown areas. Site preparation activities may be phased to accommodate material and construction crew availability to accommodate efficient construction of the facilities.

Demolition would take approximately 2 weeks and would be accomplished using an excavator, bulldozer, and a dump truck. Other site preparation would last approximately 3 to 4 weeks and require a backhoe, wheel loaders, front-end loaders, rollers and compactors, excavator, crane, forklift, welders, man-lifts, concrete trucks, concrete pump truck, dump trucks, paving equipment, and trucks for materials hauling and deliveries.

2.3.3.3 Site Drainage

The site drainage system would be installed in compliance with FSSD's Waste Discharge Requirements from the Regional Water Quality Control Board. Existing site access may be improved within the FSSD facility, and utility connections described in Section 2.3.2.7 would be undertaken.

2.3.3.4 Underground Utilities and Foundations

Underground utilities and pipelines would be constructed using an open cut construction method. Average trench widths of 2 to 4 feet and an average depth of 5 feet is anticipated with maximum construction depths up to 20 feet possible for loading/unloading areas and structure foundations. Initial excavation is anticipated to last 3 to 4 weeks. Excavated materials are not anticipated to be used as backfill and based on known groundwater levels in the area, it is anticipated that dewatering would be required. Based on the approximate depth of the Project facilities, it is estimated that approximately 500 cubic yards of material would be imported or exported/disposed of on site. If dewatering is required during excavation, water would be discharged into the sanitary sewer on site. Construction of the below ground utilities would last approximately 6 weeks.

2.3.3.5 Process Facilities and Ancillary System Construction

Once site preparation is underway, the process facilities would be delivered, constructed, and tested. This phase of construction would be the longest and would be scheduled to move forward as components are ready. Construction of the above ground facilities would last 12 to 13 months. No public road closures are anticipated as part of the Project.

2.3.3.6 Electrical Connection

A new PG&E electrical service would be required for the Project. PG&E's work would include extending distribution power at 15KV (or the local distribution voltage) to the location of the step-down transformers. PG&E may possibly include installation of the primary power step down transformer as part of the utility service (2000 to 3000A, 480V, 3-phase requested). The utility primary power transformer would be connected to a project installed disconnect switch and metering panel up stream of the plant switchboard that would energize the plant motor control centers. Transformers for the 480V power supply to disconnect switches and metering panel would be supplied from a distribution supply location to be determined by PG&E but anticipated to be within 300 feet of the facility. Electrical work would last approximately 4 to 5 weeks after receipt of the equipment.

2.3.3.7 Commissioning – Startup and Testing

Once the facility is constructed, startup and testing activities would be performed to ensure that the facility components and systems are operating properly and meet design standards; these activities for testing and commissioning are expected to last up to 2 to 3 months after which the facility would be ready for performance testing.

2.3.3.8 Staging

Project staging is anticipated to occur on the Project site. The staging area would be approximately 2.5 acres and would include the building footprint. After commissioning, excess laydown and staging areas would be cleaned of gravel pads and seeded with the same quality of existing vegetation as is currently on the site. The Project would be constructed in compliance with the General Construction Permit (Construction General Permit Order 2009-0009-DWQ), which requires the completion of a SWPPP with site tailored best management practices for stormwater and erosion control that limit the potential for substantial soil erosion or the loss of topsoil.

2.3.3.9 Construction Water Use

Water for construction of the Project facility would primarily be used for dust suppression during site preparation. The overall construction water usage is anticipated to be approximately 3,900 gallons per day.

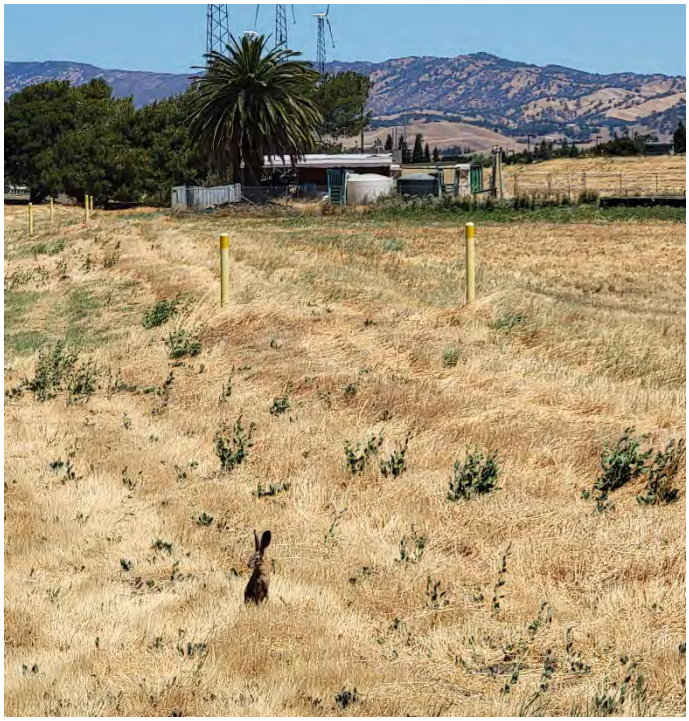
2.3.3.10 Solid and Nonhazardous Waste

Construction of the Project facility may produce a small amount of solid waste such as paper, wood, glass, plastics from packing material, waste lumber, scrap metal and concrete, empty non-hazardous containers, and vegetation wastes. This waste would be segregated for recycling. Non-recyclable materials would be disposed of at the Potrero Hills landfill, located approximately 10 miles from the Project site or disposed of at the closest facility approved to accept the material type.

2.4 Environmental Setting

2.4.1 Regional Setting

The Project vicinity, consisting of the cities of Fairfield and Suisun City and portions of central Solano County, is characterized by level terrain used for agricultural and agricultural/residential purposes. Fairfield is located along the Interstate 80 (I-80) corridor in the west-central area of Solano County. The FSSD WWTP is located in proximity to Suisun City and Travis Air Force Base (AFB). Grazing and prairie lands are located to the east, rolling hills to the north, and the Suisun Valley, a productive agricultural region, is located between Fairfield's central area and the city's Cordelia planning area.



Photograph 2-6 View Looking Northwest at Project Site

The terrain in the Project vicinity is generally level. The FSSD service area is located at the base of the Coast Ranges at the edge of the Central Valley between Sacramento and San Francisco in the Great Valley ecological region (USDA 1998). The orchards, vineyards, row crops, and rangeland of the valley are framed by the ridgeline of the Vaca Mountains to the north and west. The grazing land and orchards interspersed with urbanized areas along I-80 and I-680 provide a contrast in land uses. The WWTP site is north of the Suisun Marsh, the nation's largest brackish water marsh as well as the largest wetland on the Pacific Coast.

2.4.2 Local Setting

Photograph 2-7 View of Project Site and Dewatering Building looking Northeast

The WWTP site is characterized by disturbed areas made up of urban, mowed grasses, some ornamental trees, and brush (FSSD 2005). These disturbed grassland areas are regularly disturbed by site operations as well as mowing, disking, or other vegetation management activities. The grasses are dominated mostly by nonnative Mediterranean annual grasses such as wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and ryegrass (*Lolium perenne*), although historically California grasslands were composed of native annual and perennial grasses such as purple needlegrass (*Nassella pulchra*) and Idaho fescue (*Festuca idahoensis*). Other typical exotic annual grasses include silver hairgrass (*Aira caryophyllea*), little quaking grass (*Briza minor*), and an assemblage of native and nonnative forbs such as curly dock (*Rumex crispus*), wild mustard (*Hirschfeldia incana*), English plantain (*Plantago lanceolata*), California poppy (*Escholzia californica*), common vetch (*Vicia sativa ssp. nigra*), field bindweed (*Convulvulus arvensis*), turkey mullein (*Eremocarpus setigerus*), butter-and-eggs (*Triphysaria eriantha ssp. eriantha*), blue-eyed grass (*Sisyrinchium bellum*), yellow star-thistle (*Centaurea solstitialis*), and various clovers (*Trifolium sp.*). In areas that remain moist during the growing season, meadow barley (*Hordeum brachyantherum*), reed fescue (*Festuca arundinacea*), velvet grass (*Holcus lanatus*) and smooth crabgrass (*Digitaria ischaemum*) occur along with bristly ox-tongue (*Picris echioides*), common vetch, and curly dock.

The grassland communities are fairly open habitat, providing foraging for many wildlife species such as rodents, birds, lizards, snakes, coyotes and foxes. Features such as ponds, fence posts, burrows, trees, logs, or snags may occur within or near grasslands, providing essential habitat for breeding or cover. Species that are commonly found in annual grassland areas include red-tailed hawk (*Buteo jamaicensis*), western rattlesnake (*Crotalus viridis*), California ground squirrel (*Spermophilus beecheyi*), western burrowing owl (*Athene cunicularia*), California vole (*Microtus californicus*), western fence lizard (*Sceloporus occidentalis*), and a variety of songbirds.

The WWTP is surrounded by agricultural lands, which are bordered by the Suisun Marsh. A business park is located approximately 0.4 miles north of the WTTP site, and private duck clubs are located approximately 1.5 miles south of the WWTP. The closest residence is east of the WWTP, about 3,000 feet from the secondary access road. The existing WWTP facilities are rectangular and circular concrete buildings that range in height from approximately 22 feet above grade (the equalization clarifier) to 64 feet above grade (oxidation towers and dewatering building). The WWTP has four wind turbines with 75-foot towers and max heights at approximately 100-feet. The topography of the WWTP area is essentially flat. Elevation ranges from approximately 5 to 15 feet above sea level, and slopes south. The WWTP site can be seen from Cordelia Road and Chadbourne Road.

Photograph 2-8 View Looking South at Project Site and Existing Windmills

2.5 Permits Required

This IS/MND is intended to be used by the FSSD Board of Directors when considering the Project. To support its decision on the Project, the Board must approve the Mitigated Negative Declaration and must also adopt a mitigation monitoring and reporting program to ensure compliance with mitigation measures during project implementation. The IS/MND is also intended to be used by responsible agencies that have review and permit authority over the project. Agencies with responsibility for permit approval of certain project elements include:

- Authority to Construct and Permit to Operate from Bay Area Air Quality Management District
- Regional Water Quality Control Board Notice of Intent to obtain coverage under General Construction Activity Stormwater NPDES permit requiring preparation of a Stormwater Pollution Prevention Plan
- City of Fairfield Conditional Use Permit
- Solano County Department of Resource Management, Environmental Health Services Division , acting as the Local Enforcement Agency for California Department of Resources Recycling and Recovery (CalRecycle) Solid Waste Facilities Permit and Odor Impact Minimization Plan
- Solano County Department of Resource Management, Environmental Health Services Division, Certified Unified Program Agency (CUPA) Hazardous Materials Business Plan and Approval of Spill Prevention Control and Countermeasure Plan

3. ENVIRONMENTAL CHECKLIST FORM

1. Project title: Aries Fairfield Bioenergy Project

2. Lead agency name and address: Fairfield-Suisun Sewer District
1010 Chadbourne Road
Fairfield, CA 94534

3. Contact person and phone number: Talyon Sortor
General Manager
(707) 429-8930

4. Project location: Fairfield-Suisun Sewer District Wastewater Treatment Plant (WWTP) 1010 Chadbourne Road
Fairfield, CA 94534

5. Project sponsor's name and address: Aries Fairfield LLC
1010 Chadbourne Road
Fairfield, CA 94534

6. General plan designation: Public Facility

7. Zoning: Public Facility

8. Description of project: The District proposes to execute a lease agreement with Aries Fairfield LLC, who proposes the construction and operation of a biomass processing facility located on approximately 2.5 acres of the 7-acre leased site at the WWTP. The Project would be suitable for processing and converting a variety of biomass streams (e.g., biosolids from the District or other wastewater treatment plants in the area and woody biomass from local industrial or municipal producers/aggregators), diverting these biomass streams from landfills, and converting them into usable renewable thermal energy, renewable electrical energy, and carbon products (that have beneficial uses in building, manufacturing, industrial, and agricultural material inputs and also can sequester carbon).

9. Surrounding land uses and setting: The WWTP site is designated Public Facility on the City of Fairfield General Plan Map. The area to the north of the WWTP, on the north side of Cordelia Road (also within the city limits of Fairfield), is designated for Light Industrial use by the Fairfield General Plan. Unincorporated Solano County lands are located to the east, south, and west of the WWTP. These County lands consist of open agricultural fields designated for Extensive Agriculture use by the Solano County General Plan. These designated Extensive Agriculture lands are within the Secondary Management Area of the Suisun Marsh Management Area as defined in the Suisun Marsh Protection Plan (Solano County, 1982). The Suisun Marsh Management Area boundary coincides with the Fairfield City Limit-Solano County boundary adjacent to the WWTP.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)
    - Authority to Construct and Permit to Operate from Bay Area Air Quality Management District
    - Regional Water Quality Control Board for a General Construction Activity Stormwater NPDES permit requiring preparation of a Stormwater Pollution Prevention Plan
    - City of Fairfield Land Use Conditional Use Permit

- Solano County Department of Resource Management, Environmental Health Services Division, acting as the Local Enforcement Agency for California Department of Resources Recycling and Recovery (CalRecycle) Solid Waste Facilities Permit and Odor Impact Minimization Plan
- Solano County Department of Resource Management, Environmental Health Services Division, Certified Unified Program Agency (CUPA) Hazardous Materials Business Plan and Approval of Spill Prevention Control and Countermeasure Plan

11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 2180.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

To date, no requests for consultation have been received pursuant to Public Resources Code section 2180.3.1.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology / Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology / Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Talyon Sortor
Signature

January 31, 2022
Date

Talyon Sortor
Printed Name

Fairfield-Suisun Sewer District
For

Impact Terminology and Assessment Methodology

The environmental impact analysis for each resource defines the criteria used to judge whether an impact is significant based on the CEQA Initial Study Checklist and regulatory agency standards. Impacts that exceed identified threshold levels are considered significant. In describing the significance of impacts, the following categories of significance are used and are based on the best professional judgment of the preparers of the Initial Study:

No Impact: An effect that would have no impact, or would have a positive impact on the environment, such as reducing an existing environmental problem.

Less than Significant: An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures.

Less than Significant with Mitigation: An impact is potentially significant but can be reduced to below the threshold level (to less than significant) given reasonable and available mitigation measures.

Potentially Significant: An impact that would cause substantial, or potentially substantial, impacts above the threshold level. Such an impact requires further evaluation and would trigger the preparation of an Environmental Impact Report for the project.

3.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion

*a) Would the Project h*ave a substantial adverse effect on a scenic vista?

The City of Fairfield's adopted Scenic Vistas and Roadways Plan (1999) identifies portions of I-680, Cordelia Road, Green Valley Road, Hillborn Road, Lyon Road, and Rockville Road as scenic corridors. The existing visual environment is characterized by WWTP infrastructure with surrounding agricultural land and industrial uses with none of the designated scenic vistas or corridors (or topographic viewpoints) within view from the Project site. The Project would blend in with the existing nature and use of the WWTP site and distant view from scenic vistas would be muted and insignificant. The Project would not have any effect on a scenic vista. Thus, there would be no impact.

*b) Would the Project s*ubstantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The California Department of Transportation (Caltrans) administers the California Scenic Highway Program (Streets and Highways Code, Section 260 et seq) to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. There are no officially designated California scenic highways or roadways in the Project area (Caltrans 2019). The segment of Interstate-80 that runs near the eastern portion of the WWTP site is not a designated scenic highway (Caltrans 2019). Highway 12 is also located in the vicinity of the Project but is also not a designated scenic highway (Caltrans 2019). There are no scenic highways in the vicinity of the Project site and thus there would be no impact.

c) *Would the Project in non-urbanized areas, substantially degrade the* existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

The Project would be installed in the southeastern portion of the existing WWTP site, which is not publicly accessible. The nearest public vantage points would be from Chadbourne Road, about 0.4 miles from the Project site and from Cordelia Road, about 0.6 miles from the Project site. Although some portions of the proposed facilities would be visible from outside the WWTP site, the Project would be consistent with the existing visual character of the treatment plant site and would not conflict with applicable zoning regulations. There would be no impact.

d) *Would the Project create a new source of substantial light or* glare which would adversely affect day or nighttime views in the area?

A new light source would be considered significant if it introduces viewers from public roads or residences to a substantial amount of light visibility at night or if the collective illumination of the Project results in a noticeable spill-over effect into the nighttime sky, increasing the overall ambient light in the region. The Project includes the addition of new lighting to allow for 24-hour a day operational safety. Some of this lighting may be bright white – LED lights and could result in an increase in overall ambient light conditions. However, the Project site is not visible from outside the WWTP and both the direction and hue of lights on the facility would be controlled so as to ensure that increases in light and glare would not be substantial. Therefore, Project facilities would not add a new source of substantial light or glare. Any potential Impacts would be less than significant.

Mitigation Measures: None required or recommended.

3.2 Agriculture and Forestry Resources

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

a-e) Would the Project a) convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use; b) conflict with existing zoning for agricultural use, or a Williamson Act contract?; c) conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)); d) result in the loss of forest land or conversion of forest land to non-forest use?; or, e) involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The Project is located on a previously developed site that is designated by the Farmland Mapping and Monitoring Program as Urban and Built Up Land (California Department of Conservation 2016). There is no farmland or forest land at the Project site, thus there would be no impact.

Mitigation Measures: None required or recommended.

3.3 Air Quality

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d) Result in other emissions (such as those leading to odors or adversely affecting a substantial number of people)?	☐	☐	☒	☐

Discussion

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The WWTP is in the San Francisco Bay Area Air Basin (SFBAAB), under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD regulates air quality through its permit authority over most types of stationary emission sources and through its planning and review process. To meet planning requirements related to

the Nonattainment status of the SFBAAB, the BAAQMD has developed a regional air quality plan, the Bay Area 2017 Clean Air Plan (CAP) (BAAQMD 2017). A significant impact would occur if a Project did not mirror assumptions of the plan to attain air quality standards; did not reduce population exposure and protect public health in the Bay Area; and/or did not reduce greenhouse gas emissions and protect the climate. The Project is intended to improve existing biosolids handling and disposal at the WWTP and provide an improved disposal method for biomass supplies in surrounding areas. The Project would not increase treatment capacity or accommodate unplanned population growth. As such, Project-related emissions, which are discussed in greater detail below, are accounted for in the growth assumptions underlying the CAP, and implementation of the Project would not conflict with or obstruct implementation of the applicable air quality plan. There would be no impact.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non- attainment under an applicable federal or state ambient air quality standard?

All air basins are characterized as to whether the air quality in the basin is in compliance with the National Ambient Air Quality Standards (NAAQS) and/or California Ambient Air Quality Standards (CAAQS). Standards for criteria air pollutants are established to ensure protection of human health and public welfare. Table 3-1 shows federal and state ambient air quality standards and the Bay Area's federal and state designation for each criteria pollutant.

The Project site is located in the San Francisco Bay Area Air Basin (SFBAAB), which does not meet the State PM_{10} (respirable particulate matter) standard, the national and State $PM_{2.5}$ (fine particulate matter) standard, and the State 1-hour, State 8-hour and the national 8-hour ozone standards. The BAAQMD (2017) has set quantitative thresholds for criteria air pollutants that represent the level at which an individual project would have a cumulatively considerable contribution to the SFBAAB existing air quality conditions. The Project would result in emissions of criteria pollutants from short-term construction activities and long-term operation and maintenance activities. Project emissions from short-term construction activities were estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0, which is used throughout California to quantify criteria pollutants and greenhouse gas (GHG) emissions. Emissions of ozone precursors (reactive organic gases (ROG) and nitrogen oxides (NO_x) are ozone precursors), carbon monoxide (CO), sulfur dioxide (SO_2), PM_{10}, and $PM_{2.5}$ were modeled. The CalEEMod emissions scenarios were based on Project-specific information found in the Project Description (Section 2*)*. In instances where Project-specific information was not available (e.g., construction equipment horsepower, soil moisture content), the analysis relied on CalEEMod default values for construction activities. Appendix A includes detailed air quality modeling outputs.

The Project would also result in emissions of criteria pollutants from long-term operation and maintenance activities. Project emissions from process-related operations were estimated based on emission date provided by Aries Clean Technologies from emissions testing from other facilities, EPA emissions factors for limited natural gas use and estimated emissions from material loading and unloading operations]. Project emissions from vehicle trips associated with feedstock deliveries, carbon product deliveries, worker trips, materials delivery trips, and other operations and maintenance related trips were estimated using CalEEMod. Appendix A includes detailed air quality modeling outputs.

Table 3-1: Bay Area Air Basin Attainment Status

Pollutant	Averaging Time	CAAQS (State)		NAAQS (Federal)	
		Standard	Attainment Status	Standard	Attainment Status
Ozone (ROG)	One hour	0.09 ppm	Nonattainment	NA	No Designation
	Eight hour	0.070 ppm	Nonattainment	0.070 ppm	Nonattainment
Carbon Monoxide (CO)	One hour	20 ppm	Attainment	35 ppm	Attainment
	Eight hour	9.0 ppm	Attainment	9 ppm	Attainment
Nitrogen Dioxide (NO_2)	One hour	0.18 ppm	Attainment	0.100 ppm	Unclassified
Sulfur Dioxide (SO_2)	One hour	0.25 ppm	Attainment	0.075 ppm	Attainment
	24 hour	0.04 ppm	Attainment	0.14 ppm	Unclassified
Particulate Matter (PM_{10})	24 hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified /Attainment
Fine Particulate Matter ($PM_{2.5}$)	Annual	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
Lead	30 day	1.5 µg/m^3	No Designation	0.15 µg/m^3	Attainment
Sulfates	24 Hour	25 µg/m^3	Attainment	NA	No Designation
Hydrogen Sulfide	One Hour	0.03 ppm	Unclassified	NA	No Designation
Visibility-Reducing Particles	Eight Hour	Extinction coefficient of 0.23 per kilometer	Unclassified	NA	No Designation

Source: (BAAQMD 2017a)

Footnotes: NA = Not Applicable, no applicable standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

Construction

Air emissions of criteria pollutants during construction would result from the use of construction equipment with internal combustion engines, and offsite vehicles to transport workers, deliver materials to the site, and haul export material from the site. The construction contractor(s) would implement standard dust control measures in compliance with BAAQMD Regulation 6 (Particulate Matter), Regulation 1-301 (Public Nuisance), and BAAQMD CEQA Air Quality Guidelines (BAAQMD 2017), as described in Mitigation Measure AQ-1. Table 3-2 summarizes the unmitigated maximum daily pollutant emissions during construction of the Project and Table 3-3 summarizes mitigated maximum daily pollutant emissions during construction. As shown in Table 3-2, even before adherence to applicable regulations and mitigation, criteria pollutant emissions from construction of the Project would not exceed the BAAQMD thresholds. Therefore, construction-related air quality impacts would be less than significant.

Table 3-2: Project Unmitigated Maximum Daily Construction Emissions

	ROG	NO_x	CO	SO_2	PM_{10} (exhaust)	PM_{10} (total)	$PM_{2.5}$ (exhaust)	$PM_{2.5}$ (total)
Project Maximum Daily Emissions (pounds/day)	2	19	26	<1	1	5	1	3
BAAQMD Regional Thresholds (pounds/day)	54	54	--	--	82	--	54	--
Threshold exceeded?	No	No	--	--	No	--	No	--

Table 3-3: Project Mitigated Maximum Daily Construction Emissions

	ROG	NO_x	CO	SO_2	PM_{10} (exhaust)	PM_{10} (total)	$PM_{2.5}$ (exhaust)	$PM_{2.5}$ (total)
Project Maximum Daily Emissions (pounds/day)	2	19	26	<1	1	3	1	2
BAAQMD Regional Thresholds (pounds/day)	54	54	--	--	82	--	54	--
Threshold exceeded?	No	No	--	--	No	--	No	--

Operation

Project operation would generate indirect emissions from vehicle trips for operation and maintenance and delivering feedstock to the site. As described in the Project Description (Sections 2.3.2.2 and 2.3.2.3) it was assumed the Project would involve approximately 12 worker trips per day. The 12 employees would have daily commute trips estimated to be an average of 30 miles roundtrip. The Project would accept up to 10 trucks per day for the delivery of feedstock materials and up to 2 trucks per day for the export of carbon products from the Project to be sold off site. It is assumed that feedstock would be sourced, and products would be sold within 200 miles of the Project site. It was also assumed that operational delivery of feedstocks would on balance offset existing trips that already occur to dispose of biomass waste, so there would be little if any additional vehicle miles travel generated as a result of transporting feedstock to the new facility. For modeling purposes transport of feedstock was conservatively assumed to result in an additional 1,000 vehicles miles traveled per day, though actual miles traveled could be less than existing, depending on the previous origins and destinations of feedstock deliveries. Operational vehicle trips would be related to operations and maintenance deliveries such as chemicals and equipment replacement parts. Periodic additional trips associated with occasional employees for miscellaneous business activities and laboratory services would also be required. It was conservatively assumed that the feedstock delivery trips would be made using standard diesel trucks, although the Project aims to use electric vehicles in the future. Daily maximum operational emissions of criteria pollutants associated with mobile trips to operate the Project are included in Table 3-4.

Project operation would generate direct criteria pollutant emissions from the bioprocessing facility and natural gas use to power start-up of facilities. Fugitive dust emissions associated with unloading the feedstock and loading the export products were considered negligible because they would be largely controlled for by being located below grade, inside a building, with fans and other control devices (see Section 2.3.1.1).

No BAAQMD daily thresholds would be exceeded by operation of the Project.

Table 3-4: Project Unmitigated Maximum Daily Operational Emissions

	ROG	NO_x	CO	SO_2	PM_{10} (total)	$PM_{2.5}$ (total)
Operational Trips Maximum Daily Emissions (pounds/day)	1	5	4	<1	2	1
Operational Process-Related Maximum Daily Emissions (pounds/day)	2.6	47.5	5.0	138.6	26.3	26.2
TOTAL Maximum Daily Emissions (pounds/day)	3.6	52.5	9	139.6	28.3	27.2
BAAQMD Regional Thresholds (pounds/day)	54	54	--	--	82	54
Threshold exceeded?	No	No	--	--	No	No

The Project would not exceed significance thresholds for criteria pollutants during construction or operation, therefore impacts would be less than significant.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

The closest sensitive receptors are a small business park located about 0.4 miles north of the WWTP and a residence on the eastern boundary of the WWTP, about 3,000 feet from the WWTP secondary access road. As noted in impact b), operational emissions of criteria pollutants would be minimal and therefore, the potential to expose sensitive receptors to substantial criteria pollutant concentrations is limited. While there is some potential for generation of dust during construction and operations, Mitigation Measure AQ-1 would be implemented to reduce this impact to less than significant. However, the facility would emit toxic air contaminants (TAC) from the stack so a health risk assessment was conducted to determine if facility emissions would result in a substantial health risk (Woodard and Curran 2022). The health risk assessment calculated cancer risk, and chronic and acute health indices. Results are shown in Table 3-5, and risks are compared to BAAQMD significance thresholds. Health risk would be less than significant.

Table 3-5: Health Risk Assessment Results

Risk Analyses	Maximum Result Across All Modeled Receptors	Threshold of Significance	Result
Cancer	Risk Sum = 5.7e-06 or 5.7 in one million	10 in one million	Less than significant
Chronic	Max Hazard Index = 0.2	1.0	Less than significant
Acute	Max Hazard Index = 0.005	1.0	Less than significant

d) Would the Project result in other emissions (such as those leading to odors or adversely affecting a substantial number of people?

The Project would employ a process that reduces the odor potential of the existing biosolids produced by FSSD. Other feedstock that would be received at the WWTP would be conveyed in covered trucks and would be handled in a timely manner to minimize exposure to the outside environment. All materials handling and storage operations would be contained with fans and the Project is not expected to be a source for generation of odor beyond those existing at the WWTP already. The Project may be regulated under CalRecycle and thus required to have Odor Impact Minimization

Plans in place, which establish procedures that establish fence line odor detection thresholds. Therefore, the Project is not expected to result in a noticeable increase of odors at the WWTP. The impact would be less than significant.

Mitigation Measures:

Mitigation Measure AQ-1: BAAQMD Basic Construction Measures

The following basic construction measures are identified by BAAQMD and shall be incorporated into contract specifications and implemented by the contractor.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

3.4 Biological Resources

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the	☐	☐	☐	☒

	California Department of Fish and Game or U.S. Fish and Wildlife Service?				
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion

a-b) Would the Project a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service; or, b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The Project would take place entirely within the footprint of the existing WWTP. All construction and operational activities would occur in roadways or within existing disturbed areas. Biological resources within the site are limited; however, there are some ornamental trees that border the site that may require removal. If tree removal is required, nesting migratory birds could be impacted without the precautions of Mitigation Measure BIO-1 that recommends vegetation removal timing outside of the nesting season and survey and avoidance measures if vegetation removal within nesting season is required. The WWTP contains no suitable habitat for sensitive species and no riparian areas. There would be no impact on sensitive species or habitats.

c) Would the Project have a substantial adverse effect on state or federallyprotected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Based on a wetland delineation completed by FSSD in 2005 and confirmed during preparation of environmental documentation for the Ultraviolet Disinfection Upgrades (FSSD 2009), the WWTP site does contain seasonal wetlands and drainage areas that may be considered to be under the jurisdiction of the U.S. Army Corps of Engineers. However, these wetland areas are outside of the Project area, the Project site is regularly mowed and subject to ground disturbance and utility connections would be located within disturbed roadways. Therefore, potential for impacts to federally or state protected wetlands would be less than significant.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No wildlife migratory corridors cross the Project site; however, the Pacific flyway covers the nearby Suisun Marsh. There are a few existing ornamental trees within the WWTP that could provide nesting locations for migratory birds. Mitigation Measure BIO-1 would require nesting bird surveys prior to any tree removal, recommends removal outside the nesting season, and includes steps for protection if nests are found. Additionally, the WWTP site is highly disturbed and noisy due to ongoing operations and maintenance activities. Because construction activities are limited and are fairly similar to ongoing operations that occur at the WWTP, construction is not expected to disrupt any birds that might have established nests within the WWTP site. Impacts would be less than significant with mitigation incorporated.

e) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The City of Fairfield has a Tree Preservation Ordinance that protects trees during development and promotes tree conservation within Fairfield (Chapter 25, Sections 25.36–25.38). Native oaks, bay laurel, madrone, and buckeye trees of 6 inches in diameter at breast height (dbh) on public property are protected, as are those that support habitat or are of cultural value. A tree removal permit and specific mitigation are required for removal of protected trees (FSSD 2005). While there are a few existing ornamental trees within the WWTP that may need to be removed, none fall within these protected categories and, therefore, there would be no impact on local policies or ordinances.

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The WWTP lies within the area covered by the Solano Multi-Species Habitat Conservation Plan (SMSHCP) (Solano County Water Agency 2012). The WWTP site lies within the Fairfield Urban Growth Boundary and does not contain vernal pools or other sensitive habitats, except for small areas of seasonal wetlands as described in item "c". Because the WWTP is a designated public facility, providing ongoing services for wastewater treatment, the Project fits with the purpose and scope of the WWTP and does not conflict with the SMSHCP. There would be no impact.

Mitigation Measures:

Mitigation Measure BIO-1: Nesting Birds

Where feasible vegetation and tree removal shall be conducted outside of nesting season (removal should occur from September 1 through January 31, if possible). If outside nesting season no further actions are needed. If vegetation removal must occur during nesting season, a survey for bird nests must complete within one week of construction. If no nests are found, construction and vegetation removal may proceed. If a nest is identified, the nest should be scoped to determine if the nest is an active nest. If active, avoid work within 500 feet of the nest or contact California Department of Fish and Wildlife to develop a protection and monitoring plan that allows construction to proceed by developing other protection type measures. Upon the approval of the California Department of Fish and Wildlife, if the 500 feet avoidance zone cannot be maintained, a qualified biologist shall monitor the nest during construction with stop work authority if birds exhibit signs of distress risking potential of nest abandonment.

3.5 Cultural Resources

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

a-c) Would the Project a) cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5; b) cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5; or, c) disturb any human remains, including those interred outside of formal cemeteries?

The Project would be located within the existing WWTP site, which has been previously developed, graded, and compacted. Excavation would be required for utilities as described in Section 2.3.3.4. Excavation depths for the stack structure foundation could reach a depth of 20 feet, but other facilities including underground utilities and pipelines would generally be at an average depth of about 5 feet. There is no evidence of historic or archaeological objects or formations that could indicate presence of cultural resources within the WWTP site. There have been five previous surveys of the WWTP, none of which has identified cultural resources within the site (FSSD 2009) and therefore, no impacts to cultural resources would be expected to occur with project implementation. The WWTP is not identified as a significant historical or cultural resource and is not included in a local, state, or federal register of historical resources. There is one historic resource that has been identified within the vicinity of the WWTP: a portion of the Southern Pacific Railroad Line (P-549), which is about 1,700 feet north of the Project area. Due to the distance of this resource from the WWTP, the Project would not have any effect on California historical resources.

In the event of an inadvertent discovery of cultural resources, Mitigation Measures CUL-1 would be implemented to provide steps for mitigating impacts to a previously undiscovered resource. These measures would reduce the potential for impacts to less than significant.

Mitigation Measures:

Mitigation Measure CUL-1: Proper Handling of Inadvertent Discovery of Cultural Resources or Human Remains

In accordance with CEQA Section 15064.5, if cultural or tribal cultural resources are encountered during project-related excavations, construction shall be halted or diverted to allow an archaeologist an opportunity to assess the resource. All Contractor personnel and subcontractors shall attend training discussing the nature of cultural resources and potential materials that may be encountered. Prehistoric archaeological site indicators include chipped chert and obsidian tools and tool manufacturing waste flakes, grinding implements such as mortars and pestles, and darkened soil that contains dietary debris such as bone fragments and shellfish remains. Historic site indicators include, but are not limited to, ceramics, glass, wood, bone, and metal remains.

Section 7050.5(b) of the California Health and Safety code will be implemented in the event that human remains, or possible human remains, are located during project-related excavation. It states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

The County Coroner, upon recognizing the remains as being of Native American origin, is responsible for contacting the Native American Heritage Commission within 24 hours. The Commission has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant. Sections 5097.98 and 5097.99 of the Public Resources Code also call for "…protection of inadvertent destruction." To achieve this goal, it is recommended that the construction personnel on the Project be instructed as to the potential for discovery of cultural or human remains, and both the need for proper and timely reporting of such finds, and the consequences of failure to do so.

3.6 Energy

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Discussion

a) Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

As described in Section 2.3.1 of the Project Description, the two gasification processes work together to offset their energy usage and generate up to 250 kilowatts of net energy. Key objectives of the Project (as described in Section 2.2.5) are to improve energy efficiencies at both the Project Site and at other facilities at the WWTP through using the heat exchange. It is planned that the Project will eventually be served by an electrical vehicle fleet that would transport materials to the WWTP and deliver products produced by the process.

Construction

Energy consumption for construction would primarily be in the form of gasoline and diesel fuel to power off-road vehicles and equipment and on-road vehicles. Total energy consumed during the 12 months of construction and 3 months of commissioning of the Project facility is estimated to be approximately 215,000 gallons of fuel based on

average fuel efficiencies associated with construction equipment engines and a conservative assumption for duration of equipment use. Construction would be performed in a manner to maximize efficiency with equipment, materials, and labor being sourced as close as possible to the Project site. Additionally, compliance with CARB regulations regarding heavy-duty truck idling limits and the use of on- and off-road equipment and vehicles that meet Federal and State standards for efficiency and emissions would help improve energy utilization efficiency. As a result, construction activities would not result in the wasteful, inefficient, or unnecessary consumption of transportation fuels, and impacts would be less than significant.

Construction activities would not require connection to electrical or natural gas utilities, and no electrical or natural gas-powered equipment/vehicles would be used. As such, the Project facility would have no effect on regional or local electricity or natural gas supplies or requirements for additional capacity, and would not result in wasteful, inefficient, or unnecessary consumption of electricity or natural gas. No impacts would occur.

Operation

Energy consumption required during Project operation would primarily be in the form of gasoline associated with vehicles delivering feedstock to the facility, worker passenger vehicle road trips, and carbon product deliveries. The operational delivery of feedstocks and carbon products would on average offset existing trips that already occur to dispose of biomass waste and deliver construction products, and the decrease in volume that the gasification conversion process results in would result in fewer trips than currently required. Total on-site and off-site vehicle miles travel associated with the facility, including for feedstock deliveries, worker passenger vehicle roundtrips, and carbon product deliveries, was estimated based on the daily trip assumptions listed in the Project Description (Section 2.3.2), to be approximately 2,380 miles; the annual vehicle miles traveled is estimated to be 620,000 miles. The annual energy consumption associated with all the vehicle travel associated with the facility is conservatively estimated to be approximately 7,300,000 gallons of gasoline. It is anticipated that feedstock supply logistic cost considerations would minimize round-trip distances for feedstock trucking, which is expected to significantly reduce the actual vehicle travel energy consumption below the conservative assumptions made for the vehicle trip estimate. It is also planned to use electric trucks for these feedstock and carbon product trucking trips powered by energy generated by the Project, which would make the Project's energy production a net positive and reduce fuel vehicle trips and fuel consumption from the disposal of feedstocks to wherever they went before they were to be processed by the Project. Additionally, compliance with California Air Resources Board (CARB) regulations regarding heavy-duty truck idling limits and the use of on- and off-road equipment and vehicles that meet Federal and State standards for efficiency and emissions would help improve energy utilization efficiency. As a result, operation activities would not result in the wasteful, inefficient, or unnecessary consumption of transportation fuels and impacts would be reduced to less than significant.

The Project facility would generate approximately 775 kilowatts of renewable producer gas which would power operation of the facility with the left over 250 kilowatts which would be sold back to FSSD and help achieve meeting renewable energy targets. The facility would use natural gas during the start-up process and as a back-up power supply to the dryer in the event of an unexpected shut-down of one or both of the gasifiers, resulting in approximately 29,000 million Btu per year. The natural gas would be used to operate a burner associated with the thermal oxidizer. Natural gas in the main burner would be used during startup of the facility until the gasifier process is warm enough to power itself on the gas generated in the process. The thermal oxidizer's main burner would be used up to 10 times per year for up to 20 hours at a time. The facility would be designed to include best available energy control technologies, including the use of air preheaters, which would be installed at the facility's gasification units to recover thermal energy produced from the thermal oxidizer exhaust gas. The air preheaters would improve the gasifier's conversion and thermal efficiency and improve the energy efficiency of the facility's operation. The facility would utilize a combination of best demonstrated available technologies to produce renewable electricity that would be used on site and sold to FSSD or to the grid. Given the facility's relatively infrequent use of natural gas, its net generation of renewable energy, and incorporation of best available control technologies, operation activities would not result in the wasteful, inefficient, or unnecessary consumption of natural gas and impacts would be less than significant.

The Project would result in a net increase of energy production during operations and would not significantly consume energy resources during construction. Therefore, the Project would have a less than significant impact.

b) Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction

Energy used during construction of the Project facility would primarily be in the form of petroleum for the operation of construction vehicles/equipment. As concluded in Impact "a", the Project would not result in impacts associated with wasteful, inefficient, or unnecessary use of energy. In addition, construction equipment and trucks would be required to comply with CARB regulations regarding heavy-duty truck idling limits of 5 minutes at a location and the phase-in of off-road emission standards that result in an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines. Although these regulations are intended to reduce criteria pollutant emissions, compliance with the anti-idling and emissions regulations would also result in the efficient use of construction-related energy.

Emissions from truck operations would be further reduced by complying with USEPA and NHTSA-adopted fuel efficiency standards for medium- and heavy-duty trucks and/or using electric vehicle trucks. The 2011 Phase 1 heavy-duty truck standards applied to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018 and are expected to save a projected 530 million barrels of oil and reduce carbon emissions by about 270 million metric tons. In 2016, the USEPA and NHTSA also adopted the Phase 2 heavy-duty truck standards, which phase in through 2027 and will apply to all subsequent model years and are projected to result in vehicle fuel savings of up to 25 percent, depending on the vehicle category (USEPA 2016). The energy modeling for trucks does not take into account specific fuel reductions from these regulations, since they would apply to fleets as they incorporate newer trucks meeting the regulatory standards; however, these regulations would have an overall beneficial effect on reducing fuel consumption from trucks over time as older trucks are replaced with newer models that meet the standards. Compliance with applicable idling and fuel reduction standards would improve the energy efficiency of construction equipment and vehicles. Further, construction and operation of the facility would not utilize electricity from the power grid; therefore, the Project would not have to mitigate for GHG-emitting energy usage. Accordingly, any plan's requirements for utilizing clean, renewable energy would be satisfied. As a result, construction the facility would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency and impacts would be less than significant.

Operation

The 2017 Scoping Plan relies on achievement of the Renewable Portfolio Standard (RPS) target of 50 percent of California's energy coming from renewable sources by 2030. SB 100 further increased California's RPS and required retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030; and that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045. Biomass electricity is considered an eligible renewable energy source and will contribute towards meeting mandated State RPS (PG&E 2020).

The electricity generated by the Project facility is reasonably expected to displace region- wide and Statewide emissions of GHGs over the expected life of the Project. The reduction in GHG emissions would be a direct result of increasing the share of renewable energy available to meet RPS. In addition, the Project would be consistent with local Solano County General Plan policies to ensure energy conservation and reduced energy demand in the county through use of energy-efficient technology and practices, enable renewable energy sources to be produced from resources available in Solano County (including biofuels), and reduce Solano County's reliance on fossil fuels for energy-consuming activities (Solano County 2008).

Operation of the facility would provide up to 250 kilowatts of electricity either being sold to FSSD for its use or its other tenants' use or used to fuel EV trucks. Because implementation of the facility directly aligns with the goals of the RPS and would be consistent with local City of Fairfield and Solano County General Plan policies and goals governing bioenergy facilities, operation of the facility would not conflict with a State or local plan for renewable energy or energy efficiency and impacts would be less than significant.

Mitigation Measures: None required or recommended.

3.7 Geology and Soils

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Discussion

a) *Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*

   i) *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo* Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

The Project area is located in the U.S. Geological Survey's (USGS) Fairfield South 7.5-minute topographic quadrangle in northern California, which contains a portion of the Alquist-Priolo Earthquake Fault Zone for the Green Valley Fault at a location that is more than 3 miles from the Project area (California Department of Conservation 1993). The Fairfield South 7.5-minute topographic quadrangle has not been evaluated by the California Geological Survey for any seismic hazard zones (e.g., liquefaction, and earthquake-induced landsliding). The Green Valley-Concord Fault and the Cordelia Fault (both located about 3 miles to the west of the Project area) are the closest Holocene-active faults to the Project area (FSSD 2009). Other faults in the vicinity of the Project area are listed in Table 3-6.

Table 3-6: Seismically Active Faults Near the Project Area

Fault	Type	Max Moment Magnitude	Distance to Site (miles)
Green Valley Fault	strike slip	6.8	3.1
Great Valley Fault (Pittsburg Kirby Hills)	reverse	6.7	6.6
Great Valley Fault (Gordon Valley)	thrust	8.4	6.8
West Napa	strike slip	6.7	10.0
Hunting Creek-Berryessa	strike slip	7.1	17.4
Hayward-Rodgers Creek	strike slip	7.3	21.3
Mount Diablo Thrust	thrust	6.7	23.8
Greenville Fault	strike slip	7.0	26.7
Calaveras	strike slip	7.0	28.0
San Andreas Fault (north)	strike slip	7.8	39.3

According to the preliminary geotechnical evaluation completed by McMillen Jacobs (2021), risk of fault rupture in the Project area is low as the closest known Holocene active fault is located approximately 3 miles to the west. Earthquake rupture is generally a naturally occurring phenomenon along fault lines; however, certain human activities, mining, hydraulic fracturing, dam construction, and explosive blasting have historically triggered ruptures. The Project activities involve minimal soil excavations to a maximum depth of 20 feet and would not introduce any substantial earth movement or pressure build up that could result in rupture as a result of Project activities. Geologic mapping further supports this as there is no further evidence of known faults within the Project site or immediate surroundings and no indications that the site conditions would be subject to rupture from Project features such as introduction of heat in the environment that would alter the soil conditions. The geological characteristics of the site and soils combined with the remote nature of the Project area result in the Project having very limited potential to directly or indirectly cause substantial adverse effects due to the rupture of a known earthquake fault. Therefore, the Project would have no impact.

   ii) *Strong seismic ground shaking?*

As illustrated in Table 3-6, there are several major faults nearby that put the site at risk of strong seismic shaking. The soils on site are made up of clay and other bay/delta sediment deposit materials with characteristics that put the Project structures at high risk for experiencing a strong seismic ground shaking event (Figure 3-1).

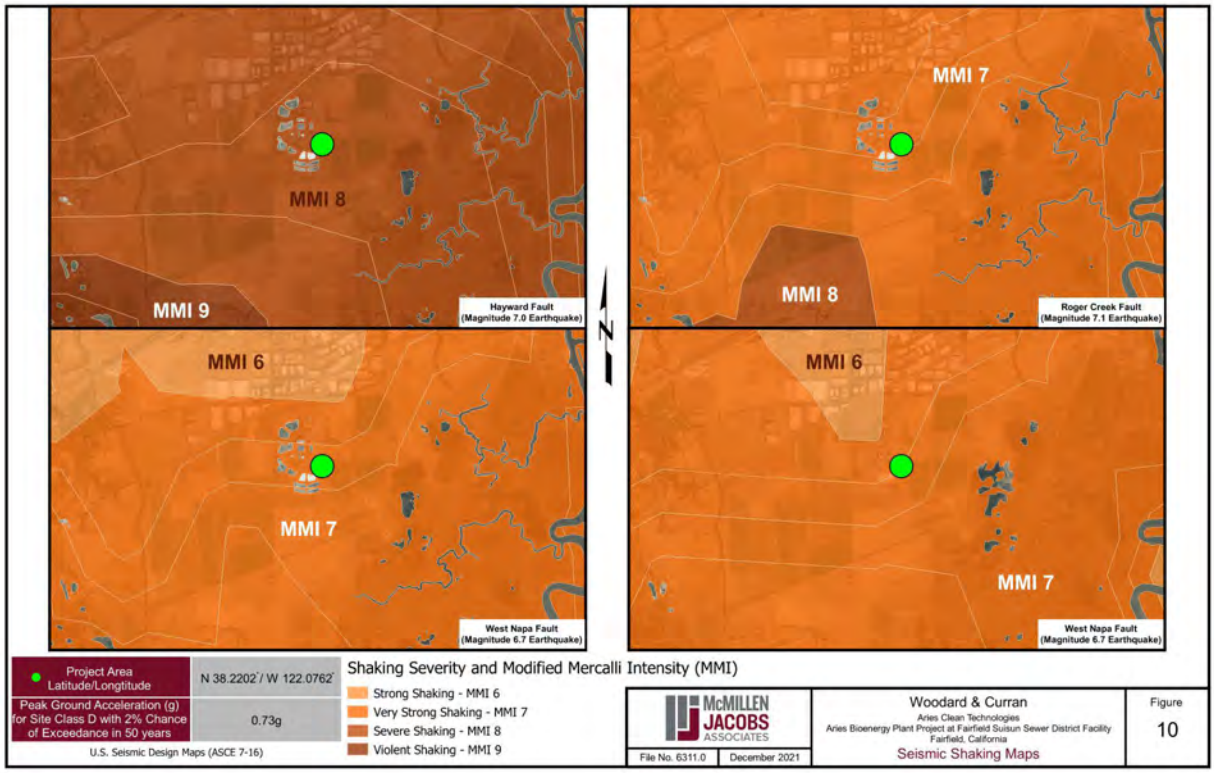


Figure 3-1: Seismic Shaking Intensity

The Project would be built in accordance with California Building Code Seismic standards, which account for the high likelihood of ground shaking occurring at the Project site. The design of the Project in accordance with existing regulations protecting structures from seismic shaking in addition to tailoring design to site specific recommendations from geotechnical investigations limits the potential for substantial adverse effects to occur as a result of strong seismic ground shaking. Therefore, the Project would have a less than significant impact.

iii) Seismic-related ground failure, including liquefaction?

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. Liquefaction occurs in saturated sandy soils, that is, soils in which the space between individual particles is completely filled with water, that takes on properties of a liquid when subject to strong ground shaking. Liquefaction is restricted to certain geologic and hydrologic environments, mainly areas where sands and silts were deposited in the last 10,000 years and where ground water is within 30 feet of the surface. Generally, the younger and looser the sediment and the higher the water table, the more susceptible a soil is to liquefaction. Soils underlying the site are generally very cohesive and not considered susceptible to liquefaction (FSSD 2009).

As illustrated in Figure 3-2, the Project is in area with moderate liquefaction susceptibility. However, subsurface conditions encountered in the Project area during the geotechnical exploration were predominantly clay with thin layers of silty and sandy materials. Consequently, the Project area has a low potential for liquefaction hazard from seismic-related events. Mapping completed by McMillen Jacobs (2021) summarizes liquefaction susceptibility based on the findings from the subsurface exploration performed for the Project. The relatively stiff clays and low potential for liquefaction hazard as well as the design features that account for seismic shaking make the potential for the Project

to result in substantial adverse impacts as a result of seismic related ground failure, including liquefaction, unlikely. Therefore, the Project would have a less than significant impact.

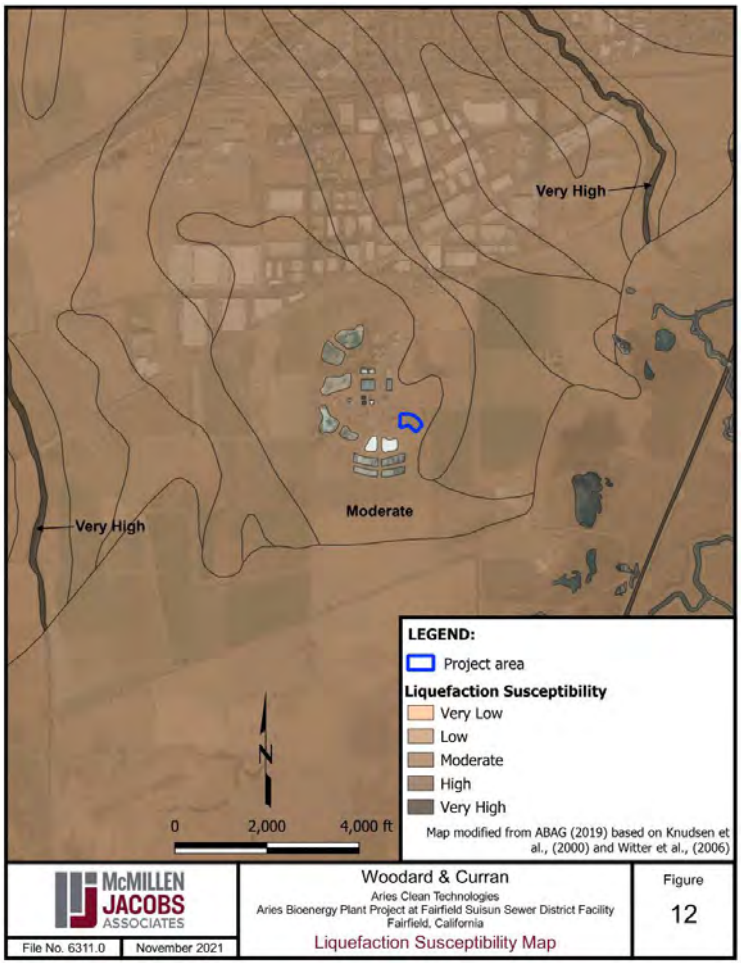


Figure 3-2: Liquefaction Susceptibility

iv) Landslides?

The topography of the Project area is generally flat with an approximately 5-foot maximum elevation change throughout the site. No steep slopes capable of producing rock falls or landslides are present on site. Trenches and excavation associated with construction of below ground Project facilities such as pipelines would have a limited potential to result in shallow debris slides with the potential for soil slumps from the trench slopes. Soils in the Project area have a moderate potential to slide under trench and excavation conditions. Cal/OSHA worker safety standards require that construction crews implement safety protocols and measures that account for these potential landslide slumps, limiting the potential for both the occurrence of landslides as well as the risk of adverse effect as a result of a landslide. The standards include complying with trenching and excavation requirements of 29 CFR 1926.651 and 1926.652. Project construction is required by law to comply with these safety standards, limiting the potential for substantial adverse effects as a result of landslides. Therefore, the Project would have a less than significant impact

b) Would the Project result in substantial soil erosion or the loss of topsoil?

The Project is on an approximately 7-acre site with proposed disturbance to approximately 3-acres or less. Near surface soil in the Project area is predominantly clay with a low erosion potential (McMillen Jacobs 2021). The size of the Project site would require the Project to comply with Clean Water Act Section 402 requirements associated with the National Pollutant Discharge Elimination System (NPDES) program; the Project would obtain coverage under the General Construction Permit (Construction General Permit Order 2009-0009-DWQ), which requires the completion of a SWPPP with site tailored best management practices and controls that limit the potential for substantial soil erosion or the loss of topsoil. Therefore, the Project would have a less than significant impact.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

The Project would occur within the previously disturbed, developed, or paved land of the existing WWTP site. As a result, the Project is not anticipated to result in substantial soil erosion or the loss of topsoil. As noted in impact 'a' 'iii', the potential for liquefaction is considered to be negligible. The Project would be constructed in compliance with applicable requirements to ensure that facilities are not subject to damage. The impact would be less than significant.

d) Would the Project be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Soils on the WWTP site have high to very high expansion potential. The Project would be constructed in compliance with applicable requirements to ensure that facilities are not subject to damage. The impact would be less than significant.

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The Project does not include the use of septic systems. There would thus be no impact associated with soils incapable of supporting septic systems.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Although no cultural or paleontological resources are expected to be present, the Project would require excavation to install foundations and underground utilities and it is not possible to completely eliminate the possibility that paleontological resources could be encountered during construction. In the event of an inadvertent discovery of or paleontological resources, Mitigation Measures GEO-1 would be implemented. This measure would reduce the potential for impacts to less than significant.

Mitigation Measures:

Mitigation Measure GEO-1: Protection of Paleontological Resources

If paleontological resources are discovered during earthmoving activities, the construction crew would immediately cease work near the find. In accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010), a qualified paleontologist would assess the nature and importance of the find and recommend appropriate salvage, treatment, and future monitoring and mitigation.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Discussion

a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Greenhouse gas (GHG) emissions are reported as metric tons per year (MT/year) measured as carbon dioxide equivalents (CO_2e). Because every GHG has a different global warming potential, CO_2 is used as the "reference gas" for climate change, and emissions of other GHGs are reported as CO_2e. For example, methane (CH_4) has a global warming potential 21 times greater than CO_2, so emissions of CH_4 are converted into CO_2e for purposes of calculating GHG emissions.

Project emissions for the Project were evaluated in two ways to assess air quality and GHG impacts. The California Emissions Estimator Model (CalEEMod) was used to assess impacts associated with construction and vehicular based emissions associated with operations. Emission factors associated with BAAQMD permitted Project facilities were used to estimate stationary source emissions associated with the Project. CalEEMod air quality modeling conducted for the Project estimates GHG emissions of 495 metric tons of carbon dioxide equivalent ($MTCO_2e$) for construction and 429 $MTCO_2e$ per year for operations. Although BAAQMD recommends quantifying and disclosing construction related GHG emissions, it does not identify a numeric threshold of significance for construction related GHG emissions because they are short, temporal, and small related to a projects' contribution to global warming over its lifetime. GHG emissions from operations would result from daily worker trips, annual operations and maintenance trips, and feedstock delivery trips. The BAAQMD identifies a threshold of significance for operational emissions of 2,000 $MTCO_2e$/year (BAAQMD 2017b) to assess whether a stationary source project would emit enough GHG to have a significant impact on the environment. According to BAAQMD guidance (2017) biogenic sources of GHG are not to be counted towards a project's total GHG emissions. Once operational, the Project would operate on biogenic sources, as the renewable fuels generated as part of the gasification process would be used to power the thermal oxidizer and dryers. The Project requires a back-up natural gas supply to facilitate Project start-up and to power the dryers in the event of an unscheduled outage where the gasifiers are unexpectedly offline. In this unlikely event it is assumed natural gas usage would be below approximately 29,000 million Btu (MMBtu) in that year, which would equate to 1,534 $MTCO_2e$/year. Combined with the GHG emissions from operational vehicle trips (429 $MTCO_2e$/year), the total annual operational emissions would be below the 2,000 $MTCO_2e$/year threshold.

Therefore, the Project would not have a cumulatively considerable contribution to greenhouse gas accumulation. As such, the Project's GHG emissions would have a less than significant impact.

b) Would the Project Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Project construction would generate some emissions GHGs, but this impact is expected to be outweighed by the long-term reduction in operational GHG emissions. Current biosolids and biomass disposal at landfills and land application of the fertilizer produced by the Lystek and similar entities are estimated to produce greater biogenic GHG emissions than the Project. While these GHG emissions are considered biogenic and carbon neutral, they do not remove carbon from the natural carbon cycle. The Project, however, captures additional carbon from the biomass and biosolids and creates a carbon sink when capturing the carbon in products that would not undergo anerobic decomposition or some other form of carbon release for a much longer period of time since the Project exports would be in the form of building materials such as additives for concrete. This reduction in biogenic GHGs is consistent with the Solano County Climate Action Plan (Solano County 2011) and other policies that aim to reduce emissions of greenhouse gases. The Project is thus expected to have a beneficial impact, and is consistent with applicable plans, policies and regulations for reduction of greenhouse gas emissions.

Mitigation Measures: None required or recommended.

3.9 Hazards and Hazardous Materials

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Discussion

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Hazardous materials associated with construction of the Project facility would be typical of most construction projects of this type. A Phase I ESA was prepared for the Project (Woodard & Curran 2021) to evaluate existing hazards associated with the Project area. Based on the information reviewed for the Phase I ESA, no Recognized Environmental Conditions (RECs), controlled RECs (CRECs), or historical RECs (HRECs) (as defined in ASTM E-1527-13) were identified as being associated with the current or historical use of the subject property. Materials used during construction would include small quantities of gasoline, diesel fuel, oils, lubricants, glues, solvents, detergents, degreasers, paints, ethylene glycol, dust palliative, and herbicides. A hazardous materials business plan would be provided to the Solano County Environmental Health Services Division/Hazardous Materials Section. The hazardous materials business plan would include a complete list of all materials used on site and information regarding how the materials would be transported and in what form they would be used. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During Project construction, safety data sheets for all applicable materials present at the site would be made readily available to on-site personnel.

Small quantities of hazardous waste may be generated during construction of the Project facility. This waste may include waste paint and glue, spent construction solvents, waste cleaners, waste oil, oily rags, and waste batteries. Workers would be trained to properly identify and handle all hazardous materials. Hazardous waste would be either recycled or disposed of at a permitted and licensed treatment and/or disposal facility. All hazardous waste hauled off site for recycling or disposal would be transported by a licensed and permitted hazardous waste hauler and disposed of at an approved location.

The Project would require the transport, storage, and use of fuels and other fluids for fueling/servicing of construction and operation equipment. As an existing WWTP, this practice is already in place for current operations. The Project facility would require approximately 10,000 gallons of (19 percent) aqueous ammonia, to be stored on site. The ammonia would be delivered to the site via trucks and unloaded into a 10,000-gallon storage tank. Additional materials needed for operation of the Project facility include the ORC working fluid, heating oil, and SorbSaver (a high surface area hydrated lime). The hydrated lime sorbent would be delivered by truck to the site and unloaded into a sorbent storage silo. Transportation, storage, and disposal/recycling of such products is extensively regulated at the Federal, State, and local levels. Current and future construction activities associated with the Project would be required to comply with these regulations.

Aqueous ammonia is listed as a hazardous substance under the Clean Water Act (CWA) (40 CFR 116.4 and 40 CFR 117.3) and is classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA) of 1976 (40 CFR 261.22 Corrosive #D002) (Tanner Industries 2020). Primary concerns regarding accidental releases of aqueous ammonia are related to groundwater contamination, inhalation of vapors, ingestion, or contact with skin or eyes. Accidental releases of aqueous ammonia could occur from leaking seals, piping failures due to the loss of mechanical integrity and corrosion, physical damage of the system components from equipment collisions, and those failures that occur during ammonia deliveries. Due to the rural nature of the surrounding area, potential hazards to the public are minimal. However, employees of the Project facility and nearby WWTP facilities may be exposed to aqueous ammonia in the event of a release. The most likely exposure to aqueous ammonia would be from vapor inhalation or skin and eye contact. Inhalation can result in irritation of the respiratory tract, bronchospasm, edema, or respiratory arrest

(Tanner Industries 2020). Physical contact with aqueous ammonia can result in irritation, corrosive burns, blisters, caustic burns, or blindness (Tanner Industries 2020).

Aqueous ammonia and other chemicals would be stored safely in accordance with all Federal, State, and local regulations. Use and disposal of all hazardous materials would be conducted in accordance with existing laws and regulations for appropriate handling and disposal. FSSD has an existing Hazardous Materials Business Plan, which would be updated to address on-site storage of aqueous ammonia and submitted to the Solano County Department of Environmental Management, Environmental Health Services Division. Project operation is expected to result in a less than significant hazard to the public or the environment.

Therefore, the Project would not create a significant hazard to the public or the environment impacts. Potential impacts would be less than significant.

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

As described for checklist question "a" the Project would involve the use of fuels during the construction phase. Use and disposal of all hazardous materials would be conducted in accordance with existing laws and regulations for appropriate handling and disposal. All activities within the WWTP would be subject to the facility's existing Spill Prevention, Control, and Countermeasure (SPCC) Plan, which contains measures to ensure safe handling of fuels on site and appropriate management of any spills.

Operation of the facility would require use of chemicals such as aqueous ammonia, which is classified as hazardous materials. Storage, use and disposal of all hazardous materials would be conducted in accordance with existing laws and regulations for appropriate handling and disposal and FSSD's existing Hazardous Materials Business Plan, would be updated to address on-site storage of aqueous ammonia and submitted to the Solano County Department of Environmental Management, Environmental Health Services Division. Project operation is expected to result in a less than significant hazard to the public or the environment.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The Project site is not located within one-quarter mile of an existing or proposed school (FSSD 2009). There would be no impact.

d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The WWTP is not a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (DTSC 2021), and according to the SWRCB Geotracker database (2021), there are no leaking underground storage tanks near the site. There would be no impact.

e) Would the Project for a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?

There are no public or private airports located in the vicinity of the WWTP. The site is not located within an airport land use plan or within two miles of a public or private airport. There would no impact.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

All construction and operational activities would take place within the existing FSSD property line with the small exception of potential utility connections within road right-of-ways. These utility connections would be brief in duration and associated with connections to existing infrastructure. Associated impacts to roadways would be limited to one travel lane (if needed at all) and traffic safety controls would be undertaken. Emergency access would be maintained and no conflict with emergency evacuation or response plans would occur. As described in Sections 2.3.2 and 2.3.3, traffic associated with construction and operation would be minimal and would not interfere with any emergency response or evacuation plan. The impact would be less than significant.

g) Would the Project Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The WWTP is surrounded on three sides by open-space lands that have the risk of wildfires. Calfire designates fire hazard severity zones in the state and has designated the northern portion of the site as having moderate hazard, with the southern portion of the site designated as high hazard (Calfire n.d.). The WWTP is in a Local Responsibility Area and is served by the City of Fairfield Fire Department. Construction would take place on previously disturbed ground and it is thus not expected that construction activities would present a substantial risk of igniting combustible materials or vegetation. In addition, the contractor would be required to use equipment with spark arrestors and to have fire suppression equipment on site. The impact would be less than significant.

Mitigation Measures: None required or recommended.

3.10 Hydrology and Water Quality

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐

iii)	create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv)	impede or redirect flood flows?	☐	☐	☐	☒
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	☐	☐	☐	☒
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Discussion

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The WWTP discharges treated wastewater primarily to Boynton Slough, with intermittent discharges to two duck ponds and Ledgewood Creek, all of which are waters of the United States within the Suisun Basin watershed tributary to Suisun Marsh and Suisun Bay. As of May 1, 2020, this discharge is subject to the Waste Discharge Requirements for the Fairfield-Suisun Sewer District, Order No. R2-2020-0012, NPDES No. CA0038024.

The Project would comply with the Clean Water Act Section 402 requirements associated with the NPDES program in which the Project would obtain coverage under the General Construction Permit (Construction General Permit Order 2009-0009-DWQ), which requires the completion of a SWPPP with site tailored best management practices and controls that limit the potential for substantial soil erosion or the loss of topsoil. Activities related to the Project would comply with these permit requirements and there would be a less than significant impact associated with violation of water quality standards or waste discharge requirements.

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

The Project would not use groundwater supplies. Dewatering and Project construction could result in work within groundwater, however, temporary dewatering or other construction methods would not permanently impact groundwater supplies or recharge. While the Project would result in a small increase in impervious surface coverage, the change is not substantive and site drainage would follow a course similar to the existing drainage patterns. Additionally, the existing site is not currently used for groundwater recharge, thus the Project would not substantially interfere with recharge and impacts would be less than significant.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?

The Project would not result in a change in the local drainage patterns of the Project area. Stormwater flows would remain similar to existing conditions and would follow existing drainage patterns but may be directed to an on-site retention pond for initial storage before being fed into the existing FSSD stormwater drainage system. Changes to

impervious surface area at the site would be minor and would occur as a result of new buildings and equipment at the Project site. All construction activities would be conducted in accordance with best management practices specified in the construction SWPPP to prevent erosion, siltation, and other construction-related pollutants (such as potential leaks from construction equipment). The Project site is not located within a Special Flood Hazard Area as designated by the Federal Emergency Management Agency (FEMA 2021) and would not create major changes to drainage or impervious surface area at the site; therefore, the Project would not have the potential to impede or redirect flood flows and impacts would be less than significant.

d) Would the Project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?

The Project site is not located within a Special Flood Hazard Area as designated by FEMA (FEMA 2021). The Project site is located inland, more than six miles north of Grizzly Bay, and is thus not expected to be affected by tsunamis. There are no other nearby large water bodies that could subject the site to seiche or mudflows. There would be no impact.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As discussed above, the impact on water quality and groundwater resources would be less than significant. Therefore, the Project would not conflict with a water quality control plan or sustainable groundwater management plan and the impact would be less than significant.

Mitigation Measures: None required or recommended.

3.11 Land Use and Planning

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Discussion

a) Would the Project physically divide an established community?

The Project would be constructed entirely within the existing WWTP and would thus not divide an established community. There would be no impact.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The City of Fairfield would need to issue a Conditional Use Permit for the Project finding that the Project is consistent with existing Public Facility land use and zoning of the WWTP property and would not conflict with any land use plan, policy or regulation. As a Project that would handle solid waste and generate energy, the proposed use is considered consistent with the Public Facility designation of the treatment plant. There would be no impact.

Mitigation Measures: None required or recommended.

3.12 Mineral Resources

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

a, b) Would the Project a) result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or, b) result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Mineral resources mined or produced within Solano County include mercury, sand and gravel, clay, stone products, calcium, and sulfur. Known mineral resource zones (MRZs) are located to the northeast of Vallejo, to the south and southeast of Green Valley, in areas south and east of Travis Air Force Base, and in pockets located within both Vacaville and Fairfield (Solano County 2008). There are no known economically significant mineral resources within the Project site. There would be no impact.

Mitigation Measures: None required or recommended.

3.13 Noise

Would the Project result in:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

Discussion

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Ambient noise levels at the WWTP are estimated to be in the 60 to 70 A-weighted decibels (dBA)[6] range, and the nearest sensitive receptor is a residence about 3,000 feet from the area where project facilities would be constructed (FSSD 2009). To reduce the impacts of construction noise, the City of Fairfield limits construction activities to the hours from 7 a.m. to 10 p.m. daily. Noise levels associated with construction typically range from 75 to 90 dBA, but because noise levels would be considerably attenuated by distance, the construction noise levels at the sensitive receptor would be less than 60 dBA and would not be expected to result in a perceptible change in the existing noise environment. Construction noise impacts are expected to be less than significant.

Operation of the Project is expected to generate very little noise. Some additional truck traffic would be generated but the numbers of trucks are not expected to substantially increase noise levels, and truck routes would not affect sensitive receptors. The Project would be operated within the boundaries of the WWTP and there are no nearby sensitive receptors. Operation of the Project is thus not expected to cause a noticeable change in the noise level at nearby receptors. Operational noise impacts are expected to be less than significant.

b) Would the Project result in the generation of excessive groundborne vibration or groundborne noise levels?

The Project does not involve substantial ground disturbing activities. Construction associated with utility and foundation installation would disturb the hard clay soils but would be limited and would not generate excessive groundborne vibration and groundborne noise. Additionally, any groundbourne vibration would attenuate prior to reaching sensitive receptors outside the WWTP boundaries. Operation of the Project facility would include truck travel, which would have limited potential to generate groundborne vibration, however, this vibration would be temporary and short in duration, and not excessive. Therefore, the impact would be less than significant.

c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

The Project site is not in the vicinity of a public or private airstrip; the nearest airport is the Napa County Airport, located approximately 10 miles west of the Project site. There would be no impacts.

Mitigation Measures: None required or recommended.

[6] A-weighted decibels are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced, compared with unweighted decibels, in which no correction is made for audio frequency. This correction is made because the human ear is less sensitive at low audio frequencies, especially below 1000 Hz, than at high audio frequencies.

3.14 Population and Housing

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a) Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The Project would improve biomass management options and expand renewable energy alternatives available to the WWTP but would not increase capacity of the WWTP. The Project would not induce unplanned population growth in the area. There would be no impact.

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The Project would be constructed and operated within the existing boundaries of the WWTP and would not displace people or housing. There would be no impact.

Mitigation Measures: None required or recommended.

3.15 Public Services

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	☐	☐	☐	☒
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒

Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services (fire protection, police protection, schools, parks, or other public facilities)?

The Project would not change existing land use at the WWTP site and would not increase population or otherwise create additional demand for public services in the area. Because the Project would not induce or accommodate growth, the demand for fire and police protection, schools, parks or other facilities would not be affected. Project facilities would comply with applicable local fire ordinances and would not create demand for police services. The existing WWTP has safety features, including controlled site access, to prevent illegal trespass on the site. There would be no impacts associated with provision of public services.

Mitigation Measures: None required or recommended.

3.16 Recreation

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The Project would not increase the use of existing parks or recreational facilities and thus would not result in substantial physical deterioration of facilities. There would be no impact.

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The project would not increase the use of existing parks or recreational facilities and would not require construction or expansion of new recreational facilities and thus no adverse physical effect on the environment would occur. There would be no impact.

Mitigation Measures: None required or recommended.

3.17 Transportation

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Discussion

a) Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Transportation in Solano County is overseen by the Solano Transportation Authority (STA), which is responsible for countywide transportation planning, programming transportation funds, managing and providing transportation programs and services, delivering transportation projects, and setting transportation priorities. The Comprehensive Transportation Plan (CTP), published in 2020 by STA, analyzes the current state of the County's transportation systems to establish a set of goals, identify strategies, and implement action plans that best bridge the gap between ideal and existing conditions (STA 2020). Access to the WWTP is provided by I-80, State Route 12, Chadbourne Road and Cordelia Road.

As described in the Project Description (Section 2.3.3), construction would generate a maximum of 50 round trips per day for workers traveling to the Project site and a maximum of 15 truck deliveries per day. This amount of additional traffic would not be expected to affect traffic congestion in the vicinity of the WWTP. Construction would be temporary and, as such, impacts are not expected to have a significant impact related to the CTP, which focuses on long-term, regional circulation projects.

Once operational, the Project is expected to require an additional 12 employees working at the WWTP site, resulting in up to 12 round trips per day. During operations it is estimated that up 12 trucks per day could be used to deliver feedstock materials (10 trucks) and remove carbon products from the Project to be sold off site (2 trucks). These additional trips would not constitute a substantial change, would be consistent with the type of traffic that occurs in the Project vicinity, and would not significantly affect the implementation of the CTP.

Therefore, the Project's long-term potential to conflict with circulation planning would be less than significant.

b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

As discussed in impact "a" above, construction would generate a maximum of 50 round trips per day for workers traveling to the Project site and a maximum of 15 truck deliveries per day. This increase in VMT would be typical of a construction project and would be temporary. Therefore, construction of the proposed Project would have no impact on the long-term VMT in the region.

Operation of the Project is expected to require an additional 12 employees working at the WWTP site, resulting in up to 12 round trips per day. During operations it is estimated that up 12 trucks per day could be used to deliver feedstock materials and remove carbon products from the Project to be sold off site. Feedstock trips would substantially offset existing trips that are required to dispose of feedstock. It is anticipated that feedstock supply logistic cost considerations would minimize round-trip distances for feedstock trucking, which is expected to significantly reduce the actual miles traveled as a result of the Project.

The Technical Advisory on Evaluating Transportation Impacts in CEQA (Governor's Office of Planning and Research 2018) provides the following guidance for evaluating projects that include heavy truck traffic:

> *Vehicle Types. Proposed Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks.*

The technical advisory also provides a screening threshold for small projects, stating that:

> "… projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact."

The statements from the advisory indicate that heavy truck trips, such as those trips generated by the project, are not subject to VMT analysis, thresholds, or reduction requirements as part of the CEQA review process. Rather, VMT analysis for the purposes of identifying potentially significant impacts under CEQA are for use in evaluating office, residential, and retail projects. Therefore, the project haul truck trips, by definition, do not create an inconsistency with CEQA Guidelines section 15064.3(b) and do not create a significant impact with regards to VMT. Worker trips associated with project operation would be well under 110 trips per day and would also not create a significant increase in VMT. Impacts would be less than significant.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Project would not alter existing roadways or require use of incompatible equipment on roads in the vicinity of the WWTP. Equipment that would be used as part of the Project would be driven to and from the site in accordance with state transportation laws. There would be no impact.

d) Would the Project result in inadequate emergency access?

The Project would not affect emergency access to the WWTP. There would be no impact.

Mitigation Measures: None required or recommended.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

Discussion

a) *Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:*

   i) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

   ii) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

As described in the Cultural Resources discussion (Section 3.5), the Project site and the larger WWTP have not been identified as a significant historical or cultural resource and no resources at the WWTP have been listed or eligible for listing on a local, state, or federal register of historical resources. The Native American Heritage Commission (NAHC) in Sacramento, California was queried May 16, 2016, in an effort to determine whether any sacred sites listed on its Sacred Lands File were present at the WWTP. A response from the NAHC, received May 20, 2016, stated that a search of its Sacred Land File failed to indicate the presence of Native American cultural resources in the immediate project area. At the time two Native American representatives were contacted for further knowledge of Native American

resources within or near the WWTP. No further resources were identified at that time. No tribal groups have requested consultation pursuant to Public Resources Code section 2180.3.1, and thus no tribal cultural resources have been identified at the WWTP. In the event of an inadvertent discovery, Mitigation Measures CUL-1 would be implemented to provide steps for mitigating impacts to a previously undiscovered resource. These measures would reduce the potential for impacts to less than significant.

Mitigation Measures:

Mitigation Measure CUL-1: Proper Handling of Inadvertent Discovery of Cultural Resources or Human Remains

Refer to mitigation measure in Section 3.5.

3.19 Utilities and Service Systems

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

a) *Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

Utilities for the Project would primarily be provided through existing connections to water, wastewater, stormwater drainage, and telecommunication facilities within the FSSD WWTP. A new transformer may be required to provide the site with an electrical power supply and a natural gas connection would need to be constructed to connect with the existing gas line on Chadbourne Road or at the PG&E substation on the northeast corner of the FSSD property (Figure 2-5). Construction of the new utility connections would occur adjacent to existing utility connections within existing and previously-disturbed FSSD-owned property. Therefore, impacts on the environment due to new or relocated utilities would be less than significant.

b) *Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?*

Non-potable water required by the Project would be provided by FSSD effluent water. The Project would also require some potable water, but the facility would implement design features to significantly reduce water demand. Sufficient water supplies are expected to be available through the existing FSSD water connection; according to the City of Fairfield's 2020 Urban Water Management Plan (City of Fairfield 2021), there will be sufficient supplies to meet projected demands through 2045 in normal, single-dry, and multiple-dry years. Therefore, impacts would be less than significant.

c) *Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?*

The Project would not generate additional wastewater and would not entail the construction of new housing or accommodation of additional growth that would increase wastewater treatment demands. FSSD is the wastewater treatment provider and would be implementing the Project. There would be no impact.

d-e) *Would the Project d) generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or, e) comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

Any waste generated during construction would be disposed of in accordance with applicable federal, state and local regulations. Disposal would occur at permitted landfills, and the construction contractor would be encouraged to recycle construction materials to the extent feasible.

The Project would generate solid waste that would be disposed of at the Potrero Hills Landfill. However, the Project would maintain a net benefit, as it is aimed at providing alternative management options for biosolids in the San Francisco Bay region and surrounding northern California area, thereby diverting solid waste from disposal. By increasing diversion of organic materials from landfills (via providing an approved expanded feedstock list that includes a variety of biosolids, wood, agricultural materials, and other organic streams to produce biomass-based carbon products that sequester carbon and renewable energy), the Project would help comply with federal, state, and local management and reduction statutes and regulations related to solid waste and goals for reduction of waste to landfills. The Project is thus expected to have a beneficial impact and is consistent with attaining solid waste reduction goals.

Mitigation Measures: None required or recommended.

3.20 Wildfire

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Discussion

a-d) Would the Project a) substantially impair an adopted emergency response plan or emergency evacuation plan; b) due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; c) require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or, d) expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The Project is located within a Local Responsibility Area and is not designated as a Very High Fire Hazard Severity Zone (Calfire n.d.). Therefore, the Project would have no impact.

Mitigation Measures: None required or recommended.

3.21 Mandatory Findings of Significance

		Potentially Significant Impact	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a)	Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b)	Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c)	Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Discussion

a) Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

The Project would be located entirely within the existing WWTP, which has little to no habitat value, and would thus not degrade habitat, or affect sensitive species. The facilities would be installed within existing disturbed surfaces and would not have the potential to affect historic or prehistoric resources. There would be no impact.

b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

FSSD is not planning other projects that would be expected to result in cumulative impacts when combined with the Project.

According to the City of Fairfield's Planning Division website, major projects underway in the City include the Green Valley 3 Apartments, Villages at Fairfield, and Pacific Flyway Center; none of the projects are near the WWTP site.

The City also has a number of capital improvement projects in various stages of design and construction, including road improvements and pipeline projects, but none of these would occur in the vicinity of the WWTP.

It is not expected that the Project would result in cumulatively considerable impacts.

c) *Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

As demonstrated in Sections 3.1 through 3.20, the Project would not be expected to have adverse effects on human beings, either directly or indirectly. The Project would be constructed entirely within the existing WWTP site and would be located about 3,000 feet from the nearest sensitive receptor. Impacts on air quality, noise, and traffic would be minimal and would not be expected to result in perceptible effects. Construction is expected to last approximately 15 months. No longer-term impacts to human beings would be expected to occur during operation of the Project.

Mitigation Measures: None required or recommended.

4. REPORT PREPARATION

4.1 Report Authors

This report was prepared by Fairfield-Suisun Sewer District, Aries Fairfield LLC, Woodard & Curran, McMillen Jacobs and Associates, and Mizutani Environmental. Staff from these agencies and companies that were involved include:

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McMillen Jacobs and Associates

- Dru Nielson, Geotechnical Investigations
- Su Soe, Geotechnical Investigations

Mizutani Environmental

- Courtney Mizutani, Air Permitting

4.2 References

Bay Area Air Quality Management District (BAAQMD). 2017a. Air Quality Standards and Attainment Status. January. Available at: https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status#twelve

Bay Area Air Quality Management District (BAAQMD). 2017b. Final 2017 Clean Air Plan. April. Available at: https://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans

California Department of Conservation. 1993. California Geological Survey – Alquist Priolo Earthquake Fault Zones for Fairfield South Quadrangle.

California Department of Conservation. 2016. California Important Farmland Finder. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/

California Department of Forestry and Fire Protection (Calfire). n.d. Fire Hazard Severity Zones (FHSV) Viewer. Available at: https://egis.fire.ca.gov/FHSZ/

California Department of Toxic Substances Control (DTSC). 2021. EnviroStor. Available at: https://www.envirostor.dtsc.ca.gov/public/

California Department of Transportation (Caltrans). 2019. California State Scenic Highways. August. Available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

California State Water Resources Control Board (SWRCB). 2021. GeoTracker. Available at: https://geotracker.waterboards.ca.gov/

City of Fairfield. 1999. Scenic Vistas and Roadways Plan. June. Available at: https://www.fairfield.ca.gov/home/showpublisheddocument?id=366

City of Fairfield. 2021. 2020 Urban Water Management Plan. July.

Fairfield-Suisun Sewer District (FSSD). 2005. Master Plan Environmental Impact Report. September.

Fairfield-Suisun Sewer District (FSSD). 2009. Initial Study/Mitigated Negative Declaration for Ultraviolet Disinfection Upgrade Projects.

Federal Emergency Management Agency (FEMA). 2021. FEMA Flood Map Service Center. Available at: https://msc.fema.gov/portal/home

Lystek. 2014. Lystek Class A Biosolids Process, presented at CBA Symposium, UC Davis, June 3.

McMillan Jacobs. 2021. Aries Fairfield Bioenergy Plant Preliminary Geotechnical Figures.

Pacific Gas and Electric Company (PG&E). 2020. Where Your Electricity Comes From. Available at: https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2020/1220-PowerContent-ADA.pdf

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Available at: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf

Solano County Water Agency. 2012. Solano Multispecies Habitat Conservation Plan. October. Available at: https://www.scwa2.com/solano-multispecies-habitat-conservation-plan/

Solano County. 1982. Solano County Policies and Regulations Governing the Suisun Marsh, Solano County Planning Department. December.

Solano County. 2008. Solano County General Plan. Available at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp

Solano County. 2011. County of Solano Climate Action Plan. June. Available at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=10080

Solano Transportation Authority (STA). 2019. Solano Congestion Management Program (CMP) 2019. Available at: https://sta.ca.gov/wp-content/uploads/2015/12/STA_CMP_Final_11-19-19.pdf

Solano Transportation Authority (STA). 2020. Solano County Comprehensive Transportation Plan 2040. Available at: https://sta.ca.gov/wp-content/uploads/2018/06/CTP_2020_Final-updated.pdf

Tanner Industries. 2020. Aqueous Ammonia: (SDS) Safety Data Sheet. Available at: https://www.tannerind.com/aqua-sds.html

United States Department of Agriculture (USDA). 1998. Ecological Subregions of California: Section and Subsection Descriptions, USDA Firest Service, Pacific Southwest Regions, San Francisco, CA. Available at: http://www.fs.fed.us/r5/projects/ecoregions/title_page.htm

United States Environmental Protection Agency (USEPA). 2016. Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2. October. Available at: https://www.govinfo.gov/content/pkg/FR-2016-10-25/pdf/2016-21203.pdf

Woodard & Curran. 2022. Health Risk Assessment – Modeling Approach and Results. January 11, 2022

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APPENDIX A: DETAILED AIR QUALITY MODELING OUTPUTS

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Aries FSSD

Solano-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	108.90	1000sqft	2.50	11,080.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	4			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project data; building sq ft taken from downwash structure inventory

Construction Phase - project data

Off-road Equipment - project data

Off-road Equipment - project data

Off-road Equipment - project data

Off-road Equipment - project data

Trips and VMT - project data; 30 workers per day, average 4 deliveries per day

On-road Fugitive Dust -

Demolition - satellite imagery; single structure

Grading - project data

Architectural Coating -

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Trips - 28 daily trips, 2.5 acre lot or 108,900 ft2

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Consumer Products - N/A

Area Coating - parking area = 1 acre

Energy Use - project is net-zero electricity

Water And Wastewater - water treated onsite

Solid Waste - treatment onsite

Construction Off-road Equipment Mitigation -

Area Mitigation - null

Fleet Mix - project data

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	5540	11080
tblAreaCoating	Area_Nonresidential_Interior	16620	11080
tblAreaCoating	Area_Parking	0	2792
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	220.00	230.00
tblConstructionPhase	NumDays	6.00	20.00
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	NT24E	3.70	0.00
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	T24E	1.32	0.00
tblEnergyUse	T24NG	19.51	0.00
tblFleetMix	HHD	0.02	0.00

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.05	0.43
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.03	0.11
tblFleetMix	LHD2	6.7100e-003	0.11
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	4.6030e-003	0.00
tblFleetMix	MHD	7.7740e-003	0.36
tblFleetMix	OBUS	9.9600e-004	0.00
tblFleetMix	SBUS	7.9500e-004	0.00
tblFleetMix	UBUS	3.9800e-004	0.00
tblGrading	AcresOfGrading	5.00	7.00
tblGrading	MaterialExported	0.00	2,500.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LandUseSquareFeet	108,900.00	11,080.00
tblOffRoadEquipment	HorsePower	247.00	158.00
tblOffRoadEquipment	HorsePower	247.00	158.00
tblOffRoadEquipment	HorsePower	97.00	402.00
tblOffRoadEquipment	HorsePower	16.00	247.00
tblOffRoadEquipment	HorsePower	16.00	247.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	LoadFactor	0.40	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.37

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	135.04	0.00
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	2.00	4.00
tblTripsAndVMT	WorkerTripNumber	8.00	30.00
tblTripsAndVMT	WorkerTripNumber	15.00	30.00
tblTripsAndVMT	WorkerTripNumber	5.00	30.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	14.70	81.40
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.26
tblWater	AerobicPercent	87.46	0.00
tblWater	AnaDigestCombDigestGasPercent	100.00	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	25,183,125.00	0.00
tblWater	SepticTankPercent	10.33	100.00

2.0 Emissions Summary

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0391	18.5075	25.7752	0.0507	4.0594	0.8967	4.6564	1.8767	0.8472	2.4268	0.0000	5,048.2872	5,048.2872	1.1054	0.2359	5,146.2308
2024	1.9264	17.3419	25.7404	0.0432	0.2736	0.8013	1.0749	0.0732	0.7564	0.8296	0.0000	4,159.1429	4,159.1429	0.8887	0.0183	4,186.8104
Maximum	**2.0391**	**18.5075**	**25.7752**	**0.0507**	**4.0594**	**0.8967**	**4.6564**	**1.8767**	**0.8472**	**2.4268**	**0.0000**	**5,048.2872**	**5,048.2872**	**1.1054**	**0.2359**	**5,146.2308**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0391	18.5075	25.7752	0.0507	2.1883	0.8967	2.7853	0.9426	0.8472	1.4928	0.0000	5,048.2872	5,048.2872	1.1054	0.2359	5,146.2308
2024	1.9264	17.3419	25.7404	0.0432	0.2736	0.8013	1.0749	0.0732	0.7564	0.8296	0.0000	4,159.1429	4,159.1429	0.8887	0.0183	4,186.8104
Maximum	**2.0391**	**18.5075**	**25.7752**	**0.0507**	**2.1883**	**0.8967**	**2.7853**	**0.9426**	**0.8472**	**1.4928**	**0.0000**	**5,048.2872**	**5,048.2872**	**1.1054**	**0.2359**	**5,146.2308**

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	43.18	0.00	32.65	47.90	0.00	28.68	0.00	0.00	0.00	0.00	0.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.2293	4.4184	3.3387	0.0341	1.9809	0.0365	2.0174	0.5609	0.0347	0.5956		3,532.0780	3,532.0780	0.0242	0.3349	3,632.4838
Total	**0.2708**	**4.4185**	**3.3498**	**0.0341**	**1.9809**	**0.0365**	**2.0174**	**0.5609**	**0.0347**	**0.5957**		**3,532.1018**	**3,532.1018**	**0.0242**	**0.3349**	**3,632.5092**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.2293	4.4184	3.3387	0.0341	1.9809	0.0365	2.0174	0.5609	0.0347	0.5956		3,532.0780	3,532.0780	0.0242	0.3349	3,632.4838
Total	**0.2708**	**4.4185**	**3.3498**	**0.0341**	**1.9809**	**0.0365**	**2.0174**	**0.5609**	**0.0347**	**0.5957**		**3,532.1018**	**3,532.1018**	**0.0242**	**0.3349**	**3,632.5092**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2023	1/27/2023	5	20	
2	Site Preparation Grading	Grading	1/28/2023	2/24/2023	5	20	
3	Facilities Construction	Building Construction	2/25/2023	1/12/2024	5	230	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 7

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Dumpers/Tenders	1	8.00	247	0.40
Demolition	Excavators	1	8.00	97	0.37
Demolition	Rubber Tired Dozers	1	8.00	158	0.38
Site Preparation Grading	Dumpers/Tenders	1	4.00	247	0.40
Site Preparation Grading	Excavators	2	8.00	97	0.37
Site Preparation Grading	Rubber Tired Dozers	1	4.00	158	0.38
Site Preparation Grading	Tractors/Loaders/Backhoes	2	8.00	402	0.38
Facilities Construction	Cranes	1	1.00	231	0.29

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Facilities Construction	Forklifts	1	5.00	89	0.20
Facilities Construction	Generator Sets	2	8.00	84	0.74
Facilities Construction	Pavers	2	7.00	130	0.42
Facilities Construction	Paving Equipment	2	7.00	132	0.36
Facilities Construction	Rollers	2	7.00	80	0.38
Facilities Construction	Tractors/Loaders/Backhoes	3	4.00	97	0.37
Facilities Construction	Welders	1	3.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	30.00	4.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	30.00	4.00	438.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading										
Facilities Construction	14	30.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1230	0.0000	0.1230	0.0186	0.0000	0.0186			0.0000			0.0000
Off-Road	0.7686	7.4966	6.1745	8.2300e-003		0.4080	0.4080		0.3754	0.3754		797.5317	797.5317	0.2579		803.9801
Total	**0.7686**	**7.4966**	**6.1745**	**8.2300e-003**	**0.1230**	**0.4080**	**0.5311**	**0.0186**	**0.3754**	**0.3940**		**797.5317**	**797.5317**	**0.2579**		**803.9801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1600e-003	0.0721	0.0160	3.3000e-004	9.6400e-003	6.5000e-004	0.0103	2.6400e-003	6.2000e-004	3.2600e-003		34.6443	34.6443	1.9000e-004	5.4500e-003	36.2729
Vendor	5.0300e-003	0.1823	0.0644	8.3000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		87.9176	87.9176	4.8000e-004	0.0125	91.6631
Worker	0.0882	0.0634	0.6899	2.0700e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		208.8798	208.8798	6.9200e-003	6.4300e-003	210.9680
Total	**0.0944**	**0.3178**	**0.7703**	**3.2300e-003**	**0.2832**	**3.0100e-003**	**0.2862**	**0.0758**	**2.8300e-003**	**0.0787**		**331.4417**	**331.4417**	**7.5900e-003**	**0.0244**	**338.9040**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0554	0.0000	0.0554	8.3800e-003	0.0000	8.3800e-003			0.0000			0.0000
Off-Road	0.7686	7.4966	6.1745	8.2300e-003		0.4080	0.4080		0.3754	0.3754	0.0000	797.5317	797.5317	0.2579		803.9801
Total	**0.7686**	**7.4966**	**6.1745**	**8.2300e-003**	**0.0554**	**0.4080**	**0.4634**	**8.3800e-003**	**0.3754**	**0.3838**	**0.0000**	**797.5317**	**797.5317**	**0.2579**		**803.9801**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1600e-003	0.0721	0.0160	3.3000e-004	9.6400e-003	6.5000e-004	0.0103	2.6400e-003	6.2000e-004	3.2600e-003		34.6443	34.6443	1.9000e-004	5.4500e-003	36.2729
Vendor	5.0300e-003	0.1823	0.0644	8.3000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		87.9176	87.9176	4.8000e-004	0.0125	91.6631
Worker	0.0882	0.0634	0.6899	2.0700e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		208.8798	208.8798	6.9200e-003	6.4300e-003	210.9680
Total	**0.0944**	**0.3178**	**0.7703**	**3.2300e-003**	**0.2832**	**3.0100e-003**	**0.2862**	**0.0758**	**2.8300e-003**	**0.0787**		**331.4417**	**331.4417**	**7.5900e-003**	**0.0244**	**338.9040**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4020	0.0000	3.4020	1.6982	0.0000	1.6982			0.0000			0.0000
Off-Road	1.4215	12.7285	13.2595	0.0348		0.5689	0.5689		0.5234	0.5234		3,372.0157	3,372.0157	1.0906		3,399.2802
Total	**1.4215**	**12.7285**	**13.2595**	**0.0348**	**3.4020**	**0.5689**	**3.9709**	**1.6982**	**0.5234**	**2.2215**		**3,372.0157**	**3,372.0157**	**1.0906**		**3,399.2802**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0462	2.8705	0.6376	0.0130	0.3838	0.0257	0.4096	0.1053	0.0246	0.1299		1,379.4741	1,379.4741	7.4100e-003	0.2170	1,444.3195
Vendor	5.0300e-003	0.1823	0.0644	8.3000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		87.9176	87.9176	4.8000e-004	0.0125	91.6631
Worker	0.0882	0.0634	0.6899	2.0700e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		208.8798	208.8798	6.9200e-003	6.4300e-003	210.9680
Total	**0.1395**	**3.1162**	**1.3918**	**0.0159**	**0.6574**	**0.0281**	**0.6855**	**0.1785**	**0.0268**	**0.2053**		**1,676.2715**	**1,676.2715**	**0.0148**	**0.2359**	**1,746.9506**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5309	0.0000	1.5309	0.7642	0.0000	0.7642			0.0000			0.0000
Off-Road	1.4215	12.7285	13.2595	0.0348		0.5689	0.5689		0.5234	0.5234	0.0000	3,372.0157	3,372.0157	1.0906		3,399.2802
Total	**1.4215**	**12.7285**	**13.2595**	**0.0348**	**1.5309**	**0.5689**	**2.0998**	**0.7642**	**0.5234**	**1.2875**	**0.0000**	**3,372.0157**	**3,372.0157**	**1.0906**		**3,399.2802**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0462	2.8705	0.6376	0.0130	0.3838	0.0257	0.4096	0.1053	0.0246	0.1299		1,379.4741	1,379.4741	7.4100e-003	0.2170	1,444.3195
Vendor	5.0300e-003	0.1823	0.0644	8.3000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		87.9176	87.9176	4.8000e-004	0.0125	91.6631
Worker	0.0882	0.0634	0.6899	2.0700e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		208.8798	208.8798	6.9200e-003	6.4300e-003	210.9680
Total	**0.1395**	**3.1162**	**1.3918**	**0.0159**	**0.6574**	**0.0281**	**0.6855**	**0.1785**	**0.0268**	**0.2053**		**1,676.2715**	**1,676.2715**	**0.0148**	**0.2359**	**1,746.9506**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9459	18.2618	25.0209	0.0404		0.8943	0.8943		0.8450	0.8450		3,870.2458	3,870.2458	0.8869		3,892.4171
Total	**1.9459**	**18.2618**	**25.0209**	**0.0404**		**0.8943**	**0.8943**		**0.8450**	**0.8450**		**3,870.2458**	**3,870.2458**	**0.8869**		**3,892.4171**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0300e-003	0.1823	0.0644	8.3000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		87.9176	87.9176	4.8000e-004	0.0125	91.6631
Worker	0.0882	0.0634	0.6899	2.0700e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		208.8798	208.8798	6.9200e-003	6.4300e-003	210.9680
Total	**0.0933**	**0.2457**	**0.7543**	**2.9000e-003**	**0.2736**	**2.3600e-003**	**0.2759**	**0.0732**	**2.2100e-003**	**0.0754**		**296.7974**	**296.7974**	**7.4000e-003**	**0.0190**	**302.6312**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9459	18.2618	25.0209	0.0404		0.8943	0.8943		0.8450	0.8450	0.0000	3,870.2458	3,870.2458	0.8869		3,892.4171
Total	**1.9459**	**18.2618**	**25.0209**	**0.0404**		**0.8943**	**0.8943**		**0.8450**	**0.8450**	**0.0000**	**3,870.2458**	**3,870.2458**	**0.8869**		**3,892.4171**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0300e-003	0.1823	0.0644	8.3000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		87.9176	87.9176	4.8000e-004	0.0125	91.6631
Worker	0.0882	0.0634	0.6899	2.0700e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		208.8798	208.8798	6.9200e-003	6.4300e-003	210.9680
Total	**0.0933**	**0.2457**	**0.7543**	**2.9000e-003**	**0.2736**	**2.3600e-003**	**0.2759**	**0.0732**	**2.2100e-003**	**0.0754**		**296.7974**	**296.7974**	**7.4000e-003**	**0.0190**	**302.6312**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8394	17.1035	25.0365	0.0404		0.7990	0.7990		0.7542	0.7542		3,870.4974	3,870.4974	0.8820		3,892.5474
Total	**1.8394**	**17.1035**	**25.0365**	**0.0404**		**0.7990**	**0.7990**		**0.7542**	**0.7542**		**3,870.4974**	**3,870.4974**	**0.8820**		**3,892.5474**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.8800e-003	0.1822	0.0624	8.2000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0800e-003	8.8800e-003		86.6380	86.6380	4.7000e-004	0.0123	90.3194
Worker	0.0821	0.0563	0.6415	2.0000e-003	0.2464	1.1800e-003	0.2476	0.0654	1.0800e-003	0.0665		202.0075	202.0075	6.2700e-003	5.9700e-003	203.9436
Total	**0.0870**	**0.2384**	**0.7039**	**2.8200e-003**	**0.2736**	**2.3000e-003**	**0.2759**	**0.0732**	**2.1600e-003**	**0.0753**		**288.6456**	**288.6456**	**6.7400e-003**	**0.0183**	**294.2630**

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8394	17.1035	25.0365	0.0404		0.7990	0.7990		0.7542	0.7542	0.0000	3,870.4974	3,870.4974	0.8820		3,892.5474
Total	**1.8394**	**17.1035**	**25.0365**	**0.0404**		**0.7990**	**0.7990**		**0.7542**	**0.7542**	**0.0000**	**3,870.4974**	**3,870.4974**	**0.8820**		**3,892.5474**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.8800e-003	0.1822	0.0624	8.2000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0800e-003	8.8800e-003		86.6380	86.6380	4.7000e-004	0.0123	90.3194
Worker	0.0821	0.0563	0.6415	2.0000e-003	0.2464	1.1800e-003	0.2476	0.0654	1.0800e-003	0.0665		202.0075	202.0075	6.2700e-003	5.9700e-003	203.9436
Total	**0.0870**	**0.2384**	**0.7039**	**2.8200e-003**	**0.2736**	**2.3000e-003**	**0.2759**	**0.0732**	**2.1600e-003**	**0.0753**		**288.6456**	**288.6456**	**6.7400e-003**	**0.0183**	**294.2630**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2293	4.4184	3.3387	0.0341	1.9809	0.0365	2.0174	0.5609	0.0347	0.5956		3,532.0780	3,532.0780	0.0242	0.3349	3,632.4838
Unmitigated	0.2293	4.4184	3.3387	0.0341	1.9809	0.0365	2.0174	0.5609	0.0347	0.5956		3,532.0780	3,532.0780	0.0242	0.3349	3,632.4838

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	28.31	0.00	0.00	599,237	599,237
Total	28.31	0.00	0.00	599,237	599,237

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	81.40	0.00	0.00	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.428570	0.000000	0.000000	0.107140	0.107140	0.357150	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Unmitigated	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254

Aries FSSD - Solano-San Francisco County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0405					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0200e-003	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Total	**0.0415**	**1.0000e-004**	**0.0111**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0238**	**0.0238**	**6.0000e-005**		**0.0254**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0405					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0200e-003	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Total	**0.0415**	**1.0000e-004**	**0.0111**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0238**	**0.0238**	**6.0000e-005**		**0.0254**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Aries FSSD

Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	108.90	1000sqft	2.50	11,080.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	4			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project data; building sq ft taken from downwash structure inventory

Construction Phase - project data

Off-road Equipment - project data

Off-road Equipment - project data

Off-road Equipment - project data

Off-road Equipment - project data

Trips and VMT - project data; 30 workers per day, average 4 deliveries per day

On-road Fugitive Dust -

Demolition - satellite imagery; single structure

Grading - project data

Architectural Coating -

Aries FSSD - Solano-San Francisco County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Trips - 28 daily trips, 2.5 acre lot or 108,900 ft2

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Consumer Products - N/A

Area Coating - parking area = 1 acre

Energy Use - project is net-zero electricity

Water And Wastewater - water treated onsite

Solid Waste - treatment onsite

Construction Off-road Equipment Mitigation -

Area Mitigation - null

Fleet Mix - project data

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	5540	11080
tblAreaCoating	Area_Nonresidential_Interior	16620	11080
tblAreaCoating	Area_Parking	0	2792
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	220.00	230.00
tblConstructionPhase	NumDays	6.00	20.00
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	NT24E	3.70	0.00
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	T24E	1.32	0.00
tblEnergyUse	T24NG	19.51	0.00
tblFleetMix	HHD	0.02	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.05	0.43
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.03	0.11
tblFleetMix	LHD2	6.7100e-003	0.11
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	4.6030e-003	0.00
tblFleetMix	MHD	7.7740e-003	0.36
tblFleetMix	OBUS	9.9600e-004	0.00
tblFleetMix	SBUS	7.9500e-004	0.00
tblFleetMix	UBUS	3.9800e-004	0.00
tblGrading	AcresOfGrading	5.00	7.00
tblGrading	MaterialExported	0.00	2,500.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LandUseSquareFeet	108,900.00	11,080.00
tblOffRoadEquipment	HorsePower	247.00	158.00
tblOffRoadEquipment	HorsePower	247.00	158.00
tblOffRoadEquipment	HorsePower	97.00	402.00
tblOffRoadEquipment	HorsePower	16.00	247.00
tblOffRoadEquipment	HorsePower	16.00	247.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	LoadFactor	0.40	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.37

Aries FSSD - Solano-San Francisco County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	135.04	0.00
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	2.00	4.00
tblTripsAndVMT	WorkerTripNumber	8.00	30.00
tblTripsAndVMT	WorkerTripNumber	15.00	30.00
tblTripsAndVMT	WorkerTripNumber	5.00	30.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	14.70	81.40
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.26
tblWater	AerobicPercent	87.46	0.00
tblWater	AnaDigestCombDigestGasPercent	100.00	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	25,183,125.00	0.00
tblWater	SepticTankPercent	10.33	100.00

2.0 Emissions Summary

Aries FSSD - Solano-San Francisco County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0417	18.4822	25.8095	0.0509	4.0594	0.8967	4.6563	1.8767	0.8472	2.4268	0.0000	5,065.0418	5,065.0418	1.1046	0.2347	5,162.5854
2024	1.9286	17.3182	25.7690	0.0434	0.2736	0.8013	1.0749	0.0732	0.7564	0.8296	0.0000	4,177.1179	4,177.1179	0.8879	0.0174	4,204.4947
Maximum	**2.0417**	**18.4822**	**25.8095**	**0.0509**	**4.0594**	**0.8967**	**4.6563**	**1.8767**	**0.8472**	**2.4268**	**0.0000**	**5,065.0418**	**5,065.0418**	**1.1046**	**0.2347**	**5,162.5854**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0417	18.4822	25.8095	0.0509	2.1883	0.8967	2.7852	0.9426	0.8472	1.4928	0.0000	5,065.0418	5,065.0418	1.1046	0.2347	5,162.5854
2024	1.9286	17.3182	25.7690	0.0434	0.2736	0.8013	1.0749	0.0732	0.7564	0.8296	0.0000	4,177.1179	4,177.1179	0.8879	0.0174	4,204.4947
Maximum	**2.0417**	**18.4822**	**25.8095**	**0.0509**	**2.1883**	**0.8967**	**2.7852**	**0.9426**	**0.8472**	**1.4928**	**0.0000**	**5,065.0418**	**5,065.0418**	**1.1046**	**0.2347**	**5,162.5854**

Aries FSSD - Solano-San Francisco County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	43.18	0.00	32.65	47.90	0.00	28.68	0.00	0.00	0.00	0.00	0.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.2440	4.0918	3.7361	0.0346	1.9809	0.0364	2.0174	0.5609	0.0347	0.5956		3,588.7641	3,588.7641	0.0257	0.3307	3,687.9503
Total	**0.2855**	**4.0919**	**3.7472**	**0.0346**	**1.9809**	**0.0365**	**2.0174**	**0.5609**	**0.0347**	**0.5957**		**3,588.7879**	**3,588.7879**	**0.0257**	**0.3307**	**3,687.9757**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.2440	4.0918	3.7361	0.0346	1.9809	0.0364	2.0174	0.5609	0.0347	0.5956		3,588.7641	3,588.7641	0.0257	0.3307	3,687.9503
Total	**0.2855**	**4.0919**	**3.7472**	**0.0346**	**1.9809**	**0.0365**	**2.0174**	**0.5609**	**0.0347**	**0.5957**		**3,588.7879**	**3,588.7879**	**0.0257**	**0.3307**	**3,687.9757**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2023	1/27/2023	5	20	
2	Site Preparation Grading	Grading	1/28/2023	2/24/2023	5	20	
3	Facilities Construction	Building Construction	2/25/2023	1/12/2024	5	230	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 7

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Dumpers/Tenders	1	8.00	247	0.40
Demolition	Excavators	1	8.00	97	0.37
Demolition	Rubber Tired Dozers	1	8.00	158	0.38
Site Preparation Grading	Dumpers/Tenders	1	4.00	247	0.40
Site Preparation Grading	Excavators	2	8.00	97	0.37
Site Preparation Grading	Rubber Tired Dozers	1	4.00	158	0.38
Site Preparation Grading	Tractors/Loaders/Backhoes	2	8.00	402	0.38
Facilities Construction	Cranes	1	1.00	231	0.29

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Facilities Construction	Forklifts	1	5.00	89	0.20
Facilities Construction	Generator Sets	2	8.00	84	0.74
Facilities Construction	Pavers	2	7.00	130	0.42
Facilities Construction	Paving Equipment	2	7.00	132	0.36
Facilities Construction	Rollers	2	7.00	80	0.38
Facilities Construction	Tractors/Loaders/Backhoes	3	4.00	97	0.37
Facilities Construction	Welders	1	3.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	30.00	4.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	30.00	4.00	438.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading										
Facilities Construction	14	30.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1230	0.0000	0.1230	0.0186	0.0000	0.0186			0.0000			0.0000
Off-Road	0.7686	7.4966	6.1745	8.2300e-003		0.4080	0.4080		0.3754	0.3754		797.5317	797.5317	0.2579		803.9801
Total	**0.7686**	**7.4966**	**6.1745**	**8.2300e-003**	**0.1230**	**0.4080**	**0.5311**	**0.0186**	**0.3754**	**0.3940**		**797.5317**	**797.5317**	**0.2579**		**803.9801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2500e-003	0.0672	0.0157	3.3000e-004	9.6400e-003	6.5000e-004	0.0103	2.6400e-003	6.2000e-004	3.2600e-003		34.5971	34.5971	1.9000e-004	5.4400e-003	36.2234
Vendor	5.2500e-003	0.1701	0.0621	8.3000e-004	0.0271	1.1100e-003	0.0282	7.8100e-003	1.0700e-003	8.8700e-003		87.7484	87.7484	4.9000e-004	0.0125	91.4793
Worker	0.0906	0.0504	0.7264	2.2500e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		227.6858	227.6858	5.9700e-003	5.5000e-003	229.4753
Total	**0.0971**	**0.2876**	**0.8043**	**3.4100e-003**	**0.2832**	**3.0000e-003**	**0.2862**	**0.0758**	**2.8300e-003**	**0.0786**		**350.0313**	**350.0313**	**6.6500e-003**	**0.0234**	**357.1781**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0554	0.0000	0.0554	8.3800e-003	0.0000	8.3800e-003			0.0000			0.0000
Off-Road	0.7686	7.4966	6.1745	8.2300e-003		0.4080	0.4080		0.3754	0.3754	0.0000	797.5317	797.5317	0.2579		803.9801
Total	**0.7686**	**7.4966**	**6.1745**	**8.2300e-003**	**0.0554**	**0.4080**	**0.4634**	**8.3800e-003**	**0.3754**	**0.3838**	**0.0000**	**797.5317**	**797.5317**	**0.2579**		**803.9801**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2500e-003	0.0672	0.0157	3.3000e-004	9.6400e-003	6.5000e-004	0.0103	2.6400e-003	6.2000e-004	3.2600e-003		34.5971	34.5971	1.9000e-004	5.4400e-003	36.2234
Vendor	5.2500e-003	0.1701	0.0621	8.3000e-004	0.0271	1.1100e-003	0.0282	7.8100e-003	1.0700e-003	8.8700e-003		87.7484	87.7484	4.9000e-004	0.0125	91.4793
Worker	0.0906	0.0504	0.7264	2.2500e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		227.6858	227.6858	5.9700e-003	5.5000e-003	229.4753
Total	**0.0971**	**0.2876**	**0.8043**	**3.4100e-003**	**0.2832**	**3.0000e-003**	**0.2862**	**0.0758**	**2.8300e-003**	**0.0786**		**350.0313**	**350.0313**	**6.6500e-003**	**0.0234**	**357.1781**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4020	0.0000	3.4020	1.6982	0.0000	1.6982			0.0000			0.0000
Off-Road	1.4215	12.7285	13.2595	0.0348		0.5689	0.5689		0.5234	0.5234		3,372.0157	3,372.0157	1.0906		3,399.2802
Total	**1.4215**	**12.7285**	**13.2595**	**0.0348**	**3.4020**	**0.5689**	**3.9709**	**1.6982**	**0.5234**	**2.2215**		**3,372.0157**	**3,372.0157**	**1.0906**		**3,399.2802**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0499	2.6747	0.6267	0.0130	0.3838	0.0257	0.4096	0.1053	0.0246	0.1299		1,377.5918	1,377.5918	7.5800e-003	0.2167	1,442.3505
Vendor	5.2500e-003	0.1701	0.0621	8.3000e-004	0.0271	1.1100e-003	0.0282	7.8100e-003	1.0700e-003	8.8700e-003		87.7484	87.7484	4.9000e-004	0.0125	91.4793
Worker	0.0906	0.0504	0.7264	2.2500e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		227.6858	227.6858	5.9700e-003	5.5000e-003	229.4753
Total	**0.1458**	**2.8951**	**1.4153**	**0.0161**	**0.6574**	**0.0281**	**0.6855**	**0.1785**	**0.0268**	**0.2053**		**1,693.0260**	**1,693.0260**	**0.0140**	**0.2347**	**1,763.3052**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5309	0.0000	1.5309	0.7642	0.0000	0.7642			0.0000			0.0000
Off-Road	1.4215	12.7285	13.2595	0.0348		0.5689	0.5689		0.5234	0.5234	0.0000	3,372.0157	3,372.0157	1.0906		3,399.2802
Total	**1.4215**	**12.7285**	**13.2595**	**0.0348**	**1.5309**	**0.5689**	**2.0998**	**0.7642**	**0.5234**	**1.2875**	**0.0000**	**3,372.0157**	**3,372.0157**	**1.0906**		**3,399.2802**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0499	2.6747	0.6267	0.0130	0.3838	0.0257	0.4096	0.1053	0.0246	0.1299		1,377.5918	1,377.5918	7.5800e-003	0.2167	1,442.3505
Vendor	5.2500e-003	0.1701	0.0621	8.3000e-004	0.0271	1.1100e-003	0.0282	7.8100e-003	1.0700e-003	8.8700e-003		87.7484	87.7484	4.9000e-004	0.0125	91.4793
Worker	0.0906	0.0504	0.7264	2.2500e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		227.6858	227.6858	5.9700e-003	5.5000e-003	229.4753
Total	**0.1458**	**2.8951**	**1.4153**	**0.0161**	**0.6574**	**0.0281**	**0.6855**	**0.1785**	**0.0268**	**0.2053**		**1,693.0260**	**1,693.0260**	**0.0140**	**0.2347**	**1,763.3052**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9459	18.2618	25.0209	0.0404		0.8943	0.8943		0.8450	0.8450		3,870.2458	3,870.2458	0.8869		3,892.4171
Total	**1.9459**	**18.2618**	**25.0209**	**0.0404**		**0.8943**	**0.8943**		**0.8450**	**0.8450**		**3,870.2458**	**3,870.2458**	**0.8869**		**3,892.4171**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.2500e-003	0.1701	0.0621	8.3000e-004	0.0271	1.1100e-003	0.0282	7.8100e-003	1.0700e-003	8.8700e-003		87.7484	87.7484	4.9000e-004	0.0125	91.4793
Worker	0.0906	0.0504	0.7264	2.2500e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		227.6858	227.6858	5.9700e-003	5.5000e-003	229.4753
Total	**0.0958**	**0.2204**	**0.7886**	**3.0800e-003**	**0.2736**	**2.3500e-003**	**0.2759**	**0.0732**	**2.2100e-003**	**0.0754**		**315.4342**	**315.4342**	**6.4600e-003**	**0.0180**	**320.9546**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9459	18.2618	25.0209	0.0404		0.8943	0.8943		0.8450	0.8450	0.0000	3,870.2458	3,870.2458	0.8869		3,892.4171
Total	**1.9459**	**18.2618**	**25.0209**	**0.0404**		**0.8943**	**0.8943**		**0.8450**	**0.8450**	**0.0000**	**3,870.2458**	**3,870.2458**	**0.8869**		**3,892.4171**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.2500e-003	0.1701	0.0621	8.3000e-004	0.0271	1.1100e-003	0.0282	7.8100e-003	1.0700e-003	8.8700e-003		87.7484	87.7484	4.9000e-004	0.0125	91.4793
Worker	0.0906	0.0504	0.7264	2.2500e-003	0.2464	1.2400e-003	0.2477	0.0654	1.1400e-003	0.0665		227.6858	227.6858	5.9700e-003	5.5000e-003	229.4753
Total	**0.0958**	**0.2204**	**0.7886**	**3.0800e-003**	**0.2736**	**2.3500e-003**	**0.2759**	**0.0732**	**2.2100e-003**	**0.0754**		**315.4342**	**315.4342**	**6.4600e-003**	**0.0180**	**320.9546**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8394	17.1035	25.0365	0.0404		0.7990	0.7990		0.7542	0.7542		3,870.4974	3,870.4974	0.8820		3,892.5474
Total	**1.8394**	**17.1035**	**25.0365**	**0.0404**		**0.7990**	**0.7990**		**0.7542**	**0.7542**		**3,870.4974**	**3,870.4974**	**0.8820**		**3,892.5474**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-003	0.1700	0.0602	8.2000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		86.4702	86.4702	4.8000e-004	0.0123	90.1375
Worker	0.0841	0.0447	0.6724	2.1800e-003	0.2464	1.1800e-003	0.2476	0.0654	1.0800e-003	0.0665		220.1503	220.1503	5.3800e-003	5.1200e-003	221.8098
Total	**0.0892**	**0.2147**	**0.7325**	**3.0000e-003**	**0.2736**	**2.3000e-003**	**0.2759**	**0.0732**	**2.1500e-003**	**0.0753**		**306.6205**	**306.6205**	**5.8600e-003**	**0.0174**	**311.9473**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8394	17.1035	25.0365	0.0404		0.7990	0.7990		0.7542	0.7542	0.0000	3,870.4974	3,870.4974	0.8820		3,892.5474
Total	**1.8394**	**17.1035**	**25.0365**	**0.0404**		**0.7990**	**0.7990**		**0.7542**	**0.7542**	**0.0000**	**3,870.4974**	**3,870.4974**	**0.8820**		**3,892.5474**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-003	0.1700	0.0602	8.2000e-004	0.0271	1.1200e-003	0.0282	7.8100e-003	1.0700e-003	8.8800e-003		86.4702	86.4702	4.8000e-004	0.0123	90.1375
Worker	0.0841	0.0447	0.6724	2.1800e-003	0.2464	1.1800e-003	0.2476	0.0654	1.0800e-003	0.0665		220.1503	220.1503	5.3800e-003	5.1200e-003	221.8098
Total	**0.0892**	**0.2147**	**0.7325**	**3.0000e-003**	**0.2736**	**2.3000e-003**	**0.2759**	**0.0732**	**2.1500e-003**	**0.0753**		**306.6205**	**306.6205**	**5.8600e-003**	**0.0174**	**311.9473**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2440	4.0918	3.7361	0.0346	1.9809	0.0364	2.0174	0.5609	0.0347	0.5956		3,588.7641	3,588.7641	0.0257	0.3307	3,687.9503
Unmitigated	0.2440	4.0918	3.7361	0.0346	1.9809	0.0364	2.0174	0.5609	0.0347	0.5956		3,588.7641	3,588.7641	0.0257	0.3307	3,687.9503

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	28.31	0.00	0.00	599,237	599,237
Total	28.31	0.00	0.00	599,237	599,237

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	81.40	0.00	0.00	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.428570	0.000000	0.000000	0.107140	0.107140	0.357150	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Unmitigated	0.0415	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0405					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0200e-003	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Total	**0.0415**	**1.0000e-004**	**0.0111**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0238**	**0.0238**	**6.0000e-005**		**0.0254**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0405					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0200e-003	1.0000e-004	0.0111	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0238	0.0238	6.0000e-005		0.0254
Total	**0.0415**	**1.0000e-004**	**0.0111**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0238**	**0.0238**	**6.0000e-005**		**0.0254**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Aries FSSD - Solano-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Aries FSSD

Solano-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	108.90	1000sqft	2.50	11,080.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	4			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project data; building sq ft taken from downwash structure inventory

Construction Phase - project data

Off-road Equipment - project data

Off-road Equipment - project data

Off-road Equipment - project data

Off-road Equipment - project data

Trips and VMT - project data; 30 workers per day, average 4 deliveries per day

On-road Fugitive Dust -

Demolition - satellite imagery; single structure

Grading - project data

Architectural Coating -

Aries FSSD - Solano-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Trips - 28 daily trips, 2.5 acre lot or 108,900 ft2

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Consumer Products - N/A

Area Coating - parking area = 1 acre

Energy Use - project is net-zero electricity

Water And Wastewater - water treated onsite

Solid Waste - treatment onsite

Construction Off-road Equipment Mitigation -

Area Mitigation - null

Fleet Mix - project data

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	5540	11080
tblAreaCoating	Area_Nonresidential_Interior	16620	11080
tblAreaCoating	Area_Parking	0	2792
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	220.00	230.00
tblConstructionPhase	NumDays	6.00	20.00
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	NT24E	3.70	0.00
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	T24E	1.32	0.00
tblEnergyUse	T24NG	19.51	0.00
tblFleetMix	HHD	0.02	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.05	0.43
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.03	0.11
tblFleetMix	LHD2	6.7100e-003	0.11
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	4.6030e-003	0.00
tblFleetMix	MHD	7.7740e-003	0.36
tblFleetMix	OBUS	9.9600e-004	0.00
tblFleetMix	SBUS	7.9500e-004	0.00
tblFleetMix	UBUS	3.9800e-004	0.00
tblGrading	AcresOfGrading	5.00	7.00
tblGrading	MaterialExported	0.00	2,500.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LandUseSquareFeet	108,900.00	11,080.00
tblOffRoadEquipment	HorsePower	247.00	158.00
tblOffRoadEquipment	HorsePower	247.00	158.00
tblOffRoadEquipment	HorsePower	97.00	402.00
tblOffRoadEquipment	HorsePower	16.00	247.00
tblOffRoadEquipment	HorsePower	16.00	247.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	LoadFactor	0.40	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	135.04	0.00
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	2.00	4.00
tblTripsAndVMT	WorkerTripNumber	8.00	30.00
tblTripsAndVMT	WorkerTripNumber	15.00	30.00
tblTripsAndVMT	WorkerTripNumber	5.00	30.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	14.70	81.40
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.26
tblWater	AerobicPercent	87.46	0.00
tblWater	AnaDigestCombDigestGasPercent	100.00	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	25,183,125.00	0.00
tblWater	SepticTankPercent	10.33	100.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2479	2.2703	3.0474	5.3900e-003	0.0735	0.1087	0.1822	0.0275	0.1025	0.1299	0.0000	472.2175	472.2175	0.1016	4.1900e-003	476.0068
2024	9.6100e-003	0.0867	0.1286	2.2000e-004	1.3200e-003	4.0100e-003	5.3300e-003	3.5000e-004	3.7800e-003	4.1400e-003	0.0000	18.8788	18.8788	4.0300e-003	8.0000e-005	19.0036
Maximum	**0.2479**	**2.2703**	**3.0474**	**5.3900e-003**	**0.0735**	**0.1087**	**0.1822**	**0.0275**	**0.1025**	**0.1299**	**0.0000**	**472.2175**	**472.2175**	**0.1016**	**4.1900e-003**	**476.0068**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2479	2.2703	3.0474	5.3900e-003	0.0541	0.1087	0.1628	0.0180	0.1025	0.1205	0.0000	472.2170	472.2170	0.1016	4.1900e-003	476.0063
2024	9.6100e-003	0.0867	0.1286	2.2000e-004	1.3200e-003	4.0100e-003	5.3300e-003	3.5000e-004	3.7800e-003	4.1400e-003	0.0000	18.8788	18.8788	4.0300e-003	8.0000e-005	19.0036
Maximum	**0.2479**	**2.2703**	**3.0474**	**5.3900e-003**	**0.0541**	**0.1087**	**0.1628**	**0.0180**	**0.1025**	**0.1205**	**0.0000**	**472.2170**	**472.2170**	**0.1016**	**4.1900e-003**	**476.0063**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**25.93**	**0.00**	**10.34**	**33.99**	**0.00**	**7.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-2-2023**	**4-1-2023**	0.5188	0.5188
2	**4-2-2023**	**7-1-2023**	0.6670	0.6670
3	**7-2-2023**	**10-1-2023**	0.6744	0.6744
4	**10-2-2023**	**1-1-2024**	0.6746	0.6746
5	**1-2-2024**	**4-1-2024**	0.0757	0.0757
		Highest	0.6746	0.6746

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.4800e-003	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9500e-003	1.9500e-003	1.0000e-005	0.0000	2.0700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0303	0.5601	0.4393	4.4400e-003	0.2499	4.7300e-003	0.2547	0.0711	4.5000e-003	0.0756	0.0000	417.1909	417.1909	2.8900e-003	0.0392	428.9508
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0378**	**0.5601**	**0.4403**	**4.4400e-003**	**0.2499**	**4.7300e-003**	**0.2547**	**0.0711**	**4.5000e-003**	**0.0756**	**0.0000**	**417.1928**	**417.1928**	**2.9000e-003**	**0.0392**	**428.9528**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.4800e-003	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9500e-003	1.9500e-003	1.0000e-005	0.0000	2.0700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0303	0.5601	0.4393	4.4400e-003	0.2499	4.7300e-003	0.2547	0.0711	4.5000e-003	0.0756	0.0000	417.1909	417.1909	2.8900e-003	0.0392	428.9508
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0378**	**0.5601**	**0.4403**	**4.4400e-003**	**0.2499**	**4.7300e-003**	**0.2547**	**0.0711**	**4.5000e-003**	**0.0756**	**0.0000**	**417.1928**	**417.1928**	**2.9000e-003**	**0.0392**	**428.9528**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2023	1/27/2023	5	20	
2	Site Preparation Grading	Grading	1/28/2023	2/24/2023	5	20	
3	Facilities Construction	Building Construction	2/25/2023	1/12/2024	5	230	

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 7

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Dumpers/Tenders	1	8.00	247	0.40
Demolition	Excavators	1	8.00	97	0.37
Demolition	Rubber Tired Dozers	1	8.00	158	0.38
Site Preparation Grading	Dumpers/Tenders	1	4.00	247	0.40
Site Preparation Grading	Excavators	2	8.00	97	0.37
Site Preparation Grading	Rubber Tired Dozers	1	4.00	158	0.38
Site Preparation Grading	Tractors/Loaders/Backhoes	2	8.00	402	0.38
Facilities Construction	Cranes	1	1.00	231	0.29
Facilities Construction	Forklifts	1	5.00	89	0.20
Facilities Construction	Generator Sets	2	8.00	84	0.74
Facilities Construction	Pavers	2	7.00	130	0.42
Facilities Construction	Paving Equipment	2	7.00	132	0.36
Facilities Construction	Rollers	2	7.00	80	0.38
Facilities Construction	Tractors/Loaders/Backhoes	3	4.00	97	0.37
Facilities Construction	Welders	1	3.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	30.00	4.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Site Preparation	6	30.00	4.00	438.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading										
Facilities Construction	14	30.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2300e-003	0.0000	1.2300e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6900e-003	0.0750	0.0617	8.0000e-005		4.0800e-003	4.0800e-003		3.7500e-003	3.7500e-003	0.0000	7.2351	7.2351	2.3400e-003	0.0000	7.2936
Total	**7.6900e-003**	**0.0750**	**0.0617**	**8.0000e-005**	**1.2300e-003**	**4.0800e-003**	**5.3100e-003**	**1.9000e-004**	**3.7500e-003**	**3.9400e-003**	**0.0000**	**7.2351**	**7.2351**	**2.3400e-003**	**0.0000**	**7.2936**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	7.0000e-004	1.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3140	0.3140	0.0000	5.0000e-005	0.3288
Vendor	5.0000e-005	1.7800e-003	6.3000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.7967	0.7967	0.0000	1.1000e-004	0.8306
Worker	8.3000e-004	5.6000e-004	6.6300e-003	2.0000e-005	2.3800e-003	1.0000e-005	2.3900e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.9234	1.9234	6.0000e-005	5.0000e-005	1.9409
Total	**8.9000e-004**	**3.0400e-003**	**7.4200e-003**	**3.0000e-005**	**2.7300e-003**	**3.0000e-005**	**2.7600e-003**	**7.4000e-004**	**3.0000e-005**	**7.6000e-004**	**0.0000**	**3.0341**	**3.0341**	**6.0000e-005**	**2.1000e-004**	**3.1002**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.5000e-004	0.0000	5.5000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6900e-003	0.0750	0.0617	8.0000e-005		4.0800e-003	4.0800e-003		3.7500e-003	3.7500e-003	0.0000	7.2351	7.2351	2.3400e-003	0.0000	7.2936
Total	**7.6900e-003**	**0.0750**	**0.0617**	**8.0000e-005**	**5.5000e-004**	**4.0800e-003**	**4.6300e-003**	**8.0000e-005**	**3.7500e-003**	**3.8300e-003**	**0.0000**	**7.2351**	**7.2351**	**2.3400e-003**	**0.0000**	**7.2936**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	7.0000e-004	1.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3140	0.3140	0.0000	5.0000e-005	0.3288
Vendor	5.0000e-005	1.7800e-003	6.3000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.7967	0.7967	0.0000	1.1000e-004	0.8306
Worker	8.3000e-004	5.6000e-004	6.6300e-003	2.0000e-005	2.3800e-003	1.0000e-005	2.3900e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.9234	1.9234	6.0000e-005	5.0000e-005	1.9409
Total	**8.9000e-004**	**3.0400e-003**	**7.4200e-003**	**3.0000e-005**	**2.7300e-003**	**3.0000e-005**	**2.7600e-003**	**7.4000e-004**	**3.0000e-005**	**7.6000e-004**	**0.0000**	**3.0341**	**3.0341**	**6.0000e-005**	**2.1000e-004**	**3.1002**

3.3 Site Preparation Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0340	0.0000	0.0340	0.0170	0.0000	0.0170	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0142	0.1273	0.1326	3.5000e-004		5.6900e-003	5.6900e-003		5.2300e-003	5.2300e-003	0.0000	30.5904	30.5904	9.8900e-003	0.0000	30.8378
Total	**0.0142**	**0.1273**	**0.1326**	**3.5000e-004**	**0.0340**	**5.6900e-003**	**0.0397**	**0.0170**	**5.2300e-003**	**0.0222**	**0.0000**	**30.5904**	**30.5904**	**9.8900e-003**	**0.0000**	**30.8378**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.8000e-004	0.0281	6.3100e-003	1.3000e-004	3.7300e-003	2.6000e-004	3.9800e-003	1.0300e-003	2.5000e-004	1.2700e-003	0.0000	12.5045	12.5045	7.0000e-005	1.9700e-003	13.0923
Vendor	5.0000e-005	1.7800e-003	6.3000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.7967	0.7967	0.0000	1.1000e-004	0.8306
Worker	8.3000e-004	5.6000e-004	6.6300e-003	2.0000e-005	2.3800e-003	1.0000e-005	2.3900e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.9234	1.9234	6.0000e-005	5.0000e-005	1.9409
Total	**1.3600e-003**	**0.0304**	**0.0136**	**1.6000e-004**	**6.3700e-003**	**2.8000e-004**	**6.6400e-003**	**1.7400e-003**	**2.7000e-004**	**2.0000e-003**	**0.0000**	**15.2245**	**15.2245**	**1.3000e-004**	**2.1300e-003**	**15.8637**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0153	0.0000	0.0153	7.6400e-003	0.0000	7.6400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0142	0.1273	0.1326	3.5000e-004		5.6900e-003	5.6900e-003		5.2300e-003	5.2300e-003	0.0000	30.5904	30.5904	9.8900e-003	0.0000	30.8377
Total	**0.0142**	**0.1273**	**0.1326**	**3.5000e-004**	**0.0153**	**5.6900e-003**	**0.0210**	**7.6400e-003**	**5.2300e-003**	**0.0129**	**0.0000**	**30.5904**	**30.5904**	**9.8900e-003**	**0.0000**	**30.8377**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.8000e-004	0.0281	6.3100e-003	1.3000e-004	3.7300e-003	2.6000e-004	3.9800e-003	1.0300e-003	2.5000e-004	1.2700e-003	0.0000	12.5045	12.5045	7.0000e-005	1.9700e-003	13.0923
Vendor	5.0000e-005	1.7800e-003	6.3000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.7967	0.7967	0.0000	1.1000e-004	0.8306
Worker	8.3000e-004	5.6000e-004	6.6300e-003	2.0000e-005	2.3800e-003	1.0000e-005	2.3900e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.9234	1.9234	6.0000e-005	5.0000e-005	1.9409
Total	**1.3600e-003**	**0.0304**	**0.0136**	**1.6000e-004**	**6.3700e-003**	**2.8000e-004**	**6.6400e-003**	**1.7400e-003**	**2.7000e-004**	**2.0000e-003**	**0.0000**	**15.2245**	**15.2245**	**1.3000e-004**	**2.1300e-003**	**15.8637**

3.4 Facilities Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2141	2.0088	2.7523	4.4500e-003		0.0984	0.0984		0.0930	0.0930	0.0000	386.2131	386.2131	0.0885	0.0000	388.4256
Total	**0.2141**	**2.0088**	**2.7523**	**4.4500e-003**		**0.0984**	**0.0984**		**0.0930**	**0.0930**	**0.0000**	**386.2131**	**386.2131**	**0.0885**	**0.0000**	**388.4256**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0196	6.9400e-003	9.0000e-005	2.9000e-003	1.2000e-004	3.0200e-003	8.4000e-004	1.2000e-004	9.6000e-004	0.0000	8.7635	8.7635	5.0000e-005	1.2500e-003	9.1365
Worker	9.1100e-003	6.2100e-003	0.0729	2.3000e-004	0.0262	1.4000e-004	0.0263	6.9700e-003	1.3000e-004	7.0900e-003	0.0000	21.1568	21.1568	6.3000e-004	5.9000e-004	21.3494
Total	**9.6700e-003**	**0.0258**	**0.0798**	**3.2000e-004**	**0.0291**	**2.6000e-004**	**0.0294**	**7.8100e-003**	**2.5000e-004**	**8.0500e-003**	**0.0000**	**29.9203**	**29.9203**	**6.8000e-004**	**1.8400e-003**	**30.4859**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2141	2.0088	2.7523	4.4500e-003		0.0984	0.0984		0.0930	0.0930	0.0000	386.2126	386.2126	0.0885	0.0000	388.4251
Total	**0.2141**	**2.0088**	**2.7523**	**4.4500e-003**		**0.0984**	**0.0984**		**0.0930**	**0.0930**	**0.0000**	**386.2126**	**386.2126**	**0.0885**	**0.0000**	**388.4251**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0196	6.9400e-003	9.0000e-005	2.9000e-003	1.2000e-004	3.0200e-003	8.4000e-004	1.2000e-004	9.6000e-004	0.0000	8.7635	8.7635	5.0000e-005	1.2500e-003	9.1365
Worker	9.1100e-003	6.2100e-003	0.0729	2.3000e-004	0.0262	1.4000e-004	0.0263	6.9700e-003	1.3000e-004	7.0900e-003	0.0000	21.1568	21.1568	6.3000e-004	5.9000e-004	21.3494
Total	**9.6700e-003**	**0.0258**	**0.0798**	**3.2000e-004**	**0.0291**	**2.6000e-004**	**0.0294**	**7.8100e-003**	**2.5000e-004**	**8.0500e-003**	**0.0000**	**29.9203**	**29.9203**	**6.8000e-004**	**1.8400e-003**	**30.4859**

3.4 Facilities Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.2000e-003	0.0855	0.1252	2.0000e-004		4.0000e-003	4.0000e-003		3.7700e-003	3.7700e-003	0.0000	17.5563	17.5563	4.0000e-003	0.0000	17.6563
Total	**9.2000e-003**	**0.0855**	**0.1252**	**2.0000e-004**		**4.0000e-003**	**4.0000e-003**		**3.7700e-003**	**3.7700e-003**	**0.0000**	**17.5563**	**17.5563**	**4.0000e-003**	**0.0000**	**17.6563**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.9000e-004	3.1000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3925	0.3925	0.0000	6.0000e-005	0.4092
Worker	3.9000e-004	2.5000e-004	3.0700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9300	0.9300	3.0000e-005	3.0000e-005	0.9381
Total	**4.1000e-004**	**1.1400e-003**	**3.3800e-003**	**1.0000e-005**	**1.3200e-003**	**2.0000e-005**	**1.3400e-003**	**3.6000e-004**	**2.0000e-005**	**3.6000e-004**	**0.0000**	**1.3226**	**1.3226**	**3.0000e-005**	**9.0000e-005**	**1.3473**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.2000e-003	0.0855	0.1252	2.0000e-004		4.0000e-003	4.0000e-003		3.7700e-003	3.7700e-003	0.0000	17.5563	17.5563	4.0000e-003	0.0000	17.6563
Total	**9.2000e-003**	**0.0855**	**0.1252**	**2.0000e-004**		**4.0000e-003**	**4.0000e-003**		**3.7700e-003**	**3.7700e-003**	**0.0000**	**17.5563**	**17.5563**	**4.0000e-003**	**0.0000**	**17.6563**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Facilities Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.9000e-004	3.1000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3925	0.3925	0.0000	6.0000e-005	0.4092
Worker	3.9000e-004	2.5000e-004	3.0700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9300	0.9300	3.0000e-005	3.0000e-005	0.9381
Total	**4.1000e-004**	**1.1400e-003**	**3.3800e-003**	**1.0000e-005**	**1.3200e-003**	**2.0000e-005**	**1.3400e-003**	**3.6000e-004**	**2.0000e-005**	**3.6000e-004**	**0.0000**	**1.3226**	**1.3226**	**3.0000e-005**	**9.0000e-005**	**1.3473**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0303	0.5601	0.4393	4.4400e-003	0.2499	4.7300e-003	0.2547	0.0711	4.5000e-003	0.0756	0.0000	417.1909	417.1909	2.8900e-003	0.0392	428.9508
Unmitigated	0.0303	0.5601	0.4393	4.4400e-003	0.2499	4.7300e-003	0.2547	0.0711	4.5000e-003	0.0756	0.0000	417.1909	417.1909	2.8900e-003	0.0392	428.9508

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	28.31	0.00	0.00	599,237	599,237
Total	28.31	0.00	0.00	599,237	599,237

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	81.40	0.00	0.00	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.428570	0.000000	0.000000	0.107140	0.107140	0.357150	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.4800e-003	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9500e-003	1.9500e-003	1.0000e-005	0.0000	2.0700e-003
Unmitigated	7.4800e-003	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9500e-003	1.9500e-003	1.0000e-005	0.0000	2.0700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.3900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9500e-003	1.9500e-003	1.0000e-005	0.0000	2.0700e-003
Total	**7.4800e-003**	**1.0000e-005**	**1.0000e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.9500e-003**	**1.9500e-003**	**1.0000e-005**	**0.0000**	**2.0700e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.3900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0000e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.9500e-003	1.9500e-003	1.0000e-005	0.0000	2.0700e-003
Total	**7.4800e-003**	**1.0000e-005**	**1.0000e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.9500e-003**	**1.9500e-003**	**1.0000e-005**	**0.0000**	**2.0700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Aries FSSD - Solano-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation