Initial Study

[Pursuant to Public Resources Code Section 21080(c) and California Code of Regulations, Title 14, Sections 15070-15071]

Lead Agency: San Joaquin County Community Development Department

Project Applicant: Ameresco Forward RNG LLC

Project Title/File Numbers: Ameresco-Forward LFG Facility Upgrade for Renewable Natural Gas (RNG)

PA-2200144 (SA)

Project Description

Project Objectives

The Project goals are to provide a significant increase in the energy utilization of LFG, an existing renewable resource, by processing the gas to sufficient quality to allow it to be placed into PG&E's regional natural gas network. Specific objectives of the Project include:

- Implement a state-of-the-art RNG processing facility to meet or exceed applicable industry, federal, and California standards to produce reliable commercial quality RNG, in coordination and cooperation with PG&E;
- Locate the RNG gas processing system on existing landfill property to avoid intrusion into surrounding agricultural, institutional, residential, and commercial uses;
- Reduce air emissions from the Forward Landfill gas flares while creating a beneficial fuel source of clean/green RNG; and,
- Decrease California's reliance on fossil fuels by off-setting natural gas use with locally generated RNG.

Project Overview

Ameresco Forward RNG LLC (Ameresco) is proposing to expand and upgrade the existing Landfill Gas to Energy (LFGTE) facility at the Forward, Inc. Landfill (Forward Landfill) to include a new Renewable Natural Gas (RNG) facility and connections to PG&E's natural gas system. The Forward Landfill is an existing Class II waste disposal and resource recovery facility located near Stockton in unincorporated San Joaquin County (see Figure 1). The Landfill is owned and operated by Forward, Inc., a subsidiary of Republic Services, Inc. (Republic). Ameresco purchases landfill gas produced by the Forward Landfill to fuel its LFGTE facility at the Landfill.

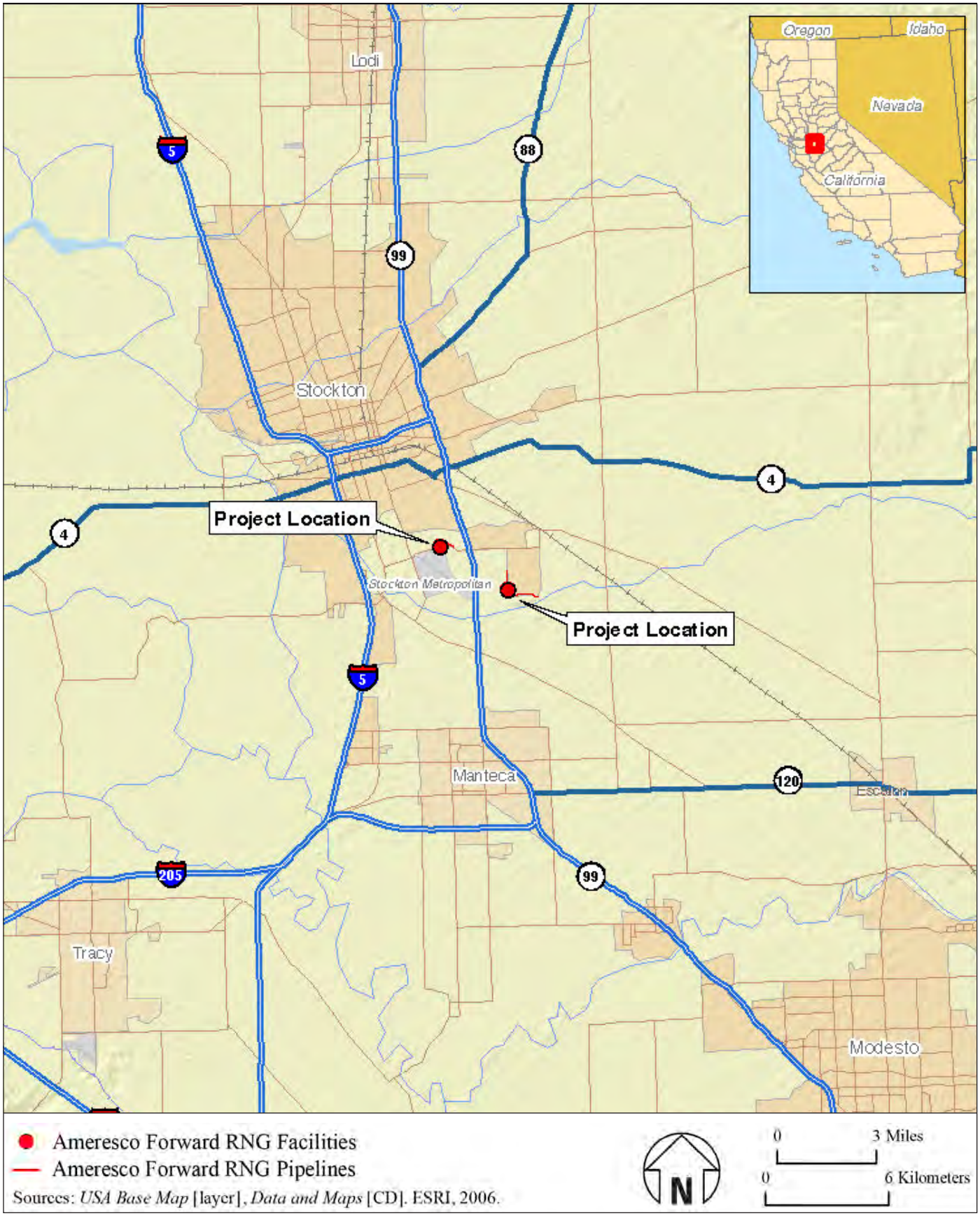


Figure 1
Project Location

Source: Solano Archaeological Services

Currently, landfill gas from the Forward Landfill runs Ameresco's Landfill Gas to Energy (LFGTE) Plant at the northeast edge of the Forward landfill property, with excess gas being burned at a flare station adjacent to that plant. In order for PG&E to accept the landfill gas, it must be conditioned (i.e., contaminants and impurities removed) to meet PG&E's Rule 21 renewable natural gas (RNG[1]) quality requirements. The proposed project would "condition" this excess gas to remove impurities and supply it to PG&E's natural gas system via a new pipeline connection. The existing LFGTE plant's enclosed flares would continue to be the primary control devices for the landfill, but would not operate when the LFGTE and RNG facilities are operating except to burn excess LFG beyond what the existing LFGTE and RNG Plant can process. The flares also would provide backup LFG combustion capacity in the event that one or both engines and/or the RNG plant are off-line.

With the project, the excess LFG would be piped from the existing Forward Landfill flare, through a blower station to compress and dewater the LFG into what is known as pre-processed renewable natural gas (PPRNG). The blower station would be located directly west of the existing LFGTE. The PPRNG would be routed via a new onsite pipeline to the new Renewable Natural Gas (RNG) plant. The RNG plant is proposed to be in the northwest area of the Forward Landfill property. The pipeline would cross the North Fork of South Littlejohn's Creek just west of the existing Ameresco LFGTE plant via a new bridge. Once across the creek, the pipeline would run just north of the creek and head west, until it turns north to the RNG plant (see Figure 2).

The gas processed at the RNG plant would then be transported via a new pipeline from the RNG Plant to an existing PG&E pipeline located near the northwest corner of the adjacent Youth Correctional Facility. From this interconnection point, the existing PG&E distribution piping would carry the conditioned gas to users in the area, mixed with other PG&E natural gas. RNG not required for use in the local area would be routed to a new compressor station on a 0.33-acre site in an existing parking lot at the southwest corner of Arch Airport Road and Pock Lane, on land leased from the Stockton Metropolitan Airport. A new PG&E pipeline would connect the compressor station to the existing PG&E pipeline network just east of the Regulation Station near the southwest corner of the intersection between Quantas Lane and Arch Airport Road (see Figure 2).

The pipeline portion of the project that is within the Forward Landfill facility boundary would be constructed and maintained by Ameresco. PG&E would construct or oversee the construction and maintain the portion of the pipeline that is outside the Forward facility boundary and incorporate it into its local natural gas pipeline network.

Project Location and Surrounding Land Uses

The proposed RNG project would include facilities on the Forward landfill property (blower plant, conditioning plant, metering station, and associated pipelines and pipeline bridge replacement), within San Joaquin County and City of Stockton street rights of way (pipelines and connections), and

[1] RNG or biomethane is defined as methane produced from biomass converted to a pipeline-quality gas that is fully interchangeable with conventional natural gas.

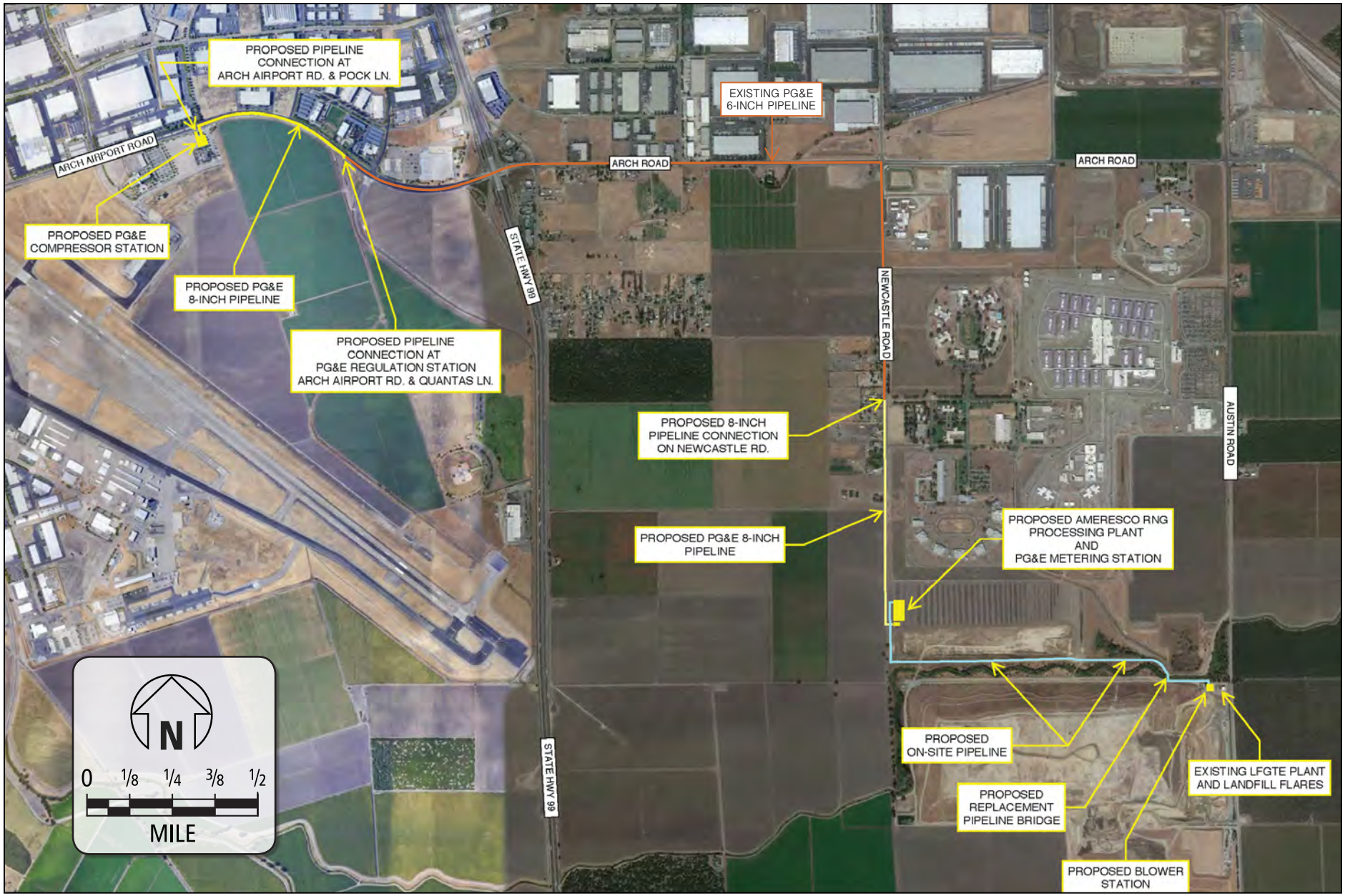


Figure 2
Project Layout

Source: Grassetti Environmental and TetraTech, Inc.

on property owned by San Joaquin County's Stockton Metropolitan Airport (compressor station). Figure 2 depicts the proposed project layout and includes the approximate locations of all of the project facilities, which are summarized below along with surrounding land uses.

- RNG Plant. The RNG Plant, including the metering station, would be located on a vacant 3.4-acre site in the northwest portion of Forward Landfill, north of the Creek. The essentially flat site is adjacent to Forward Landfill's northern borrow pit, which provides earthen cover to facilitate landfill operations. To the north and west (across Newcastle Road) are agricultural lands. Further north is the N. A. Chaderjian Youth Correctional Facility. A large prison hospital complex (California Health Care Facility, Stockton) lies farther north and east of the site. The Stockton Metropolitan Airport is about one mile to the west. The nearest residences (other than the prison) are about 2,000 feet north of the site, on Newcastle Road.
- Compressor Station. The proposed Compressor Station would be located in the vacant land next to the parking lot area of an existing industrial/commercial building on the south side of Arch Airport Road at the intersection with Pock Lane. The land would be leased from the Stockton Metropolitan Airport and is surrounded by light industrial and office uses.
- Blower Plant. The blower plant would be constructed on a 0.46-acre site adjacent to the existing Ameresco LFGTE plant at the northeast edge of the Forward Landfill property. The proposed blower plant is south of the Creek. It is surrounded by landfill and agricultural uses.
- On-Site Pipelines. Pipelines between the blower station and the RNG plant would be on Forward property and surrounded by landfill-related uses and the Creek. The pipeline crossing of the creek would be near the existing Republic pipeline crossing of the creek.
- Off-Site Pipelines. The new off-site pipelines would be mostly in paved County and City of Stockton roadways (Newcastle Road and Arch Airport Road), adjacent to agricultural, rural residential, and prison uses. The pipeline connections for the compressor station and connections to PG&E's system would be in City of Stockton and County roadways in the light industrial area. The pipelines would be owned and operated by PG&E and are subject to utility franchise agreements with the appropriate municipality.

Land Use and Zoning Designations

The landfill site is divided into two General Plan designations[2] and two zoning designations. The proposed project site is located in A/UR General Plan and AU-20 (Agriculture/Urban Reserve, 20-acre minimum parcel size) zone. (The other applicable designations for the landfill are A/G GP and AG-40 zone.) The landfill (Use Type: Major Impact Services) was originally approved under Use Permit U-73-0009, and has been subsequently expanded under permit.

The floodplain of the North Fork of the South Branch of Littlejohns Creek to the east and west of the landfill is designated as Open Space/Resource Conservation (OS/RC), but the designation does not apply on the landfill property. Property further to the east, west, and south of the facility is zoned general

[2] San Joaquin County 2035 General Plan

agricultural and property to the north is zoned public/institutional. the City of Stockton and HWY 99 are located approximately one mile west of the project site.

The RNG facility site as well as the blower plant and compressor plant would be located in the Airport Influence Area of Stockton Metropolitan Airport. as defined in the Stockton Metropolitan Airport Land Use Compatibility Plan (ALUCP), and would be required to be consistent with ALUCP land use restrictions.

Project Components and Construction

Each component of the system is discussed in detail below:

PPRNG Blower Station. The portion of LFG that is not used for LFGTE purposes would be diverted from the landfill gas flare station to the adjacent Ameresco PPRNG blower station. The Ameresco RNG project would be designed for a maximum LFG flow of 3500 standard cubic feet per minute (scfm) of LFG. The proposed blower station is shown on Figure 3. The gas that could be diverted from the flares through the blower station is currently around 3000 scfm, and the flow would increase over time as more MSW is disposed of at the landfill.

The PPRNG blower station would be site on an approximately 200-ft. by 200-ft. area, which would include electrical gear, blowers, an LFG chiller, and filters to process and remove moisture from the LFG to make it into PPRNG. All equipment would be skid mounted on concrete foundations and is similar to the equipment at the existing LFGTE facility. The facility would be built on fill raised to 1-foot from the existing grade of 40.5-foot elevation, requiring approximately 1500 cubic yards of imported fill.

The blower station and RNG plant construction could involve the use of a mobile crane to unload and install heavy equipment. The equipment would be anchored to the foundations and then be connected by fabricated piping and electrical wiring for power and control of the facility.

PPRNG Pipeline to RNG Plant and Creek Crossing. The proposed PPRNG pipeline would extend from the blower station in the NE portion of the site to the RNG Plant located in the northwestern portion of the site, see Figure 3. The pipeline would be approximately 6200 feet in length and constructed of 16-inch-diameter pipe. The pipe would be trenched to a depth of approximately 4-ft to accommodate 6 inches of bedding, the 16-inch pipe, and two feet of backfill cover. Backfill would consist of suitable, compacted pipe backfill material. A 2" dual contained condensate line, power and communications wiring would also be installed in the same trench. The pipeline would follow along the edge of existing landfill roads in previously disturbed areas. Sections of the power and communications wiring will be installed overhead on wooden power poles following the same route as the pipeline along existing roads. The new pole height and line configuration would be similar to the existing PG&E electrical service poles located on landfill property.

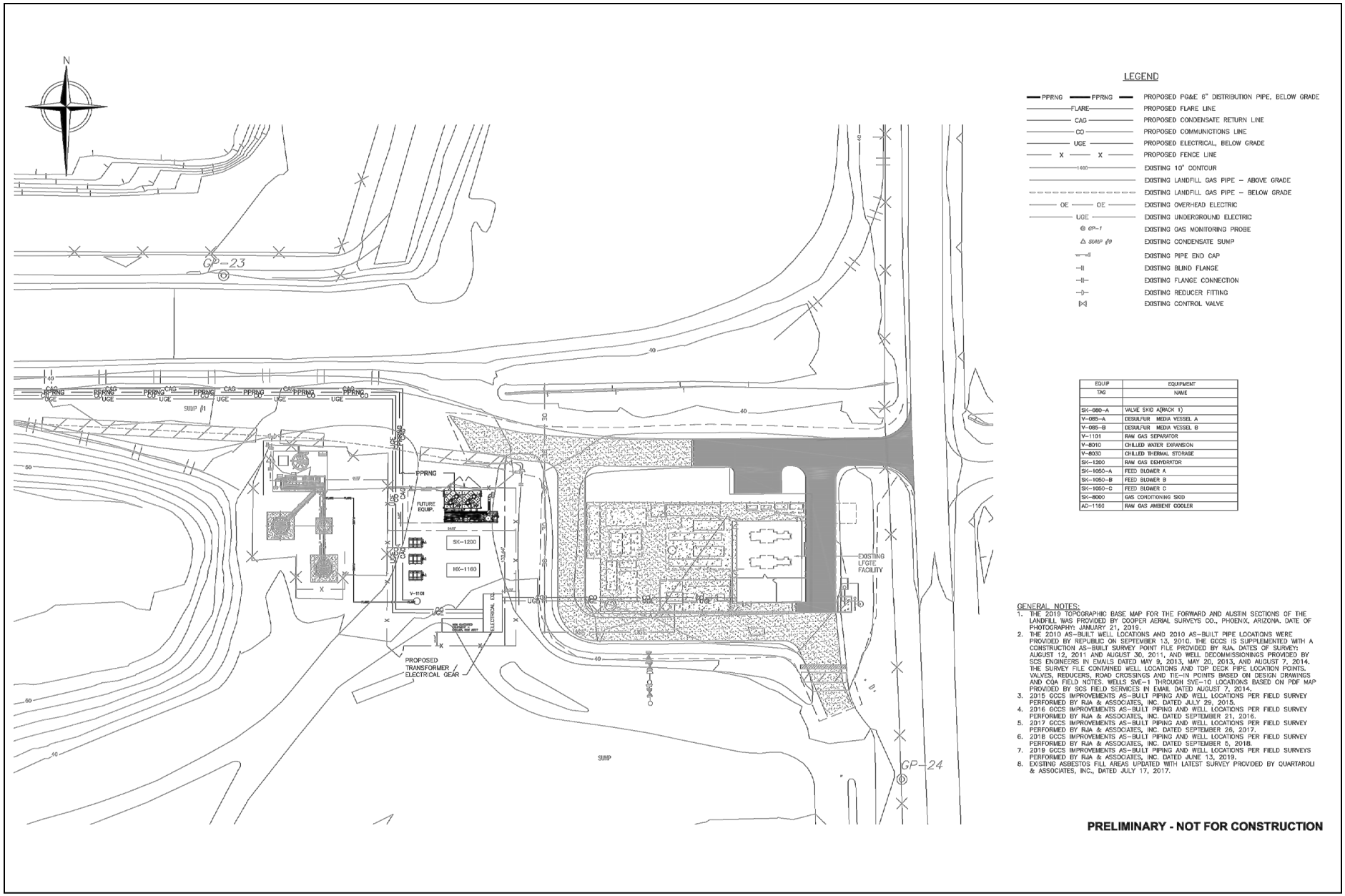


Figure 3
Proposed Blower Station

Source: Grassetti Environmental and TetraTech, Inc.

The pipe and other non-project utilities would cross the creek on a reconstructed and upgraded Forward pipeline bridge (that currently supports a groundwater remediation pipe). The possible project bridge is shown on Figure 4. The bridge elevation would be approximately 43-ft MSL, which is approximately 5-ft above the base flood elevation of 39-ft MSL.

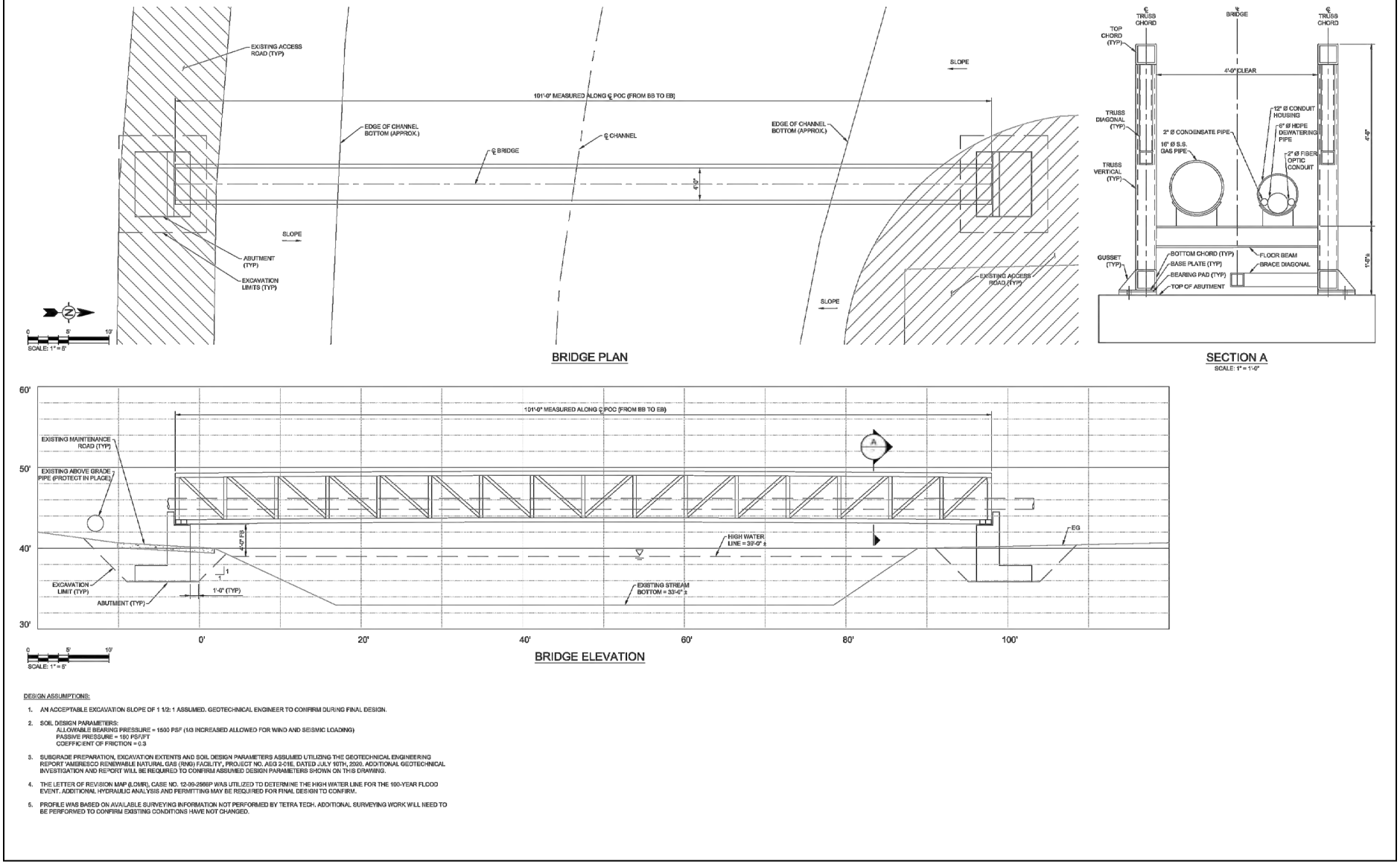
The pipeline bridge is designed to avoid direct and indirect impacts to the creek with bridge footings outside of the channel and 25 feet from the existing top of bank. The bridge would be installed using a crane; therefore, no impacts to the bed, bank, channel or riparian habitat would occur. The steel bridge would be approximately 100-ft long by 4-ft wide and would span the entire creek from top-of-bank to top-of-bank at the location of the existing pipeline bridge.

The pipeline and other utilities connecting the RNG Plant and the PPRNG blower station would be installed utilizing an excavator that would create a 4-ft deep trench and the pipeline would be placed and backfilled with a minimum of two- feet of cover in most locations, except where the utilities would be above grade on the pipeline bridge that crosses the creek. Pipeline construction activities would occur within 30 feet on either side of a 15-foot wide work space centered on the pipe center line. After the pipeline is installed, the trench would be backfilled and the site re-graded and restored to its approximate original contours. The pipeline would be designed to follow the shoulder of existing roads on the property to minimize temporary and permanent construction impacts.

RNG Plant. The RNG Plant, with the associated conditioning and processing equipment, would be constructed to industry standards. As shown on Figure 5, an approximately 3.4-acre area is proposed to encompass the conditioning equipment, which includes LFGTE media beds, membranes and other ancillary equipment. The proposed layout of the RNG plant facility is shown on Figure 5, which also includes a list of major plant components. Figure 6 shows photos of typical RNG plant facilities. The processing equipment includes compressors, filters, direct fuel recuperative thermal oxidizer, enclosed flare, thermal and pressure swing adsorption units, gas separation membranes and media beds.

The RNG processing equipment would be constructed on concrete equipment pads covering approximately 48,000 sq. ft. (1.1-acre) of the approximately 144,000 sq. ft. (3.4-acres) of the site. Parking and access for maintenance vehicles would be provided on the western side of the plant via Newcastle Road and through an existing landfill gate. The RNG processing equipment would be housed in a secure fenced compound.

The RNG Plant would be constructed on 12”-24” thick reinforced concrete pads. The Power Distribution Container (PDC) and the pipe rack would be supported by drilled piers. The majority of the equipment would be approximately 8 to 10-ft high. A small thermal oxidizer approximately 30-inch diameter and 50-ft in height (similar to a flare) and an enclosed flare, approximately 50-ft high, would also would be incorporated into the facility. In addition, the RNG Plant would include several processing vessels that are approximately 14-ft in diameter and 35-ft tall. In the future, Ameresco plans to add solar panels to the RNG Plant to provide renewable electricity to power plant. The planned maximum elevation for the equipment would be approximately 90-ft MSL.



DESIGN ASSUMPTIONS:

1. AN ACCEPTABLE EXCAVATION SLOPE OF 1 1/2: 1 ASSUMED. GEOTECHNICAL ENGINEER TO CONFIRM DURING FINAL DESIGN.
2. SOIL DESIGN PARAMETERS:
   ALLOWABLE BEARING PRESSURE = 1500 PSF (1/3 INCREASED ALLOWED FOR WIND AND SEISMIC LOADING)
   PASSIVE PRESSURE = 150 PSF/FT
   COEFFICIENT OF FRICTION = 0.3
3. SUBGRADE PREPARATION, EXCAVATION EXTENTS AND SOIL DESIGN PARAMETERS ASSUMED UTILIZING THE GEOTECHNICAL ENGINEERING REPORT "AMERESCO RENEWABLE NATURAL GAS (RNG) FACILITY", PROJECT NO. ASG 2-01E, DATED JULY 16TH, 2020. ADDITIONAL GEOTECHNICAL INVESTIGATION AND REPORT WILL BE REQUIRED TO CONFIRM ASSUMED DESIGN PARAMETERS SHOWN ON THIS DRAWING.
4. THE LETTER OF REVISION MAP (LOMR), CASE NO. 12-09-2566P WAS UTILIZED TO DETERMINE THE HIGH WATER LINE FOR THE 100-YEAR FLOOD EVENT. ADDITIONAL HYDRAULIC ANALYSIS AND PERMITTING MAY BE REQUIRED FOR FINAL DESIGN TO CONFIRM.
5. PROFILE WAS BASED ON AVAILABLE SURVEYING INFORMATION NOT PERFORMED BY TETRA TECH. ADDITIONAL SURVEYING WORK WILL NEED TO BE PERFORMED TO CONFIRM EXISTING CONDITIONS HAVE NOT CHANGED.

Figure 4
Proposed Pipeline Bridge Design

Source: Grassetti Environmental and TetraTech, Inc.

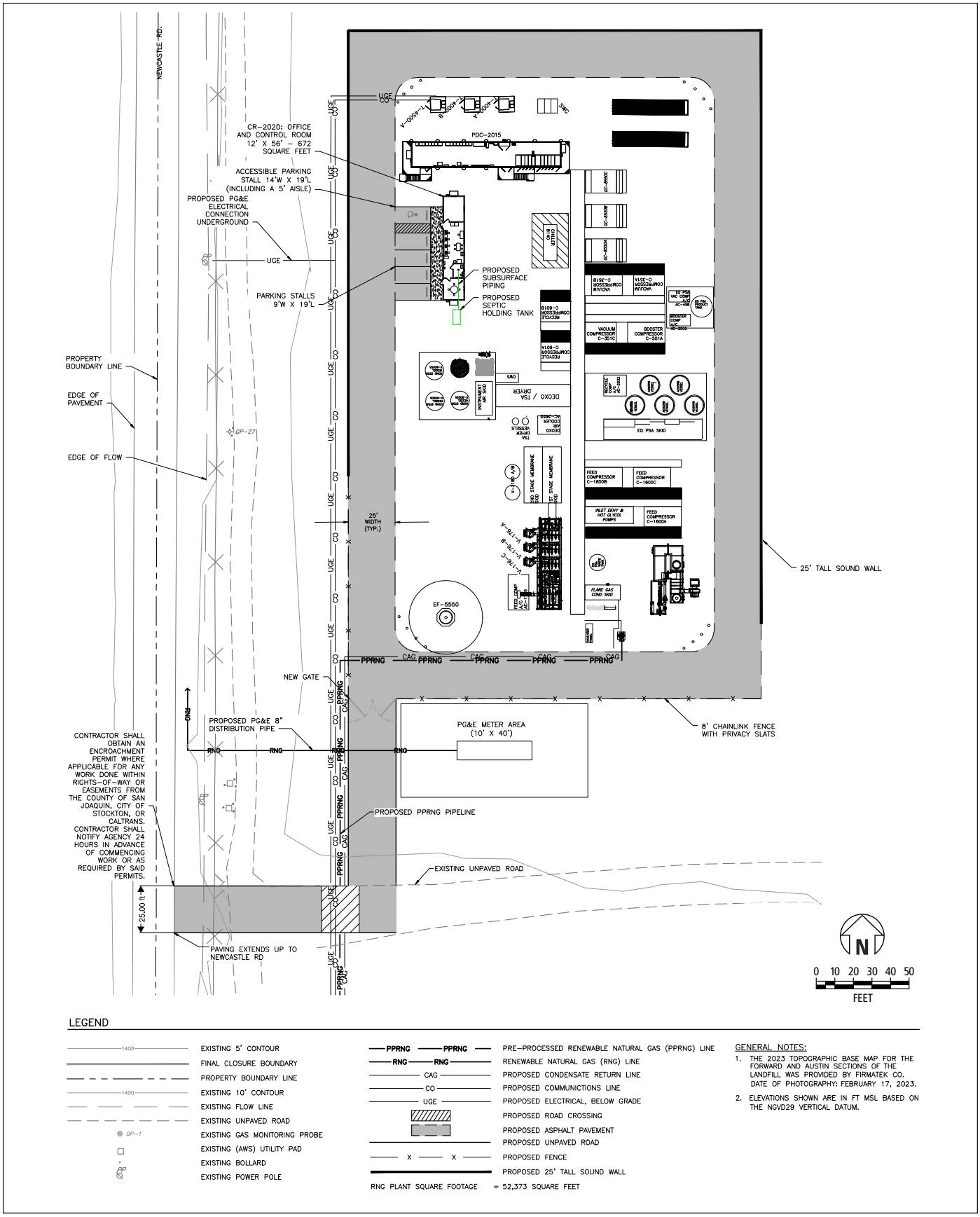


Figure 5
Proposed RNG Plant Layout

Source: Grassetti Environmental and TetraTech, Inc.

Figure 6
Typical RNG Plant

Source: Grassetti Environmental and TetraTech, Inc.

The site would be graded to provide suitable foundation support for the equipment and access roads. The existing ground elevation is approximately 35-ft MSL and the finished grade is expected to be at approximately elevation 36-ft MSL. Construction of the pad area, averaging one foot above existing grade, would require approximately 6,000 cubic yards of earth fill, using a combination of onsite and imported fill. Fill material would be obtained from onsite excavations. Excess excavated soil would be used for general landfill operations. Some materials, such as road base, would be imported.

An approximately 600-sq. ft. modular office/control room would be provided for employees. Permanent staffing of three onsite operators would be required upon Project operation. The final part of the construction would be to set the fire-water-supply tank, control room and restroom facility. Additional staff may be required for periodic maintenance and/or repairs.

Ameresco is requesting a variance such that not "all exterior equipment must be screened from public view from an adjacent public road." Ameresco would screen all equipment with an 8- foot tall fence and a 25-foot tall sound barrier wall. The variance is required for the Enclosed Flare (50 feet tall) and the Thermal Oxidizer Unit (35 feet tall). The Flare and Thermal Oxidizer are consistent with other landfill infrastructure that is located nearby at the Landfill Flare station.

The RNG plant and Compressor Station would have screening, access, and parking pursuant to Development Title codes.

PG&E Metering Station. A PG&E metering station would be added adjacent to the RNG Plant with a width of approximately 50 feet and length of 100 feet (5,000 sq. ft.) to accommodate the new gas receiving equipment (see Figure 7). The metering station would be surrounded by an approximately 7-foot tall security fence. PG&E equipment would be powered by electricity so new poles may be necessary to connect the new PG&E equipment to existing electric lines. The new pole height and line configuration would be similar and connect to the existing electrical service pole along Newcastle Road. The RNG from the Ameresco RNG Plant would go through the metering station and then enter the proposed new pipeline in Newcastle Road to connect to PG&E's existing pipeline.

RNG Gas Pipeline (from Metering Station to Existing PG&E Pipeline). A 3500-ft long, 8" HDPE pipeline would be constructed from the metering station to the connection with the existing PG&E line on Newcastle Road (see Figure 7). The pipeline would be installed in an open 18" wide trench that would be a minimum of 3' deep below Newcastle Road. The pipeline would have a minimum of 24" of clearance from other utilities. The 24" clearance requirement may be relaxed on a case by case basis[3] with other mitigations to protect the transmission line from third-party damage and cathodic protection interference with PG&E; however, the minimum clearance requirement of 12" per 49 CFR 192 would be maintained. The pipeline is planned for installation just off the east shoulder of the road to minimize pavement disturbance. The pipeline trenching work would limit travel on Newcastle Road, however Newcastle Road is very lightly traveled in this area.

[3] For PG&E construction digging efficiency, a minimum 5 ft horizontal offset wall to wall from other utilities is preferred by PG&E. Within 5 ft, PG&E digging safety standards would require potholing utilities at 50 ft intervals prior to excavating. Within 2 ft, PG&E digging safety standards would require hand-digging only.

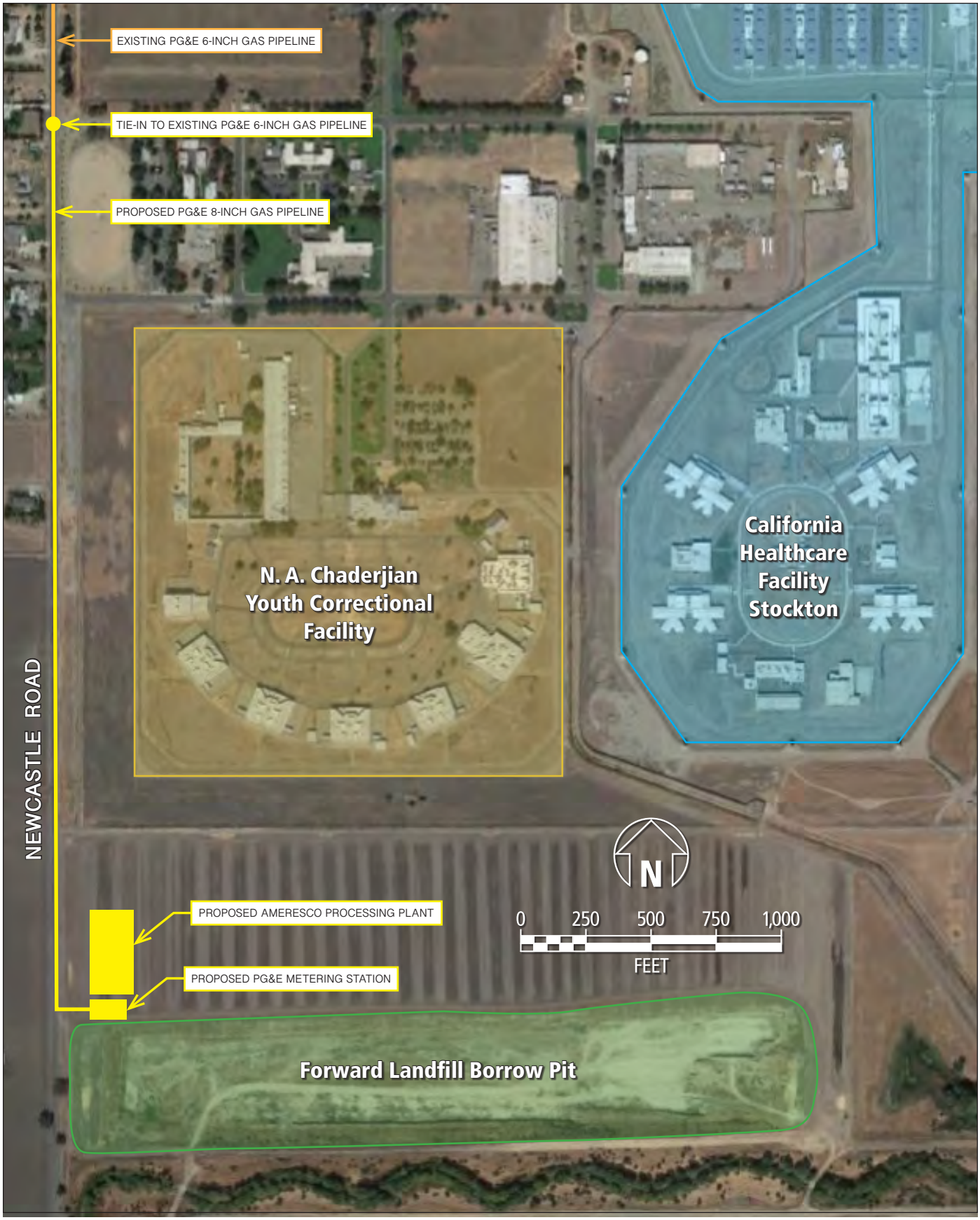


Figure 7
Proposed PG&E Newcastle Road Facilities

Source: Grassetti Environmental and TetraTech, Inc.

RNG Gas Pipeline (from Existing PG&E Regulation Station to Compressor Station). A 3800-foot long, 8" HDPE pipeline would be constructed from the east side of the existing PG&E Regulation Station near Quantas Lane along Arch-Airport Road to the Compressor Station (see Figure 8). The pipeline would be installed in an open 18" wide trench that would be a minimum of 3 feet deep below Arch-Airport Road. The pipeline would have a minimum of 24" of clearance from other utilities. The 24" clearance requirement may be relaxed on a case by case basis with other mitigations to protect the transmission line from third party damage and cathodic protection interference with PG&E; however, the minimum clearance requirement of 12" per 49 CFR 192 would be maintained. The pipeline is planned for installation in the street requiring partial street closures during construction hours. The pipeline trenching work would block access to Pock Lane as the pipeline is installed across the street. Access to the businesses in this area would be by taking B Street one block to the west.

Compressor Station and High-Pressure Pipeline. The pressure in the existing distribution pipeline is approximately 60 pounds per square inch (psi). The compressor would compress the conditioned gas to an approximate pressure of 400 psi for injection into the 6" PG&E transmission feeder main in the utility corridor on the south side of Arch Airport Road, just north of the compressor station.

The compressor station would be constructed in an existing parking lot on the southwest corner of Arch Airport Road and Pock Lane, on land to be leased from the Stockton Metropolitan Airport under a 20-year lease with two 5-year extension options (see Figure 9). The overall facility would be roughly 120' by 120' (about 1/3 of an acre) and would include a 10' x 40' skid mounted compressor which would operate periodically when required to compress gas from the distribution system up to the transmission line pressure (see Figure 4). The compressor would be fully enclosed. The compressor equipment includes a two-stage reciprocating gas compressor, cooler and associated equipment. The facility would have a communications tower that would be around 20' in height.

The proposed PG&E Compressor Station would consist of a surrounding concrete wall or masonry wall with gates and an enclosed compressor skid with cooler. The 8 to 10 feet high wall would be constructed on a reinforced concrete foundation and architecturally designed to meet Stockton Airport and San Joaquin County requirements. The facility would have two gates for vehicular and personnel access from Pock Lane. The wall would be made of precast concrete or concrete masonry units, CMU blocks, and set in place. The compressor also would be trucked to the site and set on a reinforced concrete foundation with a crane.

The facility's screening, parking, and access would comply with San Joaquin County Development Title Section 9-400.050, 9-406.040, 9-406.060, and 9-406.060(n) (1). The facility would have two parking spaces and a 25-foot driveway access as shown in Figure 4. The final design would be provided by PG&E.

The plant would be connected to the local underground PG&E electrical grid for power. It would be screened by existing trees and shrubs, and proposed new trees. A water service connection on Pock Lane would be required for irrigation. During construction, an additional 100' x 200' of open space to the west of the Compressor station would be used for construction parking and staging. Communications at the facility would be provided wirelessly through a PG&E system that would be mounted on the communication tower.

Figure 8
PG&E Regulation Plant and Associated Pipelines

Source: Grassetti Environmental and TetraTech, Inc.

Figure 9
Compressor Plant and Associated Pipelines

Source: Grassetti Environmental and TetraTech, Inc.

An approximately 180–foot long, 8-inch diameter, steel high- pressure pipeline (rated to 408 psi) would route the compressed gas to PG&E's existing high-pressure pipeline. An 8-inch tap valve is proposed to be installed where the new line ties into the PG&E transmission system. The tie-in would be on the shoulder of Arch Airport and would not affect traffic in the area.

Utilities Connections

Blower Station and RNG Plant. The Blower Station would be powered from the existing Ameresco LFGTE Plant electrical gear. The PG&E Metering Station would be powered by PG&E service from Newcastle Road as well. Phone and communications would be provided from the LFGTE plant as well.

Electrical power for the RNG plant would be obtained from the existing PG&E distribution line providing electrical service to the flare station and LFGTE plant. No new electrical transmission lines would be needed to connect to the power grid, although PG&E may have to upgrade some of their power lines, poles and equipment on the Forward Landfill property to accommodate the project.

Water service for the RNG Plant would be from tanks filled from the landfill water supply as is done with the existing LFGTE Plant. Potable water needs are limited and would be supplied by existing water wells at Forward or by purchased bottled water. The bathroom facility at the RNG plant would be serviced by a scheduled waste hauler as is done for the LFGTE Plant.

PG&E Compressor Station. The PG&E Compressor Station would be powered by nearby PG&E electrical distribution system. Water service connection for landscaping purposes on Pock Lane would be applied for and obtained from existing County or municipal water supply lines and communications would be wireless.

Construction Equipment, Sequencing, Access and Hours

Construction is expected to commence in October of 2023 and is expected to require 12 to 14 months depending on seasonal requirements. The grading work for the project would be started first and would encompass building pads and foundations for the blower station and RNG Plant, building the pipeline bridge support columns, and pipeline trenching. Once the grading work is complete, the concrete pads would be constructed and equipment set. The compressor station and pipeline extensions at Arch Rd and Pock Lane and from the RNG Plant to the existing PG&E pipeline near the Youth Correctional Facility would be constructed by PG&E concurrent with the facilities on the Forward Landfill site.

Construction would occur both on and off the Forward landfill facility. The blower facility, pipeline bridge, RNG plant, and portions of the pipeline would be sited on the landfill facility. The compressor station and connection piping to existing gas lines and high-pressure lines would be built on San Joaquin County/Airport property. All work on the proposed project would be in San Joaquin County.

Access for construction on Forward property would be via South Austin Road for the gas blower

station, Newcastle Road for the RNG Facility, and internal facility roads. The onsite construction would take seven months averaging 15-35 workers on site. Construction equipment required includes backhoes, forklifts, cranes, welding machines and man-lifts.

PG&E crews would use 2 backhoes, 3 to 4 dump trucks, and general construction trucks for the pipeline installation along Newcastle and Arch-Airport. Approximately 12 construction workers would be involved in this construction. Laydown areas for the work along Newcastle would be located on Forward Landfill property. Laydown area for the work along Arch Airport Road would be next to the Compressor Station location. The piping work would be done in three phases, the section along Newcastle as a first phase, the section along Arch Airport Road as the second phase, and the interconnecting piping at the compressor station being built with the compressor station as the third phase.

Hours for construction of facilities at the Forward Landfill are proposed to between 7am to 6pm Monday to Saturday, which are within the landfill operation hours. Construction hours for the compressor station and pipeline facilities to be constructed by PG&E and are proposed to be between 7:00 AM and 7:00 PM.

Facility Operations

Pipelines. The proposed pipelines would be designed and operated in accordance with Federal and State regulations including CPUC General Order No. 112-F "State of California Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems" (June 2015) and the Federal Pipeline Safety Regulations outlined in Title 49 of the Code of Federal Regulations (49 CFR) Part 192 that also govern the design, construction, testing, operation, and maintenance of gas piping systems. The rules outlined by the CPUC General Order do not supersede CFR Part 192 but are considered a supplement.

49 CFR and the CPUC General Order are intended to establish the minimum requirements for the design, construction, material quality, locations, testing, operations, and maintenance of facilities used in the gathering, transmission, and distribution. These are regarded as the established practices to protect the safety of the general public and employees.

RNG Plant. Operations would begin once construction is complete and all permits have been obtained. Operation is currently schedule to begin Winter of 2024. The RNG facility is planned to operate 24 hours/day, 7 days/week. It would be staffed by 3 operators who would be at the facility on weekdays from approximately 8 am to 5 pm.

RNG in excess of the local gas distribution systems use would be transported through the distribution system to the PG&E compression station where the RNG would be compressed and back-flowed into the PG&E high pressure gas transmission system. Ameresco is proposing to install a new thermal oxidizer to combust the leftover process gas during the purification process. The RNG plant is designed for a maximum flow of 3,500 scfm of landfill gas which after processing would result in approximately 1,700 scfm of RNG.

Alarms and sensors are incorporated within the RNG facility to alert the operator of any equipment or operations issues. Lighting is provided during night-time hours using a light stand with downward shielding to prevent glare.

Maintenance of the RNG facility would be ongoing; however, the RNG facility would be periodically taken offline for major maintenance for 1 to 3 days. This type of outage would be extremely rare as the plant is designed with backup equipment to allow continued operation during maintenance. A total plant outage is more typically caused by the electrical utility due to weather related causes, LFG collection system issues on the landfill or planned maintenance work requiring the plant to be offline. During these times, the LFG would be routed to the existing Forward LFG flares.

Planned minor maintenance at the facility typically happens once per week and may include greasing motors or other similar activities. In these cases, the operator may have one or two additional persons assisting with the maintenance work.

Operations Monitoring and Reporting

Ameresco would coordinate with Forward Landfill staff, County staff, and regulatory agencies to ensure operation of the RNG system meets project goals and performance specifications. Coordination would include verbal and written reports and status reports. Examples of parameters to be monitored and reported include, but are not limited to, the following:

- Recuperative thermal oxidizer and enclosed flare emissions would be monitored, reported yearly and tested by/for the SJVAPCD as required in the RNG processing facility's future Permit to Operate; and
- RNG produced at the RNG processing facility would be metered for sales purposes to meet PG&E and CPUC requirements as well as other environmental attributes.

RNG Plant Contingency Operations and Plans. Unforeseen events could temporarily affect the RNG processing and pipeline operations that could ultimately preclude the processing and pipeline export of RNG. These potential events could include:

- Local or regional power failure or outage;
- Upset in the GCCS systems upstream of the RNG processing facility including collection well failures, blower/flare station upsets;
- Equipment shutdown or control issues at the power plant;
- RNG processing facility equipment failure;
- PG&E metering station shut-out or PG&E distribution or compressor station shutdown;
- Natural disaster such as an earthquake.

Based on the occurrence of these events, Ameresco would implement the following contingency measures:

- The RNG processing facility control system (controlling both the RNG Plant and Blower Station) is designed to operate and maintain the RNG process under normal conditions. If

conditions occur outside of the normal operating range, the RNG processing facility would shut down and any potential hazardous process conditions would be combusted in the RNG Plant Enclosed Flare;

- An electronic auto-dialing system would be expanded to include the proposed Project. The system can notify the operator of an abnormal condition during non-business hours and would provide visual and audible warnings to assist operator response;
- In the event of planned maintenance, process upset or other event, the RNG processing facility would be either manually or automatically shut down and LFG would be redirected to the landfill flares as necessary;
- The pipeline pressure and flow would be monitored and any change outside of normal operating parameters would shut off the pipeline and shut down the RNG processing facility; and
- The RNG processing facility would have a seismic sensor. In the event of a large earthquake, the RNG processing equipment would be shut down and pipeline valves would be closed.

Compressor Plant. Operations would begin once construction is complete, all permits have been obtained and the RNG Plant is in operation. The PG&E Compressor Plant is planned to be able to operate 24 hours/day, 7 days/week. The Plant would actually work only when required to remove natural gas and/or RNG from the system to maintain proper operating pressures and flows. The Compressor Plant likely would operate more in the summer when gas demand is lower than the winter months. The facility would be unmanned and would be visited periodically by PG&E operating/maintenance personnel for inspections and maintenance. The plant would be operated following PG&E standards similar to the many other compressor stations owned and operated by PG&E on their system.

The Compressor plant would have a gas compressor to take gas from the distribution system piping and compress it up to transmission line pressure of around 400 psi. The proposed compressor is a multistage piston type compressor which is commonly used throughout the PG&E system.

Alarms and sensors are incorporated within the Compressor Plant to alert PG&E gas operations personnel of any equipment or operations issues. Lighting is provided during night-time hours when needed using a light stand with downward shielding to prevent glare.

Maintenance of the Compressor Plant would be ongoing; however, the Compressor would be periodically taken offline for major maintenance for 1-3 days. This type of outage would be based on normal maintenance intervals and would be arranged with Ameresco so the RNG Plant production would be lowered accordingly. A total plant outage could be more typically caused by the electrical utility due to weather related causes and during these times, the RNG Plant production would be lowered and any excess LFG would be routed to the existing Forward LFG flares.

Planned minor maintenance at the facility typically happens once per week and may include greasing motors or other similar activities. In these cases, the operator may have one or two additional persons assisting with the maintenance work.

Compressor Plant Contingency Operations and Plans. As with the RNG Plant, unforeseen events could temporarily affect the Compressor Plant that could ultimately preclude or reduce the processing and pipeline export of RNG. Based on the occurrence of these events, Ameresco/PG&E would implement the following contingency measures:

- The compressor plant would be shut-down and PG&E Gas Operations personnel notified of an abnormal condition to allow appropriate technicians to respond;
- In the event of planned maintenance, process upset or other event, the RNG processing facility would be either manually or automatically adjusted to reduce gas processing or shut down depending on the gas demand in the system. Any unused LFG would be redirected to the landfill flares as necessary;
- Should the Compressor Plant shut down, the RNG Plant monitors pipeline pressure and flow would be monitored and any change outside of normal operating parameters would reduce the amount of gas processed or, if necessary, the pipeline valve would be closed stopping flow into the pipeline. The RNG processing facility would operate in recycle mode or be shut down depending on the length of the pipeline closure;
- The Compressor Plant would be monitored along with the local pipeline regulation stations by the PG&E Gas Operations Center which would be able to adjust operations or shut the Compressor Plant off when required for safety or system reliability concerns.
- In event of a large seismic event, the Compressor Plant operation would follow PG&E standard protocols for Natural Gas Compressor Stations.

Projected Life Span

The operational life of the proposed RNG processing facility and associated blower and compressor plants and pipelines is dependent upon the decaying refuse generating methane within the landfill. Ameresco's original agreement with the Forward Landfill allows for a 20-year project life span with the opportunity to extend the agreement as long as sufficient LFG is available to make operating the plant commercially viable. Current Forward LFG generation models predict that methane generation would continue far beyond the 20-year project period. Once the agreement with Forward expires, the Ameresco existing power plant and proposed RNG processing facility would be de-constructed, the RNG pipeline abandoned according to prevailing regulations, and the remaining LFG would be directed to the landfill flares. The PG&E Compressor Station would require a 20-year agreement with the possibility of 2 five-year extensions from the Airport. When the agreement expires, the compressor would be removed and other facilities deconstructed and abandoned as required.

Assessor's Parcel No.: RNG Plant: 181-150-08; **Blower Station** 201-060-05; Creek Crossing: 181-150-07; **Compressor Station Facilities:** 177-260-34

Acres: RNG Conditioning Plant Site: 3.4 acres; Compressor Plant Site: 0.33 acres

General Plan: A/UR – Agricultural – Urban Reserve (Conditioning Plant, Blower Plant, and on-site pipelines and bridge); P/F – Public Facilities (Compressor Station)

Zoning: AU-20 (Conditioning Plant, Blower Plant, and on-site pipelines and bridge; P-F Public Facilities (Compressor Station)

Surrounding Land Uses:

See Project Description, above.

Tribal Cultural Resources:

Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 21080.3.1? 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.?

On October 29th, 2021, SAS emailed a letter and a map depicting the project area to the NAHC. The letter requested a Sacred Lands File (SLF) search for the project area, and a list of Native American community representatives who might have knowledge of cultural resources in the project area or that might have an interest in or concerns with the proposed Project. The NAHC replied to SAS on December 29th, 2021, noting that the SLF search documented the presence of a culturally significant property within or near the project area and stated that the North Valley Yokuts Tribe would be the most appropriate point-of-contact. The NAHC also provided a list of suitable regional Native American tribal organizations and representatives. On January 5th, 2022, SAS mailed letters to each of these contacts:

- Rhonda Morningstar Pope, Chair - Buena Vista Rancheria of Me-Wuk Indians
- California Valley Miwok Tribe
- California Valley Miwok Tribe / Sheep Rancheria of Me-Wuk Indians of California
- Lloyd Mathiesen, Chair - Chicken Ranch Rancheria of Me-Wuk Indians
- Donald Duncan, Chair - Guidiville Indian Rancheria
- Sara A. Dutschke, Chair - Ione Band of Miwok Indians
- Monica Areallano, Vice Chair - Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Cosme A. Valdez, Chair - Nashville Enterprise Miwok-Miadu-Nishinam Tribe
- Katherine Perez, Chair - North Valley Yokuts Tribe
- Timothy Perez - North Valley Yokuts Tribe
- Corrina Gould, Chair - The Confederated Villages of Lisjan
- Neil Peyron, Chair - Tule River Indian Tribe
- Gene Whitehouse, Chair - United Auburn Indian Community of the Auburn Rancheria

- Jesus G. Tarango, Jr., Chair - Wilton Rancheria
- Steven Hutchason, Tribal Historic Preservation Officer - Wilton Rancheria
- Kenneth Woodrow, Chair - Wuksache Indian Tribe / Eshom Valley Band

In addition, SAS specifically contacted Ms. Perez of the North Valley Yokuts Tribe by phone on January 6th, 2022, concerning the NAHC findings and emailed her on January 10th, 2022. SAS left messages both times regarding the SLF report of a potentially significant property within or near the project area. Alan Siegwarth of Ameresco, Inc. was contacted by Ms. Perez in June 2023 with respect to the (separate) Forward Landfill North Bridge Project. The tribe is requesting that they monitor all ground disturbing activities. This recommendation is included in Mitigation TCR-1 in the Tribal Cultural Resources section of this document.

The Community Development Department sent an Early Consultation Referral to the Buena Vista Rancheria, California Valley Miwok Tribe, North Valley Yokuts Tribe, and the United Auburn Indian Community of the Auburn Rancheria on November 2, 2022. On December 13, 2022, the Community Development Department received a response letter from the Buena Vista Rancheria requesting a formal tribal cultural consultation. This formal consultation must be completed prior to completion of the environmental review of the project. The San Joaquin County Community Development Department had a formal consultation with Ivan Senock of Buena Vista Rancheria (BVR) in March 2023. An email exchange between Stephanie Stowers, San Joaquin County Planning Department, and Alan Siegwarth on March 15th, 2023 responded to Buena Vista Rancheria comments after the meeting. Mr. Siegwarth reached out several additional times between March 15, 2023 and June 28, 2023, with no response. No further comments or questions have been presented to Ameresco at this time. See Appendix F for email communications.

With implementation of Mitigation Measure TCR-1, this impact would be **less than significant**.

General Considerations:

Does it appear that any environmental feature of the Project would generate significant public concern or controversy?

Yes	No
☐	☒

Nature of concern(s): None known at this time.

Will the Project require approval or permits by agencies other than the County?

Yes	No
☒	☐

Agency name(s):

- San Joaquin County: Conditional Use Permit, Building Permit and Encroachment Permit for PG&E piping/tie-in connections
- San Joaquin Valley Air Pollution Control District: Permit to Operate (PTO)
- Central Valley Flood Protection Board (CVFPB): Section 408 Permit (Consultation to assess if permit required)

Is the Project within the Sphere of Influence, or within two miles, of any city?

Yes	No
☒	☐

City: Portions of the project would adjacent to, but outside of, the City of Stockton city limits. The compressor station, some of the pipeline roadway alignments, and associated pipelines would be within the City of Stockton's Sphere of Influence (pipes would be outside of roadway and within County ROW). The Regulation Station is currently located on the south side of Arch Airport Road, which is in County jurisdiction.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. Please see the checklist beginning on page 4 for additional information.

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

X Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation (choose one):

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

X 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.

Stephanie Stowers	Stephanie Stowers	9/1/23
Print Name	Signature	Date

CEQA Environmental Checklist

AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No Impact
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 a 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?	No Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less Than Significant Impact

Discussion

a) Have a substantial adverse effect on a scenic vista?

The project area is generally flat except for the large hill feature created by the Forward Landfill. The visual character of the southern part of the project area is dominated by the landfill and the adjacent prison and hospital to the south and east, and agricultural lands to the west. The northern portion of the project area is more urbanized and includes views of industrial land uses. The project blower plant would not be visible from Austin Road, as it would be located behind the existing Flare Plant. The bridge and pipeline between the Blower Plant and the new RNG Conditioning Pant also would either not be visible or be visible as minor elements in the disturbed landscape only to workers at the Forward Landfill. The new Conditioning Plant would be adjacent to a highly disturbed landfill borrow pit. It would be visible from motorists and residents at the southern end of Newcastle Road, which dead-ends near the site, and possibly residents at the prison complex immediately northeast of the site. There are no residences directly across the street from the Conditioning Plant site; the nearest residence is about half a mile north of that site.

The Compressor Plant would be visible from Arch Airport Road near Pock Lane, however it would be small in scale and its enclosure would be similar in design to the commercial and light industrial land uses nearby.

There are no scenic vistas at or near the site, so the project would have **no impact** to any such vistas.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

There are no state scenic highways in the vicinity of any of the project elements. No rock outcroppings or historic buildings would be affected by the project. It is possible that some trees would be trimmed or removed near the pipeline bridge crossing, however those are not visible from off of the landfill site. **No impact** would occur.

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 a 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?

See discussion in response to question a), above. The project would not substantially degrade the existing visual character of the site. The project would be consistent with the sites' general plan and zoning regulations governing scenic quality. **No impact** would occur.

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

The Compressor Plant, Conditioning Plant, and Blower Plant would have nighttime lighting for both operational and security purposes. That lighting would be shielded and directional, and would not result in off-site glare. As discussed in item a), above, there are no residences near any of these facilities, so light and glare impacts would be **less than significant.**

AGRICULTURE AND FOREST RESOURCES

Would the project:

Question	CEQA Determination
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?	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact
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))?	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
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?	No Impact

Discussion

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?

The project would convert a narrow 3.4-acre strip of former farmland adjacent to the landfill borrow pit to industrial use for the Compressor Plant. An area on the Forward Landfill site adjacent to the existing Flare Plant would be used for the Blower Plant. These lands are designated as "Urban and Built Up Land" in the California Department of Conservation's farmland mapping program[4]. The Compressor Plant would be located on already developed commercial and light industrial lands. Pipelines would be in existing roadways and adjacent to the existing landfill borrow pit, none of which are agricultural lands. Therefore the project would have **no impact** to prime, unique, or important agricultural lands.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The project would not be located on any Williamson Act contracted lands**.** Furhter, the site is developed with landfill-related uses and has no current agricultural uses. **No impact** would occur.

[4] https://maps.conservation.ca.gov/DLRP/CIFF/ accessed October 19, 2021.

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))?

The project is in the agricultural and urbanized areas of California's San Joaquin Valley. There are no forestry uses on or near any of the proposed project facilities. **No impact** would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

The project is in the agricultural and urbanized areas of California's San Joaquin Valley. There are no forestry uses on or near any of the proposed project facilities. **No impact** would occur.

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 in the agricultural and urbanized areas of California's San Joaquin Valley. There are no farmland or forest land uses on or near any of the proposed project facilities. **No impact** would occur.

AIR QUALITY

Would the project:

Question	CEQA Determination
a) Conflict with or obstruct implementation of the applicable air quality plan?	Less Than Significant Impact
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?	Less Than Significant Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	Less Than Significant Impact
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less Than Significant Impact

Background

This analysis is based upon the calculations performed by RCH Group (see Appendix A) and the Authority to Construct/Permit to Operate Application prepared for the project[5]. This analysis is consistent with the San Joaquin Valley Air Pollution Control District (SJVAPCD) Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI).[6] This analysis includes emissions estimates and significance determinations for the following pollutants: carbon monoxide (CO), nitrogen oxides (NOx), reactive organic gases (ROG), sulfur dioxide (SOx), particulate matter less than 10 micrometers (PM10), and particulate matter less than 2.5 micrometers (PM2.5).

The project site is within the San Joaquin Valley Air Basin (SJVAB), under the jurisdiction of the SJVAPCD. The United States Environmental Protection Agency (USEPA) has set air pollutant emission standards for criteria pollutants, referred to as National Ambient Air Quality Standards (NAAQS), to protect public health. At the state level, the California Air Resources Board (CARB) also regulates these criteria air pollutants and other pollutants through the California Ambient Air Quality Standards (CAAQS). The SJVAB is currently designated "nonattainment" for the state 1-hour ozone standard, state and national 8-hour ozone standards, state PM10 standards, and for state and national PM2.5 standards. The SJVAB is designated "attainment" or "unclassifiable" with respect to the other ambient air quality standards. Additional environmental and regulatory setting information is found in Appendix A.

Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

[5] Tetra Tech, Authority to Construct/Permit to Operate Application, Renewable Natural Gas Facility Ameresco Forward RNG LLC, November 24, 2021.

[6] San Joaquin Valley Air Pollution Control District (SJVAPCD), Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), March 19, 2015.

As discussed in b) below, both project construction and operational emissions would be substantially below the SJVAPCD's significance thresholds for criteria pollutants. As the significance thresholds were established in part to ensure consistency with the objectives of air quality attainment plans adopted by the SJVAPCD, the project would not conflict with or obstruct implementation of SJVAPCD air quality plans. The project would be required to comply with applicable rules and regulations. Specifically, the project would be required to comply with SJVAPCD Regulation VIII – Fugitive PM10 Prohibitions, which requires measures to reduce fugitive dust emissions during construction. Therefore, this impact would be **less than significant**.

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?

The project would generate criteria pollutant emission during construction and operations but would also result in a significant decrease in criteria pollutant emissions during operations due to decrease flaring of LFG.

Construction of the project was estimated using the California Emissions Estimator Model (CalEEMod) Version 2020.4.0[7] and the Road Construction Emissions Model Version 9.0[8]. SJVAPCD thresholds of significance are annual-based thresholds and to be conservative project construction activities were assumed to be completed entirely within a one-year period (2023) even though construction could require several months of construction in 2024. See Appendix A emissions calculations and assumptions. Table AQ-1 displays the project construction emissions in comparison to SJVAPCD's annual significance thresholds.

Table AQ-1: Project Construction Emissions (tons/year)

Source	ROG	NOx	CO	SOx	PM10	PM2.5
RNG Plant & Blower Station	0.095	0.676	0.651	0.002	0.100	0.050
Metering & Compressor Stations	0.011	0.099	0.095	0.000	0.007	0.004
Ameresco Pipelines	0.075	0.607	0.585	0.002	0.134	0.044
PG&E Pipelines	0.156	1.298	1.175	0.004	0.190	0.072
Total	**0.34**	**2.68**	**2.51**	**0.01**	**0.43**	**0.17**
Significance Threshold	10	10	100	27	15	15
Significant?	No	No	No	No	No	No

Source: CalEEMod Version 2020.4.0, Road Construction Emissions Model Version 9.0

[7] California Air Pollution Control Officers Association (CAPCOA), California Emissions Estimator Model Version 2020.4.0, May 2021, http://www.aqmd.gov/caleemod/user's-guide, Accessed June 8, 2022.
[8] Sacramento Metropolitan Air Quality Management District (SMAQMD), Road Construction Emissions Model Version 9.0, May 2018, https://www.airquality.org/residents/ceqa-land-use-planning/ceqa-guidance-tools, Accessed June 8, 2022.

Operation of the project was estimated using the Authority to Construct/Permit to Operate Application prepared for the project.[9] The project would primarily emit criteria pollutant emissions from the thermal oxidizer and process enclosed flare at the proposed RNG facility. Criteria pollutant emissions from motor vehicles and other minor sources would be negligible. Overall, the project would result in a reduction in all criteria pollutants due to decreased LFG flaring. See Appendix A emissions calculations and assumptions. Table AQ-2 displays the project operational emissions in comparison to SJVAPCD's significance thresholds.

Table AQ-2: Project Operational Emissions (tons/year)

Source	ROG	NOx	CO	SOx	PM10	PM2.5
Thermal Oxidizer	7.72	6.72	22.39	2.24	11.07	11.07
Process Enclosed Flare	1.7	2.08	6.92	0.41	2.15	2.15
Project Total	9.42	8.8	29.31	2.65	13.22	13.22
Existing LFG Flare Emissions	-13.12	-30.88	-123.52	-11.9	-10.38	-10.38
Net Operational Emissions	-3.7	-22.08	-94.21	-9.25	2.84	2.84
Significance Threshold	10	10	100	27	15	15
Significant?	No	No	No	No	No	No

Source: Tetra Tech, 2021.

As shown in tables AQ-1 and AQ-2, the project would not exceed SJVAPCD's significance thresholds. Pursuant to the SJVAPCD's guidance, if project-specific emissions would be less than the thresholds of significance for criteria pollutants, the project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the SJVAPCD is in nonattainment under applicable federal or state ambient air quality standards. Therefore, this impact would be **less than significant**.

c) Expose sensitive receptors to substantial pollutant concentrations?

As defined in the SJVAPCD GAMAQI, "sensitive receptors" include residences, schools, parks and playgrounds, day care centers, nursing homes, and hospitals. Typically, health risk is analyzed for sensitive receptors within 1,000 feet of a project's boundary. Two project components are within 1,000 feet of a sensitive receptor. The proposed PG&E gas pipeline that runs north along Newcastle Road from the proposed PG&E metering station to the tie-in to the existing PG&E gas pipeline has approximately seven residential structures along this segment of Newcastle Road that would be considered sensitive receptors. The N. A. Chaderjian Youth Correctional Facility is also within 1,000 feet of the proposed RNG Plant.

Construction emissions for the PG&E pipeline would be short-term (construction of the PG&E pipeline was estimated to require approximately 24 weeks) and would only be within 1,000 feet of a given sensitive receptor for a few weeks. Furthermore, diesel exhaust (PM2.5) emissions from construction of this stretch

[9] Tetra Tech, Authority to Construct/Permit to Operate Application, Renewable Natural Gas Facility Ameresco Forward RNG LLC, November 24, 2021.

of pipeline would be a maximum of approximately 0.66 pounds per day and a total of approximately 0.07 tons, which is very low. Construction emissions for the RNG plant would be short-term (construction of the RNG Plant would require approximately 38 weeks). Furthermore, diesel exhaust (PM2.5) emissions from construction of the RNG plant would be an average of approximately 0.20 pounds per day and a total of approximately 0.02 tons, which is very low. For reference, the San Luis Obispo APCD adjacent to the SJVAPCD has an adopted significance threshold of 7 pounds per day of diesel exhaust (PM2.5). Therefore, construction health impacts would be **less than significant**.

Once operational, the PG&E pipeline would not generate toxic air contaminants (TACs). Operation of the RNG plant would generate TACs, thus a preliminary health risk assessment (HRA) was conducted by Tetra Tech (September 20, 2022), which can be found in Appendix B of this Initial Study. The HRA evaluated health risk related to the flare and thermal oxidizer for the RNG Plant and found cancer risk to be less than one in a million for both sources, which is less than the adopted SJVAPCD threshold of 20 in a million. Furthermore, the SJVAPCD will conduct their own HRA during project permitting based on the air permit application information and the SJVAPCD's permit engineer's evaluation, which would ensure the project does not emit TACs that exceed health risk significance thresholds. Furthermore, the project would reduce flare usage at the landfill, which would reduce TAC emissions in the project area. Therefore, operational health impacts would be **less than significant**.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The project would not result in odorous emissions adversely affecting a substantial number of people. SJVAPCD's GAMAQI contains screening levels for potential odor sources and RNG facilities are not listed as a potential odor source. RNG facilities do not create odors because the LFG is being processed and compressed for shipment in PG&E gas pipeline, and not released into the air. The byproducts of the treatment would be combusted at high temperatures just as it is currently being burned in the existing flare. The maintenance work on site also would not generate any significant odor. Therefore, this impact would be **less than significant**.

BIOLOGICAL RESOURCES

Would the project:

Question	CEQA Determination
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 Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?	Less Than Significant with Mitigation Incorporated
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Less Than Significant with Mitigation Incorporated
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?	Less Than Significant with Mitigation Incorporated
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?	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact
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?	No Impact

Background

This analysis was prepared based on a biological resources evaluation prepared by Swaim Biological Consulting and peer reviewed by biologists from Vollmar Natural Lands Consulting. For purposes of this IS-MND, the following geographic references apply:

- Project Area – an approximate 5-mile radius around each pipeline alignment and the RNG Processing Facility located on Forward Inc. Landfill property.
- Project Site –includes the existing Landfill Gas to Energy Plant adjacent to Austin Road; the pipeline alignment as it travels north from the existing plant to an above ground crossing over the relocated North Fork of South Littlejohn's Creek before connecting to the location where the new

RNG Processing Facility and PG&E metering station that would be built in a previously disturbed area designated for landfill activities; and the pipeline extent that follows Arch Airport Road to its terminus at a new metering/compressor station on Pock Lane.

- Pipeline/Alignment/Route – refers to the location of the buried pipeline. The pipeline alignment is further defined to include a 50-foot buffer on either side of the pipeline for survey of biological resources.

As conditions over most portions of the Project Site have been studied over multiple years, this analysis relied upon the 2018 *Forward Expansion Supplemental EIR* ([SEIR] San Joaquin County 2018) to evaluate conditions at the proposed Project Site and text is often excerpted verbatim. The SEIR drew upon longer-term studies of the Forward Landfill site, including a fisheries habitat assessment (2002) and fish surveys in Littlejohn's Creek (2007), burrowing owl habitat assessments (2013) and surveys (2013, 2014, 2015, 2017), and Swainson's hawk nesting surveys (2014, 2017). Additional sources consulted include the 2013 *Forward Landfill Expansion Project FEIR* (San Joaquin County 2013), and the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan ([SJMSCP] SJCOG 2000).

Updated database queries were obtained from the USFWS's Sacramento Endangered Species Office Information for Planning and Consultation (IPaC) website (USFWS 2021), the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2021), and the California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Plants (CNPS Inventory) (CNPS 2021). The IPaC was queried for San Joaquin County and the CNDDB and CNPS Inventory were queried for the nine U.S. Geological Survey 7.5-minute quadrangles that contain and surround the project (Stockton East, Stockton West, Lathrop, Manteca, Peters, Avena, Lodi South, Waterloo, and Linden).

A visual reconnaissance survey of the project area and surrounding habitats was conducted by Swaim Biological, Inc. (SBI) on November 30, 2020 and June 27, 2022. During the field surveys, the biologist walked the extent of the Project Site including the proposed processing facility, pipeline alignment, and PG&E metering station and pipeline to evaluate biological resource conditions that exist within the project area. Focused botanical or wildlife studies following published protocols were not performed as part of this analysis; such surveys were not warranted due to onsite habitat conditions or other factors. During the surveys, on site and adjacent aquatic resources were evaluated as part of an aquatic resources assessment.

The project area is located within an agricultural area of San Joaquin County approximately 4 miles north of Manteca, within the Central Zone of the SJMSCP (SJCOG 2000) where land uses are primarily urban and agricultural. For the RNG pipeline and processing facility that occur within the landfill, surveys were conducted on the lands between Newcastle Road and Austin Road at an elevation of approximately 35 feet. The terrain at the existing landfill and surrounding vicinity consists of a level plain with prominent landfill mounds. The North Fork of South Littlejohn's Creek flows between the landfill and the borrow areas to the north and flows east to west. At the pipeline route on Arch Airport Road, project activities would occur in an existing road shoulder, connecting to a new compressor plant that would be built on an existing gravel lot off of Pock Lane. Surrounding land uses are agricultural and urban, with an elevation of approximately 30 feet.

Habitat types within the survey area are described from the 2018 SEIR and are consistent with the SJMSCP land cover type classifications (SJCOG 2000). The study area is characterized as a highly modified

environment, supporting very little native vegetation. With the exception of the rerouted North Fork of South Littlejohn's Creek, the proposed development areas consist of developed landfill-related land uses (which are largely graded and devoid of vegetation). However, some non-native grassland and ruderal (i.e., weedy) vegetation is present on and around the proposed onsite development areas. Emergent freshwater marsh is present along the creek channel. Other than the freshwater marsh, which has colonized the altered and maintained creek channel, no native plant communities are present within the study area.

Discussion

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 Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?

Special Status Plant Species and Sensitive Natural Communities Impacts

Suitable habitat for special status plants that occur within riparian habitats were identified – slough thistle (*Cirsium crassicaule*), Delta button-celery (*Eryngium racemosum*), Mason's lilaeopsis (*Lilaeopsis masonii*) and Sanford's arrowhead (*Sagittaria sanfordii*). Complete avoidance of plant populations on site is required for slough thistle, Delta button-celery, and Sanford's arrowhead per the SJMSCP. If impacts to Mason's lilaeopsis occur, mitigation must be addressed through the SJMSCP in coordination with the TAC.

There is one CDFW Sensitive Natural Community (SNC) Alliance present within the Project Site, Button willow thickets (State Rarity Rank S2, CDFW CA Alliance Code 63.000.01). The project as currently designed would not have direct impacts to this SNC.

Impacts to these plants, the Button willow SNC and other potential impacts in riparian forest associated with the North Fork of South Littejohn's Creek would be avoided by placing a bridge crossing outside of the 100-year floodplain and above the Ordinary High-Water Mark. If impacts to special status plants and/or the Button willow SNC cannot be avoided this would be a **potentially significant impact**. Mitigation Measures BIO-1 and BIO-2 would reduce this potentially significant impact to a **less-than-significant level.**

Special Status Wildlife Species

Temporary impacts associated with construction related activities may injure or kill individuals by crushing occupied burrows or running over individuals. Individuals may become trapped in excavated areas, pipes or other equipment used for construction. Hazardous chemicals and substances during construction (oil, gasoline) may cause mortality in the event of spills or leaks. These are **potentially significant impacts**.

Potential "Take" of Giant Garter Snake. The North Fork of South Littlejohn's Creek within the study area provides suitable habitat to support giant garter snake. In addition, portions of the Stockton Diverting Canal, Littlejohn's Creek, Lone Tree Creek, and French Camp Slough are considered to have habitat elements for the species (SJCOG 2000). No impacts will occur directly within the creek, however, if the species were present within the surrounding grassland/upland areas during construction, a "take" of giant garter snake could occur. This is a **potentially significant impact**. Mitigation Measures BIO-1 and BIO-2 would reduce this potentially significant impact to a **less-than-significant level.**

Potential "Take" of Western Pond Turtle. The North Fork of South Littlejohn's Creek Creek within the study area provides suitable habitat to support western pond turtle. No impacts will occur directly within the creek, however, if the species were present within the surrounding grassland/upland areas during construction, a "take" of western pond turtle could occur. This is a **potentially significant impact**. Mitigation Measures BIO-1 and BIO-2 would reduce this potentially significant impact to a **less-than-significant level.**

Potential "Take" of Special-status Bird Species. Construction could adversely affect special-status birds including Swainson's hawk, least Bell's vireo, tricolored blackbird, white- tailed kite, burrowing owl, grasshopper sparrow, short-eared owl, mountain plover, northern harrier, and loggerhead shrike through direct and indirect impacts. These are **potentially significant impacts**. Mitigation Measures BIO-1 and BIO-2 would reduce this potentially significant impact to a **less-than-significant level.**

Impacts on Fishes. The North Fork of South Littlejohn's Creek within the study area provides suitable habitat to support multiple native protected fish species. The perennial nature of the creek, use of the creek for irrigation water delivery and presence of non-native fish species reduces the overall value of the creek for native fish species but does not preclude the potential for them to be present and/or to utilize the creek during portions of their life cycles. **No impacts** would occur directly within the creek and therefore potential impacts to the species would be limited to indirect water quality impacts in the event construction activities resulted in an impact.

Impacts on Migratory Birds. Pursuant to the MBTA, it is unlawful at any time, by any means or in any manner to pursue, hunt, take, capture, kill, attempt to take, capture, or kill any migratory bird, any part, nest, or eggs of any such bird is defined as "take". If conducted during the nesting season (February 1 to August 31), construction could have direct effects on special status and other bird species potentially nesting in open grassland and/or trees. Ground disturbance in the grassland and removal or trimming of trees could result in destruction of active nests, including eggs, nestlings, or juveniles, and construction-related disturbance (e.g., equipment noise, presence of workers) could disrupt normal nesting behavior, resulting in nest abandonment and reproductive failure. Construction-related activities could result in direct mortalities of bird species protected under the MBTA. These are **potentially significant impacts**. Mitigation Measures BIO-1 and BIO-2 would reduce this potentially significant impact to a **less-than-significant level.**

Temporary Impacts to Roosting and Foraging Special-status Bat Species. No direct impacts to bat roosts are expected to occur within the project areas. The project does not include the removal of trees or buildings. Common and special status bat species such as pallid bat, pale big-eared bat, California mastiff bat, western red bat, small-footed myotis, long-eared myotis, fringed myotis, and long-legged myotis may forage over the North Fork of South Littlejohn's Creek. Construction activities near the North Fork of South Littlejohn's Creek could result in a temporary reduction in foraging habitat and a disruption in foraging behavior by special-status bat species such as red bat. However, abundant foraging habitat similar to that being affected is available in the immediate project vicinity. This impact is considered **less than significant**, and no mitigation is required.

Impacts on Species Through Loss of Nonnative Annual Grassland and Ruderal Vegetation. The project-related loss of wildlife habitat in non-native annual grassland and ruderal vegetation totals 2.01 acres. All construction activities and associated habitat conversions would occur within the boundary of the existing

landfill. Impacts associated with the pipeline extension on Arch Airport Road would result in temporary impacts to a road shoulder and the compressor station off of Pock Lane would occur within a currently developed lot.

Swainson's hawk (a state-listed species) and other special-status bird species forage over grassland habitat and may use the existing landfill habitats for foraging. In the short-term, there would be a loss of 2.01 acres of potential Swainson's hawks foraging habitat and the County considers any loss of potential Swainson's hawk habitat to contribute to a significant county-wide impact. Therefore, the loss of wildlife habitat (including raptor foraging habitat) is considered **a cumulatively significant impact**. Mitigation Measures BIO-1, BIO-2, and BIO-3 would reduce this **potentially significant** impact to a **less-than-significant level.**

Mitigation Measures

Impacts to special status species listed above would be addressed through participation in the SJMSCP and implementation of avoidance and minimization measures. These impacts would be reduced to a less-than-significant level by implementation of the Mitigation Measures described below.

MM BIO-1 SJMSCP Participation. The Project proponent shall participate in and receive take coverage under the SJMSCP and comply with all conditions of take coverage. Prior to the issuance of grading or construction permits for the project site, the project proponent shall submit an SJMSCP application to the San Joaquin County and the SJMSCP TAC for review and approval.

The temporary and permanent impacts to ruderal and grassland habitats require both temporary and permanent impact fees as defined by the current SJMSCP fee schedule at the time of application. Additionally, avoidance and minimization measures as required by the SJMSCP shall be implemented to minimize impacts to covered species and jurisdictional resources. The Certificate of Coverage would be issued to the project proponent to confirm the fee has been received, that other SJMSCP requirements have been met or will be performed, and will authorize take of covered species. Participation in the SJMSCP would fully address impacts to the covered species.

MM BIO-2 Species Specific Avoidance and Minimization Measures. The Project proponent shall adhere to the following avoidance and minimization measures.

A. *SJCMSCP Covered Plant Species and CDFW Sensitive Natural Communities.* Floristic rare plant surveys shall be conducted prior to construction activities, to coincide with the blooming periods of all potential rare plants. The plant surveys shall be of sufficient scope, duration, and intensity to determine the need (or lack of a need) for attaching Incidental Take Minimization Measures as conditions of project approval, obtain a gross determination of habitats present on the site, any species-specific information as may be readily obtained, and the relation of the site to surrounding land uses. At a minimum the surveys shall follow the protocols described in the 2018 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW). Surveys also generally followed guidelines from the California Department of Fish and Game (2009), the U.S. Fish and Wildlife Service (1996), and the California Native Plant Society (2001).

    1. The one CDFW Sensitive Natural Community (SNC) Alliance present adjacent to the Project Site, Button willow thickets (State Rarity Rank S2, CDFW CA Alliance Code 63.000.01) is currently planned to be avoided. To ensure the SNC can be avoided the

extent of the button willow thicket will be mapped during rare plant surveys prior to project implementation.

B. *Listed Fish Species.* Indirect impacts to fish species associated with water quality changes will be mitigated through implementation of avoidance and minimization measures described in MM BIO-3.1 which includes measures to avoid incidental impacts to aquatic resources within the North Fork of South Littlejohn's Creek. These measures are consistent with measures for SJMSCP Covered Fish Species and protection of riparian habitats.

C. *Giant garter snake.* Participation in the SJMSCP affords the project proponent Incidental Take authorization for giant garter snake pursuant to ESA, CESA and CEQA. Nonetheless, to minimize the potential for "incidental take" of giant garter snake, the following measures required by the SJMSCP (SJCOG 2000) shall be applied:

1. A preconstruction survey for the species shall be conducted according to the requirements of the SJMSCP by a qualified biologist approved by the SJMSCP Technical Advisory Committee (TAC). If a giant garter snake is detected within the study area, the project will undertake Incidental Take Avoidance and Minimization Measures to protect the species as directed by the TAC.

2. The project shall also comply with any mitigation requirements specified for giant garter snake habitat by the SJMSCP TAC (SJCOG 2000). Avoidance and minimization measures may include the following, as specified by the TAC:

3. Construction shall occur during the active period for the snake, between May 1 and October 1. Between October 2nd and April 30th, the SJMSCP Joint Powers Authority (JPA), with the concurrence of the Permitting Agencies' representatives on the TAC, shall determine if additional measures are necessary to minimize and avoid take.

    a. Limit vegetation clearing within 200 feet of the banks of potential giant garter snake aquatic habitat to the minimal area necessary.

    b. Confine the movement of heavy equipment within 200 feet of the banks of potential giant garter snake aquatic habitat to existing roadways to minimize habitat disturbance.

    c. Prior to ground disturbance, all on-site construction personnel shall be given instruction regarding the presence of SJMSCP Covered Species and the importance of avoiding impacts to these species and their habitats.

    d. In areas where wetlands, irrigation ditches, marsh areas or other potential giant garter snake habitats are being retained on the site:

        i. Install temporary fencing at the edge of the construction area and the adjacent wetland, marsh, or ditch,

        ii. Restrict working areas, spoils and equipment storage and other project activities to areas outside of marshes, wetlands and ditches; and

iii. Maintain water quality and limit construction runoff into wetland areas through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents.

4. If on-site wetlands, irrigation ditches, marshes, etc. are being relocated in the vicinity: the newly created aquatic habitat shall be created and filled with water prior to dewatering and destroying the pre-existing aquatic habitat. In addition, non-predatory fish species that exist in the aquatic habitat and which are to be relocated shall be seined and transported to the new aquatic habitat as the old site is dewatered.

5. If wetlands, irrigation ditches, marshes, etc. will not be relocated in the vicinity, then the aquatic habitat shall be dewatered at least two weeks prior to commencing construction.

6. Pre-construction surveys for the giant garter snake (conducted after completion of environmental reviews and prior to ground disturbance) shall occur within 24 hours of ground disturbance.

7. Other provisions of the USFWS Standard Avoidance and Minimization Measures during Construction Activities in Giant Garter Snake Habitat shall be implemented (excluding programmatic mitigation ratios which are superseded by the SJMSCP's mitigation ratios).

These mitigation measures would reduce potential impacts to the giant garter snake to less than significant levels because impacts to giant garter snake would be minimized or avoided.

D. *Western Pond Turtle.* Participation in the SJMSCP affords the project proponent Incidental Take authorization for western pond turtle pursuant to ESA, CESA and CEQA. Nonetheless, to minimize the potential for incidental take of the species, preconstruction surveys for western pond turtles shall be conducted within the project study area by a qualified biologist approved by the SJMSCP TAC. If the species is detected, within the study area, the project shall undertake Incidental Take Avoidance and Minimization Measures to protect the species as directed by the TAC. Avoidance and minimization measures may include the following, as specified by the TAC:

1. When nesting areas for pond turtles are identified on a project site, a buffer area of 300 feet shall be established between the nesting site (which may be immediately adjacent to wetlands or extend up to 400 feet away from wetland areas in uplands) and the wetland located near the nesting site. These buffers shall be indicated by temporary fencing if construction has begun or will begin before nesting periods end (the period from egg laying to emergence of hatchlings is normally April to November). The buffer zones shall be maintained until the nesting season has ended.

These mitigation measures would reduce potential impacts to western pond turtle to less than significant levels because impacts to pond turtles would be avoided or minimized. In addition, restoration of the realigned creek channel would provide at least equivalent habitat for western pond turtle.

E. *Nesting and Migratory Birds.* To avoid and minimize impacts on nesting and migratory birds and to comply with the federal Migratory Bird Treaty Act pre-construction surveys will be

conducted and construction avoidance measures will be implemented if necessary. Riparian vegetation, grassland, agricultural and ruderal habitats and trees shall be surveyed prior to construction to evaluate nesting bird habitat.

1. If work is scheduled to take place between February 1 and August 31, a pre-construction nesting bird survey will be conducted by a qualified biologist within 14 days of construction, covering a radius of 500 feet for non-listed raptors and 100 feet for non-listed passerines at all locations. Preconstruction surveys will need to be done in phases as work along the alignment based on project phasing will not be occurring concurrently. If there is a break in construction activities of more than 7 days during the nesting season a new preconstruction survey must be conducted.

2. If an active bird nest is found within these buffers, species-specific measures shall be prepared by a qualified biologist and implemented to prevent abandonment of the active nest. If an active nest is present, a minimum exclusion buffer of 100 feet shall be maintained during construction, depending on the species and location.

3. The perimeter of the nest setback zone shall be fenced or adequately demarcated with stakes and flagging at 20-foot intervals, and construction personnel and activities restricted from the area. A survey report by a qualified biologist verifying that no active nests are present, or that the young have fledged, shall be submitted prior to initiation of grading in the nest-setback zone.

4. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop work authority in the event construction activities result in disturbance to an active nest.

F. *SJMSCP-covered Birds.* Participation in the SJMSCP affords the project proponent Incidental Take authorization for these species, both for direct impacts and loss of habitat. As specified in the SJMSCP, incidental take avoidance measures have been developed and must be implemented to conform to the SJMSCP; each species is discussed separately, below.

All SJMSCP Covered Bird Species are subject to the MBTA. The SJMSCP is based on the more stringent, federal standard for "take" pursuant to the FESA, which includes modification of habitat. Incidental Take Permits for SJMSCP-covered bird species are included in the SJMSCP, to allow for the conversion of habitat with appropriate creation of compensatory habitat for these species (SJCOG 2000). However, to conform to the MBTA, the Incidental Take Minimization Measures of the SJMSCP may not result in a "take", as defined by the MBTA, of SJMSCP Covered Bird Species. The Incidental Take Minimization Measures in Section 5.2.4 of the SJMSCP have been designed to avoid such a "take".

1. *Swainson's Hawk.* Swainson's hawks have been observed in the project vicinity and there is a known nest site in an oak tree on Austin Road, approximately 200 feet from the landfill boundary. Potentially suitable nest sites are also present near to the project site, particularly along the North Fork of South Littlejohn's Creek. The proposed project does not include the removal of any potential nest trees, but construction activities would occur in proximity

to a known nest site and potential nest trees. Given the use of the site as a landfill and associated truck traffic and landfill operation activities, baseline noise conditions are high on the site. Initial construction activities (e.g., soil excavation) could temporarily elevate onsite noise levels, thus potentially affecting an active Swainson's hawk nest (should one occur within 500 feet of the construction zone). Participation in the SJMSCP affords the project proponent Incidental Take authorization for Swainson's hawk pursuant to CESA and CEQA. To conform to the SJMSCP in regards to protecting potentially occurring nearby active nests, the following measures shall be followed:

a. Prior to the initiation of ground clearing, grubbing, grading or excavation activities, scheduled to occur during the breeding season (February 16 through August 31), a preconstruction survey for Swainson's hawk nests shall be performed by a qualified biologist.

b. If an occupied Swainson's hawk nest is detected, a setback of 500 feet from the nesting area shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests. The setback distance may be smaller, subject to CDFW approval. Setbacks shall be marked by brightly colored temporary fencing.

c. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop work authority in the event construction activities result in disturbance to an active nest.

d. If a nest tree becomes occupied during construction activities, then all construction activities shall remain a distance of two times the dripline of the tree, measured from the nest.

2. *Golden Eagle.* Although no suitable nesting sites for golden eagle are present onsite, potential nesting habitat occurs on adjacent properties. Participation in the SJMSCP affords the project proponent Incidental Take authorization for golden eagle pursuant to CESA and CEQA. As outlined in the SJMSCP, when a site inspection indicates the presence of a nesting golden eagle, the following measures shall be followed:

a. Prior to the initiation of ground clearing, grubbing, grading or excavation activities, a scheduled to occur during the nesting season (i.e., normally approximately February 1 – June 30), a preconstruction survey shall be performed by a qualified biologist.

b. If an occupied golden eagle nest is detected, a setback of 500 feet from the nesting area shall be established and maintained during the nesting season (i.e., normally approximately February 1 – June 30) for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground disturbing activities must begin during the nesting

season in the presence of nests that are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

c. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop-work authority in the event construction activities result in disturbance to an active nest.

3. *White-tailed Kite.* White-tailed kite has been observed foraging in the project area and suitable nesting habitat is present in the immediate project vicinity. Participation in the SJMSCP affords the project proponent Incidental Take authorization for white-tailed kite in the form of habitat conversion provided the following Incidental Take Minimization Measures, as outlined in the SJMSCP, are followed:

a. Prior to the initiation of tree removals/pruning, ground clearing, grubbing, grading or excavation activities scheduled to occur during the nesting season (i.e., normally approximately February 15 – September 15), a preconstruction survey shall be performed by a qualified biologist. If there is a break in construction activities of more than 7 days during the nesting season a new preconstruction survey must be conducted.

b. A setback of 100 feet from nesting areas shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests.

c. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests that are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

d. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop work authority in the event construction activities result in disturbance to an active nest.

4. *Burrowing Owl.* Suitable habitat is present on and near the project sites and in the project vicinity and the species could colonize the site in the future. Participation in the SJMSCP affords the project proponent Incidental Take authorization for burrowing owl pursuant to CEQA; this provides both for the taking of the species incidental to otherwise lawful activities as well as the conversion of suitable burrowing owl habitat to non-suitable habitat. Consistent with the measures outlined in the SJMSCP and CDFG 2012, the following impact minimization measures shall be followed:

a. A "Take Avoidance Survey" shall be performed by a qualified biologist (as defined in CDFG 2012, Appendix D) no less than 14 days prior to the initiation of ground disturbance. A final survey shall be conducted 24 hours prior to ground

disturbance. If there is a break in construction activities of more than 7 days during the nesting season a new preconstruction survey must be conducted.

b. If active burrows occupied by burrowing owls are observed during surveys and can be avoided by construction activities the following measures shall be implemented:

    i. During the breeding season (i.e., February 1 through August 31), occupied burrows shall not be disturbed. Minimum setbacks shall be established from occupied burrows shall be 200 m (656 ft) for low disturbance levels, and 500 m (1640 ft) for medium and high disturbance levels.

    ii. During the nonbreeding season (September 1 through January 31) occupied burrows shall not be disturbed. Minimum setbacks from occupied burrows shall be 50 m (164 ft) for low disturbance levels, 100 m (328 ft) for medium disturbance levels and 500 m (1640 ft) for high disturbance levels.

    iii. A setback shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests.

    iv. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests that are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

    v. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop work authority in the event construction activities result in disturbance to an active nest.

c. If active burrows occupied by burrowing owls are observed during surveys and <u>cannot</u> be avoided by construction activities the following measures shall be implemented:

    i. A qualified biologist will develop an exclusion plan in coordination with the TAC and CDFW. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping.

    ii. During the non-breeding season (September 1 through January 31) burrowing owls occupying the project site may be evicted from the project site by passive relocation as described by the (CDFG (2012).

    iii. Burrow exclusion and closure is not permitted during the breeding season.

5. *Loggerhead Shrike.* Loggerhead shrike have the potential to be present and foraging and/or nesting in the project area. Participation in the SJMSCP affords the project proponent Incidental Take authorization for loggerhead shrike pursuant to CEQA. As outlined in the SJMSCP, the following incidental take avoidance measures shall be followed:

    a. Prior to the initiation of ground clearing, grubbing, grading or excavation activities, a scheduled to occur during the breeding season (i.e., February 1 – August 31), preconstruction survey shall be performed by a qualified biologist. If there is a break in construction activities of more than 7 days during the nesting season a new preconstruction survey must be conducted.

    b. A setback of 100 feet from loggerhead shrike nest sites shall be established and maintained during the nesting season (i.e., February 1 to August 31) for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests that are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

    c. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop work authority in the event construction activities result in disturbance to an active nest.

6. *Northern Harrier.* Suitable foraging habitat is present within the project areas and nesting could occur within the riparian areas of the North Fork of South Littlejohn's Creek. Participation in the SJMSCP affords the project proponent Incidental Take authorization for northern harrier pursuant to CEQA. Nonetheless, as outlined in the SJMSCP, the following incidental take avoidance measures shall be followed:

    a. Prior to the initiation of ground clearing, grubbing, grading or excavation activities, a scheduled to occur during the breeding season (i.e., February 1 – August 31), preconstruction survey shall be performed by a qualified biologist. If there is a break in construction activities of more than 7 days during the nesting season a new preconstruction survey must be conducted.

    b. A setback of 500 feet from nesting areas shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests that are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

    c. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop

work authority in the event construction activities result in disturbance to an active nest.

7. *Tricolored Blackbird.* Suitable nesting habitat for this species does not occur on the project site, but it could nest in the riparian habitat associated with the North Fork of the South Fork of Littlejohn's Creek and adjacent habitat in the sediment basin near the RNG pipeline crossing. Participation in the SJMSCP affords the project proponent Incidental Take authorization for tricolored blackbird pursuant to CESA and CEQA. Nonetheless, as outlined in the SJMSCP, the following incidental take avoidance measures shall be followed:

    a. Prior to the initiation of ground clearing, grubbing, grading or excavation activities, a scheduled to occur during the breeding season (i.e., February 1 – August 31), preconstruction survey shall be performed by a qualified biologist. If there is a break in construction activities of more than 7 days during the nesting season a new preconstruction survey must be conducted.

    b. A setback of 500 feet from nesting areas shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests that are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

    c. The qualified biologist shall serve as a biological monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. The qualified biologist will have stop work authority in the event construction activities result in disturbance to an active nest.

MM BIO-3. Conversion of Habitat to a Developed Footprint. The project shall comply with the SJMSCP mitigation requirements for the conversion of row and field crop lands (SJCOG 2000). Under the SJMSCP (2000), each acre of Swainson's hawk habitat (i.e., Agricultural Habitat Lands) converted to non-open space uses would be mitigated by the establishment of 1 acre of Row and Field Crop/Riparian Preserve (a 1:1 mitigation ratio). This measure would apply to the 2.01 acres of land to be developed. This would reduce this impact to a **less than significant** level

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No direct impacts to riparian habitat would occur as part of the project as the pipeline will cross the creek by placing a bridge crossing outside of the 100-year floodplain, outside of the top of bank and above the Ordinary High-Water Mark. No riparian vegetation within the bridge crossing would be removed to install the bridge span.

One CDFW Sensitive Natural Community (SNC) Alliance Button willow thickets (State Rarity Rank S2, CDFW CA Alliance Code 63.000.01), is present adjacent to the proposed bridge alignment. The project as

currently designed would not have direct impacts to this SNC. To ensure the SNC would be avoided the extent of the button willow thicket would be mapped during rare plant surveys being conducted as part of MM BIO 1.2. Therefore, this impact would be **less than significant with mitigation.**

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?

An Aquatic Resources Assessment was conducted on November 30, 2020 and revisited on June 27, 2022 by Swaim Biological, Inc. to evaluate aquatic resources on the site. Aquatic resources in the current Project Area include (1) the North Fork of South Littlejohn's Creek, (2) a groundwater recharge basin and (3) a concrete canal that drains stormwater from the nearby youth correctional facility and other developments north of the Project Site and outside the Landfill boundary. Based on the current design as proposed, direct impacts to these aquatic resources would be avoided by the proposed project. The proposed project would avoid the groundwater recharge basin and concrete canal as these are within the Project Area outside impact areas.

The North Fork of South Littlejohn's Creek was relocated in 2002. No Landfill-related CEQA document since that time has addressed the conditions or jurisdictional status of the creek. The North Fork of South Littlejohn's Creek confluences with Lone Tree Creek to the southwest of the Project Site to become French Camp Slough, which is a tributary of Walker Slough, which finally enters the San Joaquin River. The pipeline project would cross the North Fork of South Littlejohn's Creek through the placement of a bridge crossing. At the proposed bridge crossing location, the creek has an active channel width of 20 feet with the Ordinary High-Water Mark at 50 feet in width and the Top of Bank at 80 feet in width. The current design proposes to avoid impacts to the creek by placing the bridge outside of the 100-year floodplain. Bridge abutments would be placed outside of the channel with no impacts to the stream. The bridge span would be 101 feet in width to ensure avoidance of the channel and the excavation limits would be kept outside of the channel, above the top of bank and outside of the Ordinary High-Water Mark.

No direct impacts to jurisdictional resources would occur as part of the project. The pipeline would cross the North Fork of South Littlejohn's Creek on a bridge with footings and span outside of the 100-year floodplain and above the Ordinary High-Water Mark. No tree removal or major limb pruning is foreseen.

Indirect impacts could occur during construction activities that may result in hazardous contaminants to enter the creek. To prevent indirect impacts to adjacent jurisdictional resources as a result of construction activities avoidance and minimization measures will be applied as described in MM BIO-3.1. This impact would be **less than significant with mitigation**.

Mitigation Measures

MM BIO-3.1. Indirect Impacts to Aquatic Resources

To avoid and minimize impacts to the aquatic resources in the North Fork of South Littlejohn's Creek the following best management practices and avoidance measures will be implemented. These measures are consistent with measures for SJMSCP Covered Fish Species and protection of riparian habitats.

1. No activities shall occur within the creek, no heavy equipment shall enter the creek, and the stream shall not be dewatered. All equipment shall be limited to existing roadways to minimize habitat disturbance.
2. Prior to ground disturbance, all on-site construction personnel shall be given instruction regarding the aquatic resources within the project area and requirements to limit activities within them.
3. All staging of equipment, materials, and spoils shall occur more than 100 feet from the creek
4. Fueling, maintenance and cleaning of equipment shall occur more than 100 feet from the creek
5. Temporary fencing shall be installed at the edge of the construction area and the adjacent creek to demarcate areas that are required to be avoided
6. Vegetation removal shall be limited to the maximum extent required for construction activities.
7. To maintain water quality and limit construction runoff into aquatic resources, filter fences and erosion control materials shall be installed per Stormwater Pollution and Protection Plan requirements.
8. Work adjacent to the stream shall be limited to the low flow season from June 1 to October 31.

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?

In 2010 the California Department of Fish and Game, now the California Department of Fish and Wildlife (CDFW), and California Department of Transportation (Caltrans) commissioned the California Essential Habitat Connectivity Project (CEHCP) to identify large, relatively natural habitat blocks that support native biodiversity and areas essential for ecological connectivity between them. The CEHCP included a statewide Essential Habitat Connectivity Map. According to this map the project area does not overlap with Essential Habitat Connectivity areas mapped under the statewide effort, however, Littlejohn's Creek is mapped as a "Potential Riparian Connection" between two natural landscape blocks. The area surrounding the Project Site is primarily agricultural, with some industrial and residential land uses. The Project Site is bordered by the existing Forward Landfill on the south, the 2002-realigned North Fork of South Littlejohn's Creek (and associated riparian corridor) travels to the south of the pipeline and future RNG Processing Facility which is bordered farther to the north by a youth correctional facility. Austin Road, a two-lane road, runs along the eastern boundary and Newcastle Road to the west of the study area. With the exception of isolated valley oak trees and restored riparian habitat within the North Fork of South Littlejohn's Creek there are no other native habitats within the area.

Due to the altered condition of the study area and the active use of much of it for various landfill operations, the proposed additional development areas are unlikely to be part of a significant corridor for wildlife. The North Fork of South Littlejohn's Creek provides a potentially significant movement corridor for terrestrial

and aquatic wildlife but connectivity within the creek would not be altered as part of the proposed Project. The project components associated with the RNG pipeline and processing facility that occur within the landfill and would not create a new barrier to terrestrial wildlife movement. Additionally, the North Fork of South Littlejohn's Creek would maintain a potential movement corridor for terrestrial and aquatic wildlife. The project components associated with the RNG pipeline and compressor station on Arch Airport Road and Pock Lane occur within an existing matrix of developed and industrial lands and would not change current conditions for terrestrial wildlife movement. Therefore, the project would not substantially interfere with animal movements and **no impact** would occur.

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

No trees would be removed as part of the project. The Project would participate in the SJMSCP and comply with those measures. Therefore, the project would not conflict with any local policies or ordinances protecting biological resources. **No impact** would occur.

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?

The project proponent would participate in the SJMSCP per MM-BIO-1 and therefore the activities would not conflict with the provisions of the adopted SJMSCP. **No impact** would occur.

CULTURAL RESOURCES

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less Than Significant with Mitigation Incorporated
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	Less Than Significant with Mitigation Incorporated

Background

A Cultural Resources study was conducted for the proposed project by Solano Archaeological Services (SAS) in January 2022[10]. The study consisted of archival research and an intensive field survey of the proposed project locations oat the Forward Landfill as well as walking the pipeline line locations. One previously documented archaeological site was identified in the database review. Additional archival research conducted by SAS appeared to demonstrate that no historic-era developments occurred within or immediately adjacent to the project area.

An intensive field survey did not identify any prehistoric or historic era cultural resources and noted that the previously recorded historic period site was no longer identifiable and may have been destroyed.

Discussion

a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?

As discussed above, no historic resources occur on the project sites. Therefore **no impact** would occur to any such resources as a result of project construction.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

As discussed above, the previously recorded archaeological resources site in the project vicinity appears to be no longer identifiable and may have been destroyed. However, it is possible that currently unknown cultural resources may be encountered during project construction. Mitigation Measure CULT-1 would reduce this **potentially significant** impact to a **less-than-significant** level. **c) Disturb any human remains, including those interred outside of dedicated cemeteries?**

Please see discussion of Item B, above. Although no burial sites have been recorded in the project area, it is possible that currently unknown human remains may be encountered during project construction.

[10] Solano Archaeological Services, Cultural Resources Technical Memorandum – Ameresco-Forward Landfill Gas Facility Renewable Natural Gas Upgrade Project, San Joaquin County, California, January 19, 2022

Mitigation Measure CULT-1 would reduce this **potentially significant** impact to a **less-than-significant** level.

Mitigation Measures

Mitigation CULT-1: In the event that presently undocumented buried archaeological deposits are encountered during any Project-associated construction activity, work must cease within a 50-ft. radius of the discovery. A qualified archaeologist shall be retained to document the discovery, assess its significance, and recommend treatment. If human remains or any associated funerary artifacts are discovered during construction, all work shall cease within the immediate vicinity of the discovery. In accordance with the California Health and Safety Code (Section 7050.5), the San Joaquin County Sheriff/Coroner shall be contacted immediately. If the Coroner determines the remains to be Native American, the Coroner would notify the Native American Heritage Commission, which would in turn appoint a Most Likely Descendent (MLD) to act as a tribal representative. The MLD would work with the Applicant and a qualified archaeologist to determine the proper treatment of the human remains and any associated funerary objects. Construction activities shall not resume until either the human remains are exhumed, or the remains are avoided via Project construction design change.

ENERGY

Would the project:

Question	CEQA Determination
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less Than Significant Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

Discussion

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

The project would consume energy resources during construction (primarily petroleum fuels) and operations (primarily electricity) but would generate renewable energy resources during operation (RNG).

Construction of the project was estimated to consume approximately 68,000 gallons of diesel and approximately 7,600 gallons of gasoline (see Appendix A). Once operational, the project would consume a negligible amount of gasoline from the two operators associated with the RNG facility and occasional maintenance workers.

Operation of the project was estimated to consume approximately 5,600 kWh of electricity to run the RNG facility and other project components. The project would create RNG, which would replace the use of petroleum fuels and provide an energy benefit. The project would not result in a wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the project would have **a less-than-significant impact**.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

San Joaquin County has not adopted a plan for renewable energy or energy efficiency. CARB's 2017 Scoping Plan can be viewed as a state plan for renewable energy and energy efficiency, as increase renewables and increased energy efficiency is required to achieve the state's climate goals for 2030 and beyond. As noted in the Greenhouse Gas Emissions section, once operational, the project would reduce GHG emissions, which is the overall purpose of CARB's 2017 Scoping Plan. Furthermore, the 2017 Scoping Plan calls for "more clean, renewable fuels" (2017 Scoping Plan, Page ES4) and "continued development of renewable fuels" (2017 Scoping Plan, Page 77). The project would generate renewable energy and therefore would have **no impact**.

GEOLOGY AND SOILS

Would the project:

Question	CEQA Determination
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.	No Impact
ii) Strong seismic ground shaking?	Less Than Significant Impact
iii) Seismic-related ground failure, including liquefaction?	Less Than Significant Impact
iv) Landslides?	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	Less Than Significant Impact
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?	Less Than Significant Impact
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?	Less Than Significant Impact
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?	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less Than Significant Impact

Discussion

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.

A geotechnical report was prepared for the project by Tetratech BAS (July 10, 2020)[11]. The geotechnical report seismicity analysis states that the closest active faults to the site are the Greenville fault (Marsh Creek and Clayton fault sections) located approximately 29.4 miles to the southwest. Other nearby faults include the Calaveras and Hayward faults, located approximately 42 miles and 49 miles to the southwest, respectively. The San Andreas fault is located about 67 miles southwest of the site.

The seismic analysis states that the site is not within a current Alquist-Priolo Earthquake Fault Zone for fault surface rupture hazard. The surface traces of any mapped active or potentially active faults are not known to pass directly through or project towards the site. Therefore, the potential for surface fault rupture at the site is considered low and **no impact** would occur.

ii) Strong seismic ground shaking?

As noted above, the San Joaquin Valley is known to be seismically active. Earthquakes occurring within approximately 60 miles of the site are generally capable of generating ground shaking of engineering significance to the proposed construction. The project site would be subject to moderate seismic shaking in the event of a major earthquake affecting the region. The County is located in Seismic Zone 3, as defined by the Uniform Building Code. Building standards and regulations in this zone assume earthquakes with the potential to make standing difficult and to cause stucco and some masonry walls to fall. All project facilities and structures would be designed to resist anticipated shaking. Therefore, this impact would be **less than significant**.

iii) Seismic-related ground failure, including liquefaction?

The geotechnical report found that the blower station and conditioning plant sites are located on alternating layers of sands, silts, and clays that provide a suitable foundation for the structures. Groundwater seepage or accumulations were not encountered to the exploration depths within the borings or test pits completed during the recent exploration, i.e., up to 51.5 feet below grade. According to the geotechnical report, the conditioning and blower plant sites are not considered susceptible to liquefaction or other seismically induced ground failure or settlement (Tetratech BAS 2020). Therefore, this impact would be **less than significant**.

iv) Landslides?

The project site is located within San Joaquin County, which is not currently identified by the State of California as subject to the hazard of landslides due to seismic shaking (https://www.sjmap.org/nhd/). No landslides were identified within or directly adjacent the site during the geotechnical field investigation. Therefore, there would be **no impact** from or to possible landslides.

b) Result in substantial soil erosion or the loss of topsoil?

Construction of the proposed blower plant, pipelines, bridge footings, conditioning plant, and compressor plant would be on level sites with low erosion potential. All stockpiled soil would be tarped. Erosion control plans would be developed and implemented at each of the construction sites as part of the Stormwater Pollution Prevention Plans. Therefore, erosion potential would be **less than significant**.

[11] Tetratech BAS, 2020. Geotechnical Engineering Report, Ameresco Renewable Natural Gas (RNG) Facility, Forward Landfill, Manteca, California. July 10, 2020.

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?

See discussion in Items a) iii, and IV, above. The project would not be subject to, or result in, potentially significant slope or ground failures. Therefore, this impact would be **less than significant.**

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?

The geotechnical report identified site soils ad having low and medium expansion potential. In addition, foundations would be prepared as described in the geotechnical report to eliminate any hazards to structures from expansive soils. (Tetratech BAS 2020) Therefore this impact would be **less than significant**.

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?

The project facilities would not include a septic system. Therefore, **no impact** would occur associated with these systems.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The project would occur on highly disturbed recent alluvial soils, which are unlikely to yield unique paleontological features. There are no unique geologic features on any of the proposed development areas. Therefore, this impact would be **less than significant**.

GREENHOUSE GAS EMISSIONS

Would the project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	No Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	No Impact

Background

This analysis is based upon the calculations performed by RCH Group (found in Appendix A) and the Greenhouse Gas (GHG) Emissions Memo by Tetra Tech prepared for the Project[12]. This analysis is consistent with the San Joaquin Valley Air Pollution Control District (SJVAPCD) Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI).[13] Additional environmental and regulatory setting information is also found in Appendix A.

Discussion

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

The project would generate GHG emissions during construction and operations but would also decrease GHG emissions through reduced flaring of LFG and the generation of RNG.

Construction of the project was calculated to generate approximately 757 metric tons of carbon dioxide equivalents (CO_2e)[14]. GHG emissions from construction are a one-time release and are not considered a significant source of GHG emissions.

Operation of the project was estimated to generate approximately 3,278 metric tons of CO_2e per year, almost entirely from electricity usage needed to run the RNG facility and other project components. Operation of the project would reduce the flaring of LFG, which was calculated to reduce annual GHG emissions by 27,773 metric tons of CO_2e. Thus, the project would result in an annual reduction of 24,495 metric tons of CO_2e (see Appendix A). Furthermore, the project would create RNG, which would lead to further GHG emissions reductions as it would replace the use of petroleum fuels. Because the project would result in significant GHG emissions reductions, the project would have **no impact**.

[12] Tetra Tech, Estimated Greenhouse Gas Emissions at Forward Landfill, December 20, 2021.

[13] San Joaquin Valley Air Pollution Control District (SJVAPCD), Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), March 19, 2015.

[14] Carbon dioxide equivalent or CO_2e means the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another greenhouse gas.

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

San Joaquin County has not adopted a Climate Action Plan. Plans adopted for the purpose of reducing GHG emissions that would be applicable to the project include CARB's 2017 Scoping Plan and the San Joaquin Council of Governments (SJCOG) 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The project would generate negligible vehicle trips during operations; thus, it would not conflict with the RTP/SCS. Once operational, the project would reduce GHG emissions, which is the overall purpose of CARB's 2017 Scoping Plan. Furthermore, the 2017 Scoping Plan calls for "more clean, renewable fuels" (2017 Scoping Plan, Page ES4) and "continued development of renewable fuels" (2017 Scoping Plan, Page 77). Therefore, the project would have **no impact**.

HAZARDS AND HAZARDOUS MATERIALS

Would the project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less Than Significant Impact
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?	Less Than Significant Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No Impact
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?	No Impact
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?	Less Than Significant Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less Than Significant Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	Less Than Significant Impact

Background

Hazardous Materials and Waste

The term "hazardous material" is defined in the State of California's Health and Safety Code, Chapter 6.95, Section 25501(o) as:

> "Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment."

> Hazardous waste is hazardous material generated, intentionally or unintentionally, as a byproduct of some process or condition.

Hazardous wastes are defined in California HSC Section 25141(b) as wastes that:

> "…because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed."

Regulatory Setting

Federal

The USEPA is responsible for enforcing federal regulations that affect public health and the environment. The USEPA is responsible at the federal level for enforcing regulations pertaining to hazardous materials. The applicable federal regulation pertaining to hazardous materials are contained primarily in the Code of Federal Regulations (CFR) Titles 29, 40 and 49. Hazardous materials are listed and classified in 49 CFR 172.101. Regulations governing the use, management, handling, transportation and disposal of hazardous materials and waste are administered by federal, state and local governmental agencies. Federal regulations governing hazardous materials and waste include the Resource Conservation, and Recovery Act of 1976 (RCRA); the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Amendments and Re-authorization Act of 1986 (SARA).

The U.S. Department of Transportation regulates hazardous materials transportation on all interstate roads. Within California, the State agencies with primary responsibility for enforcing federal and State regulations and for responding to transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Together, federal and State agencies determine driver-training requirements, load-labeling procedures, and container specifications. Although special requirements apply to transporting hazardous materials, requirements for transporting hazardous waste are more stringent, and hazardous waste haulers must be licensed to transport hazardous waste on public roads.

State

In California, the USEPA has granted most enforcement authority over federal hazardous materials regulations to the California Environmental Protection Agency (CalEPA). CalEPA serves as the umbrella agency for six boards/departments: the CARB, the Department of Pesticide Regulation (DPR), the Department of Toxic Substances Control (DTSC), the Department of Resources Recycling and Recovery (CalRecycle), the Office of Environmental Health Hazard Assessment (OEHHA), and the State Water Resource Control Board (SWRCB) and associated Regional Water Quality Control Boards (RWQCB).

Under the authority of CalEPA, the SWRCB and DTSC are responsible for overseeing the remediation of contaminated soil and groundwater sites. The provisions of Government Code 65962.5 (also known as the Cortese List) require the State Water Resources SWRCB, DTSC, the California Department of Health Care Services (CDHCS), and the California Department of Resources Recycling and Recovery (CalRecycle) to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal and/or hazardous materials releases to CalEPA.

The DTSC works in conjunction with the USEPA to enforce and implement specific laws and regulations pertaining to hazardous wastes. California legislation, for which DTSC has primary enforcement authority, includes the Hazardous Waste Control Act and the Hazardous Substance Account Act. Most State hazardous waste regulations are contained in Title 27 of the California Code of Regulations (CCR). The DTSC generally acts as the lead agency for soil and groundwater cleanup projects and establishes cleanup and action levels for subsurface contamination that are equal to, or more restrictive than, federal levels.

State worker health and safety regulations related to construction activities are enforced by the California Division of Occupational Safety and Health (CalOSHA). Regulations include exposure limits and requirements for protective clothing and training to prevent exposure to hazardous materials. CalOSHA also enforces occupational health and safety regulations specific to asbestos investigations and abatement, which equal or exceed their federal counterparts. CalOSHA regulations concerning the use of hazardous materials in the workplace, as detailed in Title 8 of the CCR, include requirements for safety training, availability of safety equipment, implementation and maintenance of accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Title 8 regulations (Section 3203) include requirements for worker safety training and injury/illness prevention programs contained in Senate Bill 198, which was adopted in 1990. CalOSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites.

Local

Local hazardous waste regulations on the county and city level involve setting standards of care for the use, storage, and handling of hazardous materials, as described above. Such hazardous waste-related regulations and proposed landfill programs include the RWQCB orders, RWQCB-required Solid Waste Assessment Test (SWAT), National Pollutant Discharge Elimination System (NPDES) permits, workers right-to-know, Hazardous Materials Management Plan.

DTSC implements its Unified Program on hazardous materials and wastes locally through the Certified Unified Program Agency (CUPA) for the city or county. Temporary and permanent household hazardous waste collection facilities (HHWCFs) operate under Permit by Rule authorization pursuant to CCR Title 22, Section 66270.60, and are overseen by the CUPA. Under the authority of California Health and Safety Code Section 25180; San Joaquin County Board of Supervisors Resolution R-95-760 and SJC Ordinance No. 4432, San Joaquin County Environmental Health Department (SJCEHD) is the CUPA for San Joaquin County. SJCEHD was approved by the State as the CUPA for San Joaquin County in January of 1997. The EHD administers the Hazardous Material Business Plan, California Accidental Release Prevention (Cal-ARP), Aboveground Petroleum Storage Act, Hazardous Waste Generator, Hazardous Waste Onsite Treatment (Tiered Permitting) and Underground Storage Tank program.

San Joaquin County General Plan. The Goal of the San Joaquin County General Plan's Public Health and Safety Element is to protect county residents, workers, visitors, and properties from unreasonable risks associated with natural and manmade hazards and to address the problem of hazardous materials and wastes, as well as the location, storage, transportation, and safety of these materials. The following policies pertaining to hazardous materials are relevant to the project:

- PHS-7.1: Minimize Hazardous Materials and Waste. The County shall discourage the use of hazardous materials and the creation of hazardous wastes.
- PHS-7.3: Control Hazardous Materials. The County shall require the use, storage, and disposal of hazardous materials and wastes to comply with local, State, and Federal safety standards.
- PHS-7.6: Require Hazardous Materials Management Plans. The County shall require businesses that use or store materials and wastes on-site to prepare Hazardous Materials Management Plans (Business Plans) that map and inventory all hazardous materials and contain contingency plans for accidents, designate an individual or individuals as emergency coordinator(s), and ensure that all employees understand the potential for accidents and the appropriate response. Plans must follow the requirements for Federal, State, and/or local defined special flood hazard areas.

PHS-7.9: Require Disclosure of Hazardous Materials and Waste. The County shall require public disclosure of hazardous materials and wastes for existing and proposed businesses. **Discussion**

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

Construction

Project construction activities would involve the use, transport, and disposal of hazardous materials such as gasoline, diesel fuel, oils, lubricants/greases, paints, solvents and other hazardous substances that are typical for construction activities. A release of hazardous materials can occur during construction of any project and releases are typically minor spillages of motor vehicle fuels and oils and other substances used for heavy equipment or release of paints, solvents and glues. These accidental releases can result in health and environmental impacts. Spills of hazardous materials on construction sites are typically handled by the construction contractors and are localized and cleaned up in a timely manner. The disposal, use, handling, and storage of hazardous materials during construction would occur in accordance with applicable Federal, state and local laws including CalOSHA requirements. Therefore, any potential threatening public health and environmental impacts from the transport, use, or disposal of hazardous materials during construction would be a **less-than-significant impact.**

Operations

Pipeline Hazards

Once operational, the potential risk of pipeline leaks, ruptures and failure exist. In general, natural gas is believed to be less hazardous to the public than petroleum products because it is transported at lower pressures and, when released, rises and dissipates into the atmosphere.[15] Natural gas has a higher flashpoint and is not as flammable compared to petroleum products such as gasoline and would dissipate in the air.[16] To minimize the potential risk of pipeline leaks, ruptures, and failure, the proposed project pipelines would be designed to meet the most stringent State and federal design and safety standards.

[15]Contra Costa County, 2020. Ameresco Keller Canyon RNG LLC - Proposed Renewable Natural Gas Processing Facility and Pipeline Project, https://ceqanet.opr.ca.gov/2020100267/2.
[16] Ibid.

The proposed pipelines would be designed and operated in accordance with Federal and State regulations including CPUC General Order No. 112-F "State of California Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems" (June 2015) and the Federal Pipeline Safety Regulations outlined in Title 49 of the Code of Federal Regulations (49 CFR) Part 192 that also govern the design, construction, testing, operation, and maintenance of gas piping systems. The rules outlined by the CPUC General Order do not supersede CFR Part 192 but are considered a supplement.

49 CFR and the CPUC General Order are intended to establish the minimum requirements for the design, construction, material quality, locations, testing, operations, and maintenance of facilities used in the gathering, transmission, and distribution. These are regarded as the established practices to protect the safety of the general public and employees.

Furthermore, the project would require a Hazardous Materials Business Plan (HMBP) that contains contingency plans for accidents, designates an individual or individuals as emergency coordinator(s), and ensures that all employees understand the potential for accidents and the appropriate response. Given these factors, any potential threatening public health and environmental impacts of the proposed pipelines from accidental release or hazardous materials and/or accident conditions during operations would be **less than significant.**

New Facility Hazards

New project facility design would be designed to comply with County requirements as well as Federal and State requirements. Project operation activities would involve the use, storage, and disposal of hazardous materials. Any hazardous materials or chemicals that would be stored at the project site for operational uses are required to be stored according to the manufacturer's recommendations. Furthermore, San Joaquin County would require the project to prepare a HMBP to prevent or minimize harm to public health and the environment from a release of a hazardous material. The HMBP requires site inspections, chemical inventories, employee training plans, and emergency response/contingency plans. The SJCEHD would review and determine the applicability and requirements of the HMBP. The SJCHED also requires that all spills, releases, or threatened releases of a hazardous material must be immediately reported to the County.

Compliance with County requirements as well as Federal, State and manufacturer requirements for the storage, use, handling and disposal of hazardous materials would significantly reduce the potential threat of accidental release of hazardous materials that could potentially result in health and environmental impacts during project operations. Furthermore, the project includes several contingency measures (see Project Description) that Ameresco would implement in the event of an unforeseen event (i.e., power failure/outage, equipment failure, natural disaster, etc.). Therefore, any potential threatening health and environmental impacts from the transport, use, or disposal of hazardous materials during operations would be **less than significant.**

b) Create a significant hazard to the public or the environment through unforeseeable upset and accident conditions involving the release of hazardous materials into the environment?

As discussed above, the project would comply with all applicable Federal, State, local, and manufacturer requirements for the storage, use, handling, and disposal of hazardous materials to significantly reduce the threat of accidental release of hazardous materials that could potentially result in public health and

environmental impacts. The required project HMBP would include emergency response/contingency plans in the event of an accidental release of hazardous materials and the County would be immediately notified in the event of an accidental release of hazardous materials. Furthermore, the project includes several contingency measures (see Project Description) that Ameresco would implement in the event of an unforeseen event (i.e., power failure/outage, equipment failure, natural disaster, etc.). Therefore, potential release of hazardous materials into the environment through unforeseeable upset and accident conditions would be a **less-than-significant impact.**

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

There are no existing or proposed schools that are within one-quarter mile of the project site. Therefore, the project would have **no impact** on existing or proposed schools.

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

The proposed project includes facilities on the Forward landfill property (blower plant, conditioning plant, metering station, and associated pipelines and pipeline bridge replacement), within San Joaquin County street rights of way (pipelines and connections), and on business park property owned by San Joaquin County's Stockton Metropolitan Airport (compressor station).

The DTSC and SWRCB compile and update lists of hazardous materials sites pursuant to Government Code Section 65962.5. Forward Landfill is listed on the DTSC's Envirostor database for a Post-Closure Permit related to Waste Management Unit-A (WMU-A), which is a closed Class 1 hazardous waste disposal landfill unit that is currently undergoing post-closure monitoring, inspection, and maintenance. WMU-A has not received hazardous waste since 1984 and a Post-Closure Plan was approved by DTSC and closure of WMU-A was started and completed in 1989.[17]

Forward landfill is not subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code and is therefore not on a list of hazardous materials pursuant to Government Code Section 65962.5. The other portions of the project site are also not included on a list of hazardous materials pursuant to Government Code Section 65962.5. Therefore, there would be **no impact.**

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?

Stockton Metropolitan Airport is approximately two miles west of the overall project site and approximately one mile west of the proposed RNG plant. The project is an industrial facility and is not noise sensitive. The project facilities would be well below any airspace approach or departure restriction "cones" and would

[17] Department of Toxic Substances Control, 2016. California Environmental Quality Act Notice of Exemption, Forward Landfill, Hazardous Waste Management Facility, Waste Management Unit A Post-Closure Permit Renewal, https://www.hwmpenvirostor.dtsc.ca.gov/public/site_documents/8186124503/Forward%20PC%20CEQA%20NOE_Final%20Rev1%20%28signed%29%2006102016.pdf

not have the potential to interfere with or cause hazards to aircraft approaching or departing from the airport. Therefore, airport safety and noise hazards impacts would be **less than significant.**

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The proposed project would not interfere with any adopted emergency response plans or emergency evacuation plans. Emergency vehicle access would be maintained during construction and operations. Therefore, impacts to adopted emergency response plans or emergency evacuation plans would be **less-than-significant.**

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

According to the San Joaquin General Plan, fire hazards include wildland fires, peat fires, chemical fires, flammable liquid storage fires, structural fires, and fires that result from transportation (vehicle) accidents. To quantify potential risk from wildland fire, Cal Fire has developed a Fire Hazard Severity Scale that uses three criteria (fuel loading, fire weather, and topography) to determine fire hazard severity. The project site is in a Local Responsibility Area (LRA)[18]. The project site is not located on lands classified as Very High Fire Hazard Severity Zones (VHFHSZ). Fire protection for the area including the project site is provided by the Lathrop-Manteca Fire Department (see Public Services section). The proposed project would be required to meet all the required fire prevention ordinances outlined in the San Joaquin County Code to meet the County's fire prevention standards. Therefore, the project would not substantially increase the risk of wildfire and wildland fire impacts would be **less than significant.**

[18] Local Responsibility Area (LRA). LRAs are areas not protected by Cal Fire, generally they are densely populated areas, incorporated cities, and agricultural lands.

HYDROLOGY AND WATER QUALITY

Would the project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	No Impact
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	No Impact
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;	No Impact
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	Less Than Significant Impact
(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	No Impact
(iv) impede or redirect flood flows?	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No Impact

Discussion

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The Forward Landfill has a stormwater monitoring program in place, which complies with the State's NPDES requirements. A SWPPP has been prepared for the landfill as part of the State's General Permit to Discharge Stormwater Associated with Industrial Activity requirements for stormwater inspection, sampling, observations and reporting. Work performed on this project would comply with the Forward Landfill SWPPP to minimize erosion. Therefore, the project would have **no impact** with respect to violation of water quality standards or waste discharge requirements.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?

The project would not use any groundwater nor involve any deep excavations that could encounter groundwater. Therefore, **no impact** to groundwater recharge or flows would occur.

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;

An evaluation of the flood plain maps indicates that the blower station and RNG Plant, and associated pipelines, would not be located within the flood plain. However, to allow for drainage away from the facilities, fill would be added such that the base elevation of the blower facility and RNG Plant would be 41.5-ft MSL and 36'-ft MSL, respectively. Fill material would be obtained from onsite excavations. Some import material may be required for road base or other structural fill needs. Excess excavated soil not needed for fill on the site would be used for general landfill operations. **No impact** would occur.

(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Paving of most of the 3.4-acre conditioning plant site plus the blower plant would slightly increase impervious surfaces in the area. However, the increased runoff would be negligible in comparison flood flows associated with the adjacent branch of Littlejohns Creek, and the impact would be **less than significant**.

(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

Stormwater drainage from the conditioning plant would be routed to the stormwater network within the Forward Landfill facility. Stormwater from the blower station would be routed to the south via drainage ditches to the current Forward eastern borrow area. Once this portion of the Forward landfill is constructed, stormwater from the blower station would be routed to the appropriate future v-ditches that would route stormwater to a future sedimentation basin in the area of the current Forward Landfill entrance facility. Stormwater from the RNG Plant would be routed via V-ditches to the Forward Landfill northern borrow pit. The other proposed improvements would not add to impervious surfaces and would drain to existing roadway storm drains. Therefore, **no impact** would occur.

(iv) impede or redirect flood flows?

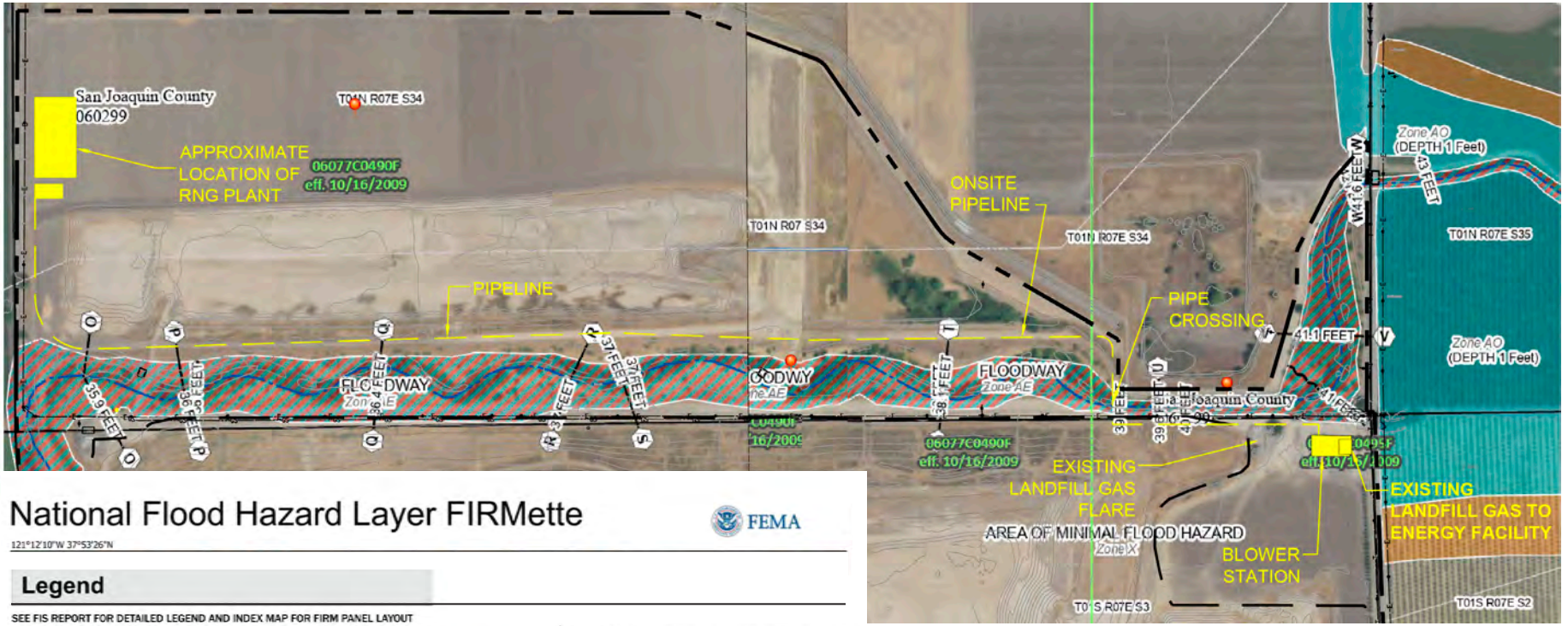
Please see response to item i, above. The project would not impede or redirect any flood flows. Therefore **no impact** would occur.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The proposed project facilities are outside of the flood zone of the on-site portion of the North Branch of Littlejohns Creek, see Figure 10. The site is well inland from the coast so would not be exposed to any tsunami hazards. It also is distant from any large body of water that could experience seiches. Therefore **no impact** would occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Please see the above discussion. The project has no significant potential to adversely affect water quality or groundwater, and therefore have no potential to conflict with a control or management plan aimed at protecting those resources. **No impact** would occur.



National Flood Hazard Layer FIRMette

FEMA

121°12'10"W 37°53'26"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

N

0 250 500 750 1,000

FEET

This map compiles with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/28/2021 at 5:09 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective may change or become superseded by new data over time.

This map is void if one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure 10
Flood Hazard Maps

Source: Grassetti Environmental and U.S. Dept. of Homeland Security

LAND USE AND PLANNING

Would the project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
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?	No Impact

Discussion

a) Physically divide an established community?

The proposed blower plant, conditioning plant, and associated metering, bridge, and pipelines, would be on the existing Forward landfill site and would not affect any community. The proposed compressor plant would be a small enclosed structure on a parking lot in a light industrial/commercial area, and would also not affect any community. Therefore, **no impact** would occur.

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?

All of these facilities would be consistent with applicable zoning and general plan land use designations, with a conditional use permit (CUP). The project proposes an amendment to Forward's existing CUP for the overall landfill site to permit the facilities to be sited on that property. The location of proposed industrial facilities on the landfill site would be consistent with plans and policies affecting that site. The location of the compressor plant at the edge of a parking lot also would not have the potential to conflict with any County plans or policies.

The RNG facility site as well as the blower plant and compressor plant would be located in the Airport Influence Area of Stockton Metropolitan Airport. as defined in the Stockton Metropolitan Airport Land Use Compatibility Plan (ALUCP), and would be consistent with ALUCP land use and restrictions. Further, the project facilities would not intrude into any restricted air spaces as defined in the ALUCP. Therefore **no impact** would occur.

MINERAL RESOURCES

Would the project:

Question	CEQA Determination
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?	No Impact
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?	Less Than Significant Impact

Discussion

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?

There are no known mineral resources at the Forward Landfill site or in the roadways or parking lot proposed for pipelines and compressor plant, respectively. Therefore, the project would have **no impact** to known mineral resources.

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?

The facilities at the conditioning plant would slightly reduce the amount of materials available for landfill cover. This is not a locally important mineral resource and is not delineated on any County plan, therefore this impact would be **less than significant**. The compressor station and associated pipelines would not affect any designated mineral resource areas.

NOISE

Would the project result in:

Question	CEQA Determination
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?	Less Than Significant with Mitigation Incorporated
b) Generation of excessive groundborne vibration or groundborne noise levels?	Less Than Significant Impact
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?	No Impact

Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report are A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[19]; average day–night 24-hour average sound level (Ldn)[20] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[21], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

19 The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

20 Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

21 CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (decrease) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. "Soft" surfaces, such as dirt, grass, or scattered bushes and trees attenuate at 7.5 dB per doubling because they have an absorptive ground surface. Hard surfaces have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling of distance). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, that also depends on ground absorption (Caltrans, 1998b).

Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, would increase the attenuation that occurs by distance alone. Noise from large construction sites (or a landfill with heavy equipment moving dirt and solid waste daily and trucks entering and exiting the main gate daily – activities similar to construction sites) would have characteristics of both "point" and "line" sources, so attenuation would probably range between 4.5 and 7.5 dB per doubling of distance.

Regulatory Background

San Joaquin County General Plan. A goal of the San Joaquin General Plan Public Health and Safety Element is to protect county residents from the harmful and nuisance effects of exposure to excessive noise. The following noise goals and policies would be applicable to the Project:

TM-7.7 Truck Traffic Noise Minimization: The County shall seek to minimize noise and other impacts of truck traffic, deliveries, and staging in residential neighborhoods.

Noise Level Standards: Table Noise-1 summarizes the noise level standards for noise-sensitive uses (e.g., residential development, lodging, hospitals, nursing homes, schools, day care centers) at outdoor activity areas affected by non-transportation noise sources in the County.

San Joaquin County Municipal Code. Sub-section (b), "Stationary Noise Sources," of Section 9-1025.9 establishes requirements that noise-sensitive uses be protected from stationary noise sources, and that new or expanded stationary noise sources mitigate their impact at any noise-sensitive use. The noise level standards for stationary noise sources in San Joaquin County are shown in Table Noise-2. The County Municipal Code also specifies exemptions to the various standards, including noise from construction activities, provided that construction activities do not take place before 6 a.m. or after 9 p.m. on any day.

TABLE NOISE-1. NON-TRANSPORTATION NOISE LEVEL PERFORMANCE STANDARDS FOR NOISE SENSITIVE USES AT OUTDOOR ACTIVITIY AREAS

Noise Level Descriptor	Daytime[1] (7 a.m. to 10 p.m.)	Nighttime[2] (10 p.m. to 7 a.m.)
Hourly Leq, dBA	50	45
Maximum Level, Lmax, dBA	70	65

Source: San Joaquin General Plan 2035, Public Health and Safety Element, Table PHS-1

Notes: These standards apply to new or existing residential areas affected by new or existing non-transportation sources.

1. Where the location of outdoor activity areas is unknown or is not applicable, the noise standard shall be applied at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards shall be applied on the receiving side of noise barriers or other property line noise mitigation measures.

2. Each of the noise level standards specified shall be reduced by 5 dB for impulsive noise, single tone noise, or noise consisting primarily of speech or music.

TABLE NOISE-2. MAXIMUM ALLOWABLE NOISE EXPOSURE FOR STATIONARY NOISE SOURCES

Noise Level Descriptor	Daytime[1] (7 a.m. to 10 p.m.)	Nighttime[2] (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level (Leq), dB	50	45
Maximum Sound Level (Lmax), dB	70	65

Source: San Joaquin Municipal Code, Title 9, Chapter 9-1025.9, Part II

Notes: Outdoor activity areas mean the outdoor recreation areas of noise-sensitive land uses. With respect to single-family dwellings, outdoor activity areas mean the rear yard, and/or side yard when the side yard is of a sufficient size to provide outdoor recreational opportunities, of said dwellings. With respect to multiple-family dwellings, outdoor activity areas mean the patios, balconies, common outdoor recreation areas, and swimming pool areas of said dwellings.

Sensitive Receptors

San Joaquin County identifies sensitive receptors as residential areas, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. There are several rural residences located on Austin Road and Arch Airport road. There is a rural residence located approximately 3,000 feet north of the existing compression facility. The N.A. Chaderjian Youth Correctional Facility is located about 650 feet from the

northern edge of the proposed RNG Conditioning Facility. No other sensitive receptors are near any noise-producing parts of the project.

Methodology and Existing Noise Environment

This analysis is based in part on the Ameresco Forward Landfill Upgrade Project Noise and Vibration Assessment conducted by Illingworth & Rodkin (Illingworth & Rodkin, 2023, included as Appendix C-1) of this Initial Study. The monitoring survey included three long-term (24-hour) noise measurements at locations near the proposed RNG conditioning plant site. Short-term measurements were made to establish the noise levels generated by equipment at the existing Ameresco LFGTE plant.

This analysis is also based on the Ameresco Forward RNG Project PG&E Compressor Station Noise Technical Report, which analyzed noise impacts from the proposed compressor station at the corner of Pock Lane and Arch-Airport Road (RCH Group, 2021, included as Appendix C-2 of this Initial Study). RCH Group conducted one long-term (72-hour) noise measurement and several short-term noise measurements to characterize ambient noise levels at the location of the proposed compressor station.

Table Noise-3 summarizes the locations and results of the long-term noise measurements taken in and around the project site (Sites LT-1 – LT-3). As shown in Table Noise-3, measurement sites LT-1 and LT-2 were taken approximately 25 feet away from nearby roadways. Site LT-2 was taken nearby an existing residence that is located directly east of Austin Road. The ambient noise conditions of both sites LT-1 and LT-2 (65 – 75 dB, Ldn) indicate that the dominating noise source is intermittent local traffic on Austin Road and Newcastle Road. The levels near Austin Road are much higher than levels near Newcastle Road, which has less traffic than Austin Road. The nearest sensitive receptor to site LT-2 is the N.A. Chaderjian Youth Correctional Facility located approximately 650 feet north from the northern edge of the proposed RNG conditioning facility. Measurement site LT-3 was near the existing LFGTE plant. The ambient noise conditions at Site LT-3 (73 dB, Ldn) represent typical noise levels nearby commercial/industrial uses. Table Noise-4 summarizes the locations and results of the short-term measurements taken on-site and nearby the existing LFGTE plant. As shown in Table Noise-3, the short-term measurements indicate that the noise environment on-site is dominated by the noise of engines, compressors and turbines (see Appendix NOISE1). These ambient noise conditions represent typical noise levels near commercial/industrial uses.

The proposed RNG compressor station would be located on County (Stockton Airport) property at the corner of Pock Lane and Arch-Airport Road. Long- and short-term noise measurements were taken at the location of the proposed RNG compressor station (approximately 100 feet away from Arch Airport Road). The ambient noise conditions at this proposed RNG compressor station site (73 – 75 dB, Ldn) were generated by local traffic on Arch Airport Road (a busy roadway). These noise levels are typical of areas near roadways where there is constant local traffic on arterial roadways.

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?

Construction Noise Impacts

Construction would result in a temporary increase in noise levels in the vicinity of the Project. Construction activities for the Project could include site grading, clearing and excavation work. Construction activities would require the use of numerous pieces of noise-generating equipment, such as backhoes, forklifts,

cranes, welding machines, and manlifts. The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction.

TABLE Noise-3. EXISTING NOISE LEVELS (LONG-TERM NOISE MEASUREMENTS)

Location	Time Period	Noise Levels (dB)	Noise Sources
LT-1: Approximately 25 feet from the centerline of Newcastle Road	Wednesday October 7, 2020 24-hour measurement	Ldn: 65 Hourly Leq's: 45-64	Primary noise sources at this location included intermittent local traffic, farming operations, and occasional aircraft overflights.
LT-2: Approximately 25 feet from the centerline of Austin Road	Wednesday, October 7, 2020 24-hour measurement	Ldn: 75 Hourly Leq's: 61-75	Traffic on Austin Road and farming operations. Rumble strips are placed in the median and the edge of Austin Road, resulting in increased noise levels during rumble strip strikes.
LT-3: Northeast of existing Ameresco LFGTE plant	Wednesday, October 7, 2020 24-hour measurement	Ldn: 73 Leq's: 66-67	Ambient noise at this site was generated primarily by the existing LFGTE operations with intermittent truck passby events.
Source: Illingworth & Rodkin, 2023.			

TABLE Noise-4. NOISE LEVELS GENERATED BY EXISTING ON-SITE LFGTE PLANT EQUIPMENT

Existing LFGTE Equipment	Noise Level at Distance from Source, Leq		
	@ Distance 1	@ Distance 2	@ Distance 3
Engines (ST-1, ST-2)	80 dB (43 feet)	73 dB (85 feet)	-
Compressor (ST-3, ST-4)	81 dB (8 feet)	76 dB (16 feet)	-
Turbines (Blowers) (ST-5, ST-6)	70 dB (36 feet)	68 dB (72 feet)	-
Outside Plant (Doors Closed) (ST-7, ST-8, ST-9)	87 dB (8 feet)	87 dB (16 feet)	81 dB (43 feet)
Source: Illingworth & Rodkin, 2023.			

The maximum noise levels for various types of construction equipment that could be used during Project construction are provided in Table Noise-5. Maximum noise levels generated by construction equipment used for the Project would range from 74 to 85 dB, Lmax[22] at a distance of 50-feet. Table Noise-6 provides average typical construction activity noise levels at 50 feet.

TABLE NOISE-5. TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT (LMAX)

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Air Compressor	78
Backhoe	78
Forklift	77
Crane	81
Welder/Torch	74
Manlift	75
Roller	80
Vibratory Concrete Mixer	80
Concrete Mixer Truck	79
Grader	85
Flat Bed Truck	74
Front End Loader	79
Dozer	82
Paver	85
Tractor	84
Source: Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide, 2006 Notes: Lmax = Maximum Sound Level	

[22] Lmax = Maximum Sound Level

TABLE NOISE-6. TYPICAL CONSTRUCTION ACTIVITIES NOISE LEVEL

Construction Equipment	Noise Level (dB, Leq at 50 feet)
Ground Clearing	84
Excavation	89
Foundations	78
Finishing	89
Source: U.S. Environmental Protection Agency, Legal Compilation, 1973 Notes: Leq = Equivalent Sound Level Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.	

Temporary Noise Increases from Project Construction: San Joaquin County exempts noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. The proposed project would include the construction of the new RNG conditioning plant site and installation of a new pipeline from the existing site, north along Austin Road to Arch Airport Road and then west along Arch Airport Road. Minimal construction would occur to install additional equipment at the existing facility. Activities needed to construct the new facility include site grading (10 days) and plant construction (76 days). Installation of the pipeline is anticipated to take 90 days to complete; however, pipeline installation would be anticipated to occur for relatively short periods of time in any specific location as construction proceeds along the project's alignment. Pile driving, blasting, and helicopter use, which generate high noise levels, are not anticipated as methods of construction.

Construction noise varies greatly depending on the construction activity performed, type and specific model of equipment, and the condition of equipment used. Typical noise levels for different construction equipment at a distance of 50 feet are shown in Table 8. Most demolition and construction noise ranges from 80 to 90 dBA at 50 feet from the source. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10-dBA noise reduction at distant receptors.

Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, the distance between construction noise sources and noise-sensitive receptors, any shielding provided by intervening structures or terrain, and ambient noise levels. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), when construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction durations last over extended periods of time.

The closest noise sensitive area to the new facility is the N. A. Chaderjian Youth Correctional Facility, with the fence line located about 780 feet from the center of the site. Construction noise levels were calculated at a distance of 780 feet, based on a list of construction equipment anticipated at the site. Construction noise

levels at the fence line of the correctional facility are anticipated to be 69 dBA Leq during site grading (10 days), 62 dBA Leq during underground work (25 days), 64 dBA Leq during equipment setting (1 day), and 61 dBA Leq during aboveground work (50 days). Construction noise levels would be about 3 dBA lower at the nearest hardscape area. Noise levels would be lower at more distant and/or shielded receptor locations. Construction would not be anticipated to cause sleep or speech interference if conducted within allowable hours.

Construction of the pipeline alignment could come within 70 feet of rural residences along Newcastle Road and along Arch Road to Pock Road. Construction would be required to occur between 7:00 a.m. and 8:00 p.m. to comply with the County construction restrictions outlined in Title 9, Chapter 9-1025.9 of the Municipal Code. While construction noise may be audible as it occurs near the houses, it would occur for a short period of time near each residence (less than 2 weeks), hours of noise would be limited to non-nighttime periods, and therefore would not substantially affect existing noise levels in the vicinity of construction activities. Therefore, noise from construction would be a **less-than-significant impact.**

Operational Noise Impacts

The San Joaquin County General Plan and Municipal Code limit non-transportation noise generated at noise sensitive outdoor use areas to 50 dBA, L_{eq} during daytime hours (7:00 am to 10:00 pm) and 45 dBA, L_{eq} during nighttime hours (10:00 pm to 7:00 am).

RNG Conditioning Plant

The new RNG conditioning plant and proposed equipment to be added at the existing compression facility would operate 24 hours per day, 7 days a week in conjunction with the existing plant, except during maintenance periods. Both facilities are designed to operate automatically with only minor adjustments by operations personnel. Proposed noise generating equipment includes compressors, coolers, vacuum pumps, a thermal oxidizer, and feed blowers. The following is a list of noise control measures incorporated into the project (Illingworth & Rodkin, 2023):

- Construct one 25-foot high wall within the new RNG conditioning plant site. AIL Silent Protector® brand soundwalls placed at the locations shown below in Figure 4 would adequately shield nearby noise-sensitive uses from excessive noise generated by the new facilities.
- Install acoustic insulation on new feed blowers to be located at the existing site. As designated by manufacturer Shannon's specifications, the blanket insulation shall provide a minimum noise reduction of 8 dBA to each unit.

Table Noise-7 lists the provided noise levels and number of units of all noise generating equipment.

The closest noise sensitive land uses are rural residences located 2,000 feet south and 3,000 feet north of the existing compression facility, represented by R9 and R10 and the N. A. Chaderjian Youth Correctional Facility, represented by R1 through R8 (see Figure 11), located about 650 feet from the northern edge of the new RNG Conditioning Facility.

TABLE Noise-7. NOISE LEVELS FOR EQUIPMENT AT BLOWER PLANT AND RNG CONDITIONING PLANT

Site	Equipment (with Acoustical Shrouding)	# of Units Proposed	Noise Level per Unit at 3 feet, dB
Blower Facility	Feed Blowers	3	98
	Raw Gas Ambient Cooler	1	91
New RNG Conditioning Plant	Enclosed Flare	1	85
	Feed Compressor Aftercooler	1	79
	Siloxane Removal System	1	85
	Deoxo Air Cooler	1	85
	Transformers	1	85
	Nitrogen Supply System	1	90
	Recycle Compressor	2	99
	Chiller	1	100
	Control Room	2	77
	Power Distribution Center	2	77
	Gylcol Coolers	3	83
	Vacuum Compressors	3	99
	Booster Compressor	1	93
	EQ PSA Skid	1	90
	Adsorb Vessel	5	99
	Recycle A/C	1	85
	Feed Compressor	3	93
	Deoxo/Dehydration System	1	75
	Flare Gas Conditioning Skid	1	90
	Thermal Oxidizer Unit	1	86

Source: Illingworth & Rodkin, 2023.

SoundPLAN Version 8.2 was used to calculate noise levels at the nearest noise sensitive locations, considering the geometry and acoustic characteristics of the proposed noise generating equipment and the topography of the area. Calculations assume the simultaneous operation of all proposed equipment. These results also include the effect of atmospheric attenuation and ground reflection/absorption. Neutral environmental conditions are assessed for CEQA purposes (i.e., no wind or temperature gradients).

Noise levels resulting from project operations at the nearest receptors are shown in Table Noise-8 for Existing + Proposed Operations, Existing + Proposed Operations with acoustical insulation and a 20-foot-tall noise barrier, and Existing + Proposed Operations with acoustical insulation and a 25-foot tall noise barrier. The results for Existing + Proposed Operations with acoustical insulation and a 25-foot-tall Barrier are shown graphically in Figure 11.

As shown in Table Noise-8, operational Leq due to daily activities of both the existing and the proposed equipment at the RNG conditioning plant would not exceed the daytime or nighttime thresholds with the inclusion of acoustical insulation and a 25-foot-high noise barrier (see Figure 11) at receptors R1 and R3-R10. At receptor R2, the County's nighttime noise threshold is exceeded; however, the outdoor use it applies to would not occur during nighttime hours.

TABLE NOISE-8. NOISE LEVELS GENERATED BY PROJECT EQUIPMENT WITH AND WITHOUT MITIGATION MEASURES (LEQ)

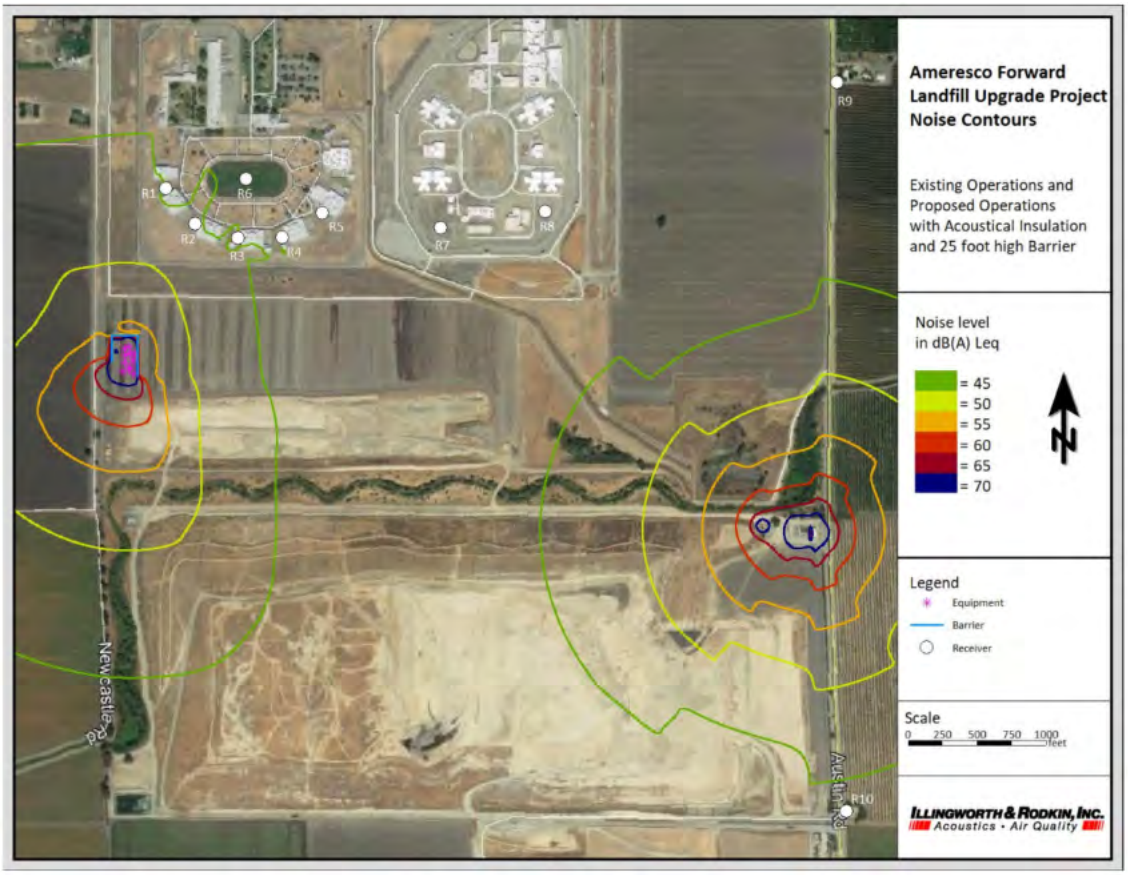
Receiver	Existing + Proposed Operations	Existing + Proposed Operations with acoustical insulation and a 20 foot Barrier	Existing + Proposed Operations with acoustical insulation and a 25 foot Barrier
R1	**48.2**	**45.6**	43.9
R2	**50.3**	**48.7**	**46.6**
R3	**52.9**	44.2	42.1
R4	**51.3**	42.0	39.7
R5	**47.6**	39.8	38.5
R6	**47.3**	41.0	39.0
R7	44.3	42.3	40.9
R8	41.8	40.9	39.9
R9	37.7	39.1	38.8
R10	41.3	43.7	43.7

Highlighting indicates noise levels exceeding nighttime threshold of 45 dBA L_{eq}.

Receptors R1 through R8 represent the outdoor uses at N. A. Chaderjian Youth Correctional Facility, which would only occur during daytime hours (7:00 a.m. – 10:00 p.m.). With the inclusion of acoustical insulation and a 25-foot-high noise barrier at the RNG facility, noise levels at building facades would range from 35 – 47 dBA Leq. Standard construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation. Standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. Assuming windows to be partially open for ventilation, daily operations at the RNG conditioning plant would expose occupants in the buildings facing the data center to interior noise levels up to 32 dBA Leq and should not disturb sleep.

Table Noise-9 shows existing ambient and calculated Ldn noise levels resulting from proposed gas processing plant equipment, with all equipment operating simultaneously 24-hr/day, construction of the 25-foot noise barrier as described above. Ambient DNL levels are based on noise measurements and observations made during the noise monitoring survey.

FIGURE 11. NOISE CONTOURS GENERATED BY EXISTING AND PROPOSED GAS PROCESSING PLANT EQUIPMENT WITH ACOUSTICAL INSULTION AND 25-FOOT TALL NOISE BARRIER



Source: Illingworth & Rodkin, 2023.

TABLE Noise-9. NOISE INCREASE RESULTING FROM PROJECT OPERATIONS WITH 25-FOOT NOISE BARRIER AND SOUND INSULATION (Ldn)

Receiver	Ambient Ldn (dBA)	Project-Generated Ldn (dBA[1])	Ambient+Project Ldn (dBA)	dBA Increase (Ldn)
R-1	50.0	50.2	53.2	3.2
R-2	50.0	53.0	54.8	4.8
R-3	50.0	48.5	52.3	2.3
R-4	50.0	46.1	51.5	1.5
R-5	50.0	44.9	51.2	1.2
R-6	50.0	45.4	51.3	1.3
R-7	50.0	47.3	51.9	1.9
R-8	50.0	46.3	51.5	1.5
R-9	69.0	45.2	69.0	0
R-10	69.0	50.1	69.0	0

[1] Assumes continuous simultaneous operation of all equipment 24-hr/day, with acoustical insulation and 25-foot high noise barrier

As indicated in Table Noise-9, project operations would not result in noise level increases in areas where existing future noise levels would exceed 60 dBA Ldn (R9 and R10) and would result in increases of from 1.2 to 4.8 dBA where future noise levels would remain below 60 dBA Ldn (R1 through R8). Project generated noise levels would comply with the General Plan and Municipal Code noise limits and noise increases at all receptors would be below the appropriate noise threshold used to assess the potential for significant permanent noise impacts. This is a **less-than-significant impact** with inclusion of acoustical insulation and a 25-foot tall barrier, as described above.

Permanent Noise Increases from Project Traffic: The facility will be staffed by 2 operators who will be at the facility from approximately 8 am to 5 pm. One or two additional persons may assist with maintenance work, which typically occurs once per week. An addition of up to 8 vehicle trips per day (4 arriving and 4 departing) would not measurably change traffic noise levels generated along the surrounding roadway network. Therefore, traffic noise increases are not anticipated. This is a **less-than-significant impact**.

RNG Compressor Station

The RNG compressor station would be located on Stockton Airport property at the corner of Pock Lane and Arch-Airport Road. The compressor station would be located on a 40'x10' skid and would be owned, maintained, and operated by PG&E. There are no residential receptors in close vicinity of the proposed compressor station. Preliminary site plans for the compressor station showed that the Compressor Station would be surrounded by sound walls (8-10 feet in height). RCH determined that the use of the proposed sound walls would not meet the required noise reduction levels (see Appendix B-2). RCH Group recommended enclosures to ensure that the RNG Compressor Station equipment would meet the 45 dB, Leq standard at the nearest property line (RCH Group, 2022). This recommendation is included as Mitigation Measure NOISE-3. Without the recommendations included in Appendix B-2, operational noise impacts from the RNG compressor station would be **potentially significant.** Mitigation Measure NOISE-3 would reduce this **potentially significant** impact to a **less-than-significant level.**

Appendix B-2 included equipment enclosure recommendations to ensure that the RNG compressor station equipment would meet the 45 dB, Leq standard at the nearest property line. Without the recommendations included in Appendix B-2, operational noise impacts from the RNG compressor station would be **potentially significant.** Mitigation Measure NOI-3 would reduce this **potentially significant** impact to a **less-than-significant level.**

Mitigation Measures

> **Mitigation NOI-1**: The applicant shall install a 25-foot-high noise barrier along the northern and eastern boundaries of the new RNG conditioning plant site.
>
> **Mitigation NOI-2**: The applicant shall install acoustic shrouding on noise-generating RNG conditioning plant equipment, such as compressors and feed blowers.
>
> **Mitigation NOI-3**: The compressor station shall be surrounded by a sound reducing noise enclosure and/or enclosed in a building with a solid roof (not just sound walls). The noise enclosure or the building shall be designed to meet the 45 dB, Leq standard at the nearest property line. Sound walls shall be constructed at the property line, if necessary, to further reduce the noise leaving the compressor station to meet the 45 dB, Leq standard.

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

Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures (Caltrans, 2013). Vibrational effects from typical construction activities are only a concern within 25 feet of existing structures (Caltrans, 2002). There are no structures within 25 feet of the Project site. Therefore, vibration would be a **less-than-significant impact.**

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?

Stockton Metropolitan Airport is approximately one mile west of the proposed RNG conditioning plant. At this distance, noise from overhead airplanes would not affect people working in the project area. The compressor station would be located on Stockton Airport property. During short-term measurements at the proposed compressor station site, noise levels ranged from 74-76 dB, Lmax during overhead plane pass-by events. At this decibel level, airport noise would not expose people working at the compressor station site to excessive noise levels. Once operational, the Project would not be affected by airport noise. Therefore, airport noise would have **no impact.**

POPULATION AND HOUSING

Would the project:

Question	CEQA Determination
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)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

Discussion

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)?

The project facilities would be located in roadways, at an existing landfill site, and in a commercial building parking lot. The project would add conditioned landfill gas to PG&E's existing system, which would reduce the need for virgin natural gas. None of the project components or effects would either induce population growth, planned or unplanned. **No impact** would occur.

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

As described above, the project facilities would be located in roadways, at an existing landfill site, and in a commercial building parking lot. No people would be displaced and no housing would be affected. **No impact** would occur.

PUBLIC SERVICES

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 following public services:

Question	CEQA Determination
a) Fire protection?	Less Than Significant Impact
b) Police protection?	Less Than Significant Impact
c) Schools?	No Impact
d) Parks?	No Impact
e) Other public facilities?	Less Than Significant Impact

Discussion

a) Fire protection.

Fire protection for the area including the project site is provided by the Lathrop-Manteca Fire District. The District provides 24-hour service from five fire stations. The District fire station nearest the proposed project site (Station 33) is located at Lathrop and Austin Roads, approximately three miles south of the existing landfill. Response time to the landfill site from this station is generally less than five minutes (https://www.lmfire.org/administration/page/response-times-statistical-data). In the event of a fire at the landfill, the Department would respond from the Lathrop/Austin fire station and three other stations, with a total of four engine companies.

The Lathrop-Manteca Fire District also provides emergency medical response to the project site, with ambulances based in Manteca (approximately six miles from the project site). Response time for emergency medical service to the existing landfill is generally less than five minutes. Past emergency medical calls at the existing Forward Landfill have involved a variety of medical conditions.

The proposed new RNG conditioning and blower plants would add two on-site staff and include numerous safety features and protocols, as described in the project description section of this IS. This would not significantly increase fire service needs at the landfill. There would be no new staff associated with PG&E's compressor station, which would be maintained by existing staff as needed. That station also would include safety features and protocols as addressed in the Project Description. Therefore, the overall effect of this project on fire protection would be small and the impact would be **less than significant**.

b) Police protection?

Police protection services for the project area are provided by the San Joaquin County Sheriff's Department. Traffic law enforcement is provided by the California Highway Patrol. The population of the project area is relatively low, and, in the past, the existing Forward Landfill has generated a low level of service calls (Desmarais, 2009; Kessler, 2009). The project facilities are industrial, surrounded by security fencing or

walls, and would not be likely to require substantial police protection. Therefore impact to police services would be **less than significant**.

c) Schools?

The project is comprised of facilities to beneficially use RNG. It would not generate any school children or otherwise affect any school services or facilities. **No impact** would occur.

d) Parks?

The project is comprised of facilities to beneficially use RNG, located on an existing landfill, in roadways, and in a parking lot. It would not generate any new park users nor otherwise affect any park or recreational facilities. **No impact** would occur.

e) Other public facilities?

The project pipelines would be located in public roads and rights of way, but would be underground and adequately separated from other subsurface utility lines, in conformance with applicable regulations. Affected road surfaces would be re-paved after the pipelines are installed. Therefore, roadway impacts would **be less than significant**. The compressor station would be located on a County-owned property. It would occupy a small area of a large parking lot and not adversely affect the existing commercial use of the overall parcel. Therefore, this impact would be **less than significant**.

RECREATION

Question	CEQA Determination
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?	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?	No Impact

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?

and

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?

As discussed in item d) under Public Services, above, the project is comprised of facilities to beneficially use RNG, located on an existing landfill, in roadways, and in a parking lot. It would not generate any new park users nor otherwise affect any park or recreational facilities. No new recreational facilities would be required nor would it result in deterioration of any such facilities. No impact would occur.

TRANSPORTATION

Would the project:

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

Discussion

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

The proposed project would have two additional employees and occasional maintenance traffic. This low level of traffic generation would have **no impact** with respect to the circulation system, including transit, roadway, bicycle, or pedestrian facilities.

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

The two additional employees and occasional maintenance trips would be far below the 110 trips/day threshold for vehicle miles traveled (VMT) analysis under CEQA Guidelines section 15064.3. Therefore this project would have a **less-than-significant impact** with respect to VMT.

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

and

d) Result in inadequate emergency access?

Once operational, the proposed project would have no impact on traffic hazards or emergency access. However, construction of pipelines in roadways and shoulders would require lane closures for a few weeks or months. PG&E would construct the new pipelines in the roadways., and would prepare Construction Traffic Management Plans for the County's review and approval. Once approved, PG&E's construction crews and/or contractors would be required to implement those plans. The plans would be designed to assure no safety hazards of impeding of emergency access along Newcastle and Arch-Airport Roads.

TRIBAL CULTURAL RESOURCES.

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:

Question	CEQA Determination
a) 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	Less Than Significant Impact
b) 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	Less Than Significant Impact

Discussion

a) 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

As described in the Cultural Resources section of this IS, a Cultural Resources study was conducted for the proposed project by Solano Archaeological Services (SAS) in January 2022[23]. The study consisted of archival research and an intensive field survey of the proposed project locations oat the Forward Landfill as well as walking the pipeline line locations. One previously documented archaeological site was identified in the database review. Additional archival research conducted by SAS appeared to demonstrate that no historic-era developments occurred within or immediately adjacent to the project area.

An intensive field survey did not identify any prehistoric or historic era cultural resources and noted that the previously recorded historic period site was no longer identifiable and may have been destroyed. Additionally, Mitigation Measure CULT-1in the Cultural Resources section would assure that any impacts to inadvertently encountered listed or eligible historical resources would be reduced to **less-than-significant levels**.

b) 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

[23] Solano Archaeological Services, Cultural Resources Technical Memorandum – Ameresco-Forward Landfill Gas Facility Renewable Natural Gas Upgrade Project, San Joaquin County, California, January 19, 2022.

On October 29th, 2021, SAS emailed a letter and a map depicting the project area to the NAHC. The letter requested a Sacred Lands File (SLF) search for the project area, and a list of Native American community representatives who might have knowledge of cultural resources in the project area or that might have an interest in or concerns with the proposed Project. The NAHC replied to SAS on December 29th, 2021, noting that the SLF search documented the presence of a culturally significant property within or near the project area and stated that the North Valley Yokuts Tribe would be the most appropriate point-of-contact. The NAHC also provided a list of suitable regional Native American tribal organizations and representatives. On January 5th, 2022, SAS mailed letters to each of these contacts:

- Rhonda Morningstar Pope, Chair - Buena Vista Rancheria of Me-Wuk Indians
- California Valley Miwok Tribe
- California Valley Miwok Tribe / Sheep Rancheria of Me-Wuk Indians of California
- Lloyd Mathiesen, Chair - Chicken Ranch Rancheria of Me-Wuk Indians
- Donald Duncan, Chair - Guidiville Indian Rancheria
- Sara A. Dutschke, Chair - Ione Band of Miwok Indians
- Monica Areallano, Vice Chair - Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Cosme A. Valdez, Chair - Nashville Enterprise Miwok-Miadu-Nishinam Tribe
- Katherine Perez, Chair - North Valley Yokuts Tribe
- Timothy Perez - North Valley Yokuts Tribe
- Corrina Gould, Chair - The Confederated Villages of Lisjan
- Neil Peyron, Chair - Tule River Indian Tribe
- Gene Whitehouse, Chair - United Auburn Indian Community of the Auburn Rancheria
- Jesus G. Tarango, Jr., Chair - Wilton Rancheria
- Steven Hutchason, Tribal Historic Preservation Officer - Wilton Rancheria
- Kenneth Woodrow, Chair - Wuksache Indian Tribe / Eshom Valley Band

Alan Siegwarth of Ameresco, Inc. was contacted by Ms. Perez in June 2023 with respect to the (separate) Forward Landfill North Bridge Project. The tribe is requesting that they monitor all ground disturbing activities. This recommendation is included in Mitigation TCR-1 in the Tribal Cultural Resources section of this document.

The Community Development Department sent an Early Consultation Referral to the Buena Vista Rancheria, California Valley Miwok Tribe, North Valley Yokuts Tribe, and the United Auburn Indian Community of the Auburn Rancheria on November 2, 2022. On December 13, 2022, the Community Development Department received a response letter from the Buena Vista Rancheria requesting a formal tribal cultural consultation. This formal consultation must be completed prior to completion of the environmental review of the project. The San Joaquin County Community Development Department had a

formal consultation with Ivan Senock of Buena Vista Rancheria (BVR) in March 2023. An email exchange between Stephanie Stowers, San Joaquin County Planning Department, and Alan Siegwarth on March 15th, 2023 responded to Buena Vista Rancheria comments after the meeting. Mr. Siegwarth reached out several additional times between March 15, 2023 and June 28, 2023, with no response. No further comments or questions have been presented to Ameresco at this time. See Appendix F for email communications.

With implementation of Mitigation Measure TCR-1, this impact would be **less than significant**.

Mitigation Measures

> **Mitigation TCR-1.** The applicant shall engage qualified staff of the Nototomne Cultural Preservation/Northern Valley Yokut/Ohlone/Patwin tribe to perform construction monitoring during ground-disturbing activities. Any identified cultural resources shall be curated per Tribal direction, and consistent with Mitigation Measure CULT-1.

UTILITIES AND SERVICE SYSTEMS

Would the project:

Question	CEQA Determination
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?	Less Than Significant with Mitigation Incorporated
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	Less Than Significant Impact
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?	No Impact
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?	Less Than Significant Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No Impact

Discussion

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?

The project would expand gas transmission facilities. The effects of that expansion are evaluated in this IS. Any potentially significant impacts would be reduced to **less-than-significant-with-mitigation** as described herein.

The Blower Station would be powered from the existing Ameresco LFGTE Plant electrical gear. The RNG Plant would be powered either from the LFGTE Plant or in combination with PG&E service off of Newcastle Road. The PG&E Metering Station would be powered by PG&E service from Newcastle Road as well. Phone and communications would be provided from the LFGTE plant as well.

Water service for the RNG Plant would be from tanks filled from the landfill water supply as is done with the existing LFGTE Plant. The bathroom facility (porta-potty) at the RNG plant would be serviced by a scheduled waste hauler as is done for the LFGTE Plant.

The PG&E Compressor Station would be powered by nearby PG&E electrical distribution system. Water

service connection for landscaping purposes on Pock Lane would be applied for and obtained from existing County or municipal water supply lines and communications would be wireless.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Water service for the RNG Plant would be from tanks filled from the landfill water supply as is done with the existing LFGTE Plant. The water consumption at the facility would be minimal (wash water and toilets for two staff and facility maintenance), and have a **less-than-significant** impact to local water supplies.

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?

The project would not generate any wastewater on-site. Contents of the portable toilets would be disposed of off-site. Therefore, **no impact** would occur.

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?

And

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

A small amount of solid waste would be generated by the staff of 2 at the conditioning plant. In addition, some construction wastes also would be generated. Construction and operational wastes would be recycled to the extent feasible. These wastes would be minimal and not substantively affect landfill capacity or affect solid waste goals, plans, or policies. Wastes would be disposed of at existing permitted landfills and therefore disposal would comply with applicable regulations. The impact would be **less than significant**.

WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	Less Than Significant Impact
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?	No Impact
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?	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No Impact

Discussion

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

See response to item d) under Transportation, above. The project would have a less-than-significant impact to emergency access and emergency response with the construction traffic management plan. Operation of the project would have a **less-than-significant** impact to emergency response because of the various safety facilities and protocols that would be implemented as part of the project, as described in the Project Description. See also the Health and safety discussion in this IS.

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?

The project would be located in agricultural and urban areas in California's San Joaquin Valley distant from any mapped wildfire areas. Therefore, the project would not exacerbate any wildfire risks, and **no impact** would occur.

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?

The project would be located in agricultural and urban areas in California's San Joaquin Valley distant from any mapped wildfire areas. Therefore, the project would not any wildfire protection infrastructure, and **no impact** would occur.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The project would be located in agricultural and urban areas in California's San Joaquin Valley distant from any mapped wildfire areas. Therefore, the project would not expose people or structures to wildfire risks, and **no impact** would occur.

MANDATORY FINDINGS OF SIGNIFICANCE

Question	CEQA Determination
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?	Less Than Significant with Mitigation Incorporated
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)?	Less Than Significant Impact
c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	Less Than Significant with Mitigation Incorporated

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 proposed project would have potentially significant impacts on biological and cultural resources that would be reduced to less-than-significant levels with mitigation measured included in this IS.

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)?

A review of San Joaquin County's current planning applications web page[24] found no nearby proposed projects with potential for overlapping impacts with those of the project. In addition, no major projects are proposed at the Forward landfill that may overlap project impacts. A southward expansion of the Landfill has been approved but is several years away from implementation. In addition, Forward has had preliminary discussions regarding constructing a truck bridge across the fork of Littlejohns Creek that also would be crossed by the project pipeline, however no application has been filed with the County and the

[24] http://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=planning&htm=active&typ=apd accessed November 4, 2021

project is considered speculative at this time. A review of active planning application at the City of Stockton indicates that several large projects are being proposed in the general project area[25]. These include the South Stockton Commerce Center (433-acre industrial and commercial development just southwest of the Stockton Airport), Mariposa Industrial Park (203.5-acre annexation for industrial uses north of Arch Road) , and the Sanchez-Hogan Annexation (combined approximately 170-acres for industrial uses, located north of Arch Road and east of Highway 99. As described in this IS, the proposed project's impacts would be minimal and mostly limited to construction effects, and would not add in a cumulatively considerable manner to the impacts of other, larger projects proposed in the vicinity. Therefore, cumulative impacts associated with the project would be **less than significant**.

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

The Initial Study evaluated the project's potential impacts to health risks from toxic air contaminants and hazardous materials, both of which were found to be less than significant. Similarly, project noise impacts would be less than significant with mitigation.

[25] http://www.stocktongov.com/government/departments/communityDevelop/cdPlanEnv.html

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APPENDICES

APPENDIX A: AIR QUALITY CALCULATIONS

APPENDIX B: HEALTH RISK ASSESSMENT

APPENDIX C: NOISE CALCULATIONS

Appendix A-1

Air Quality Setting and Regulatory Context

San Joaquin Valley Air Basin

The San Joaquin Valley Air Basin (SJVAB) consists of eight counties: Fresno, Kern (western and central), Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Cumulatively, these counties represent approximately 16 percent of California's geographic area, making the SJVAB the second largest air quality basin (based on area) as delineated by the California Air Resources Board (CARB). The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction within the SJVAB. Air pollution in the SJVAB can be attributed to both human-related (anthropogenic) and natural (non-anthropogenic) activities that produce emissions. Air pollution from significant anthropogenic activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. Activities that tend to increase mobile activity include increases in population, increases in general traffic activity (including automobiles, trucks, aircraft, and rail), urban sprawl (which will increase commuter driving distances), and general local land management practices as they pertain to modes of commuter transportation. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air.[1]

Topography and Wind

The climate of the SJVAB is modified by topography. This creates climatic conditions that are particularly conducive to air pollution formation. The SJV is surrounded by mountains on three sides and open to the Sacramento Valley and the San Francisco Bay Area to the north. The SJVAB is the southern half of California's Central Valley and is approximately 250 miles long and averages 35 miles wide. The SJVAB is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation). There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California's Central Valley. The bowl-shaped topography inhibits movement of pollutants out of the valley.

The SJVAB is in a Mediterranean Climate Zone. Mediterranean Climates Zones occur on the west coast of continents at 30 to 40 degrees latitude and are influenced by a subtropical high-pressure cell most of the year. Mediterranean Climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees F in the Valley. The subtropical high-pressure cell is strongest during spring, summer and fall and produces subsiding air, which can result in temperature inversions

[1] San Joaquin Valley Air Pollution Control District (SJVAPCD), Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), March 19, 2015.

in the Valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500-3,000 feet). Winter-time high pressure events can often last many weeks with surface temperatures often lowering into the thirties degree Fahrenheit. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet.[2]

Temperature, Sunlight, and Ozone Production

Solar radiation and temperature are particularly important in the chemistry of ozone formation. The SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances (such as volatile organic compounds) and nitrogen dioxide under the influence of sunlight. Ozone concentrations are very dependent on the amount of solar radiation, especially during late spring, summer and early fall. Ozone levels typically peak in the afternoon. After the sun goes down, the chemical reaction between nitrous oxide and ozone begins to dominate. This reaction tends to scavenge the ozone in the metropolitan areas through the early morning hours, resulting in the lowest ozone levels, possibly reaching zero at sunrise in areas with high nitrogen oxides emissions. At sunrise, nitrogen oxides tend to peak, partly due to low levels of ozone at this time and also due to the morning commuter vehicle emissions of nitrogen oxides. Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer. Typically, if the inversion layer doesn't lift to allow the buildup of contaminants to be dispersed, the ozone levels will peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur, the ozone will peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of the SJVAB. Ozone levels are low during winter periods when there is much less sunlight to drive the photochemical reaction.[3]

Criteria Air Pollutants

The United States Environmental Protection Agency (USEPA) has set air pollutant emission standards, referred to as National Ambient Air Quality Standards (NAAQS), to protect public health. NAAQS are defined for six criteria air pollutants:

- Ozone (O_3)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO_2)
- Sulfur dioxide (SO_2)
- Lead (Pb)
- Particulate matter (PM)

Ozone forms when ozone precursors (i.e., volatile organic compounds [VOCs], CO, nitrogen oxides [NO_X]) react with sunlight in the atmosphere. Particulate matter criteria pollutants are

[2] San Joaquin Valley Air Pollution Control District (SJVAPCD), Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), March 19, 2015.

[3] San Joaquin Valley Air Pollution Control District (SJVAPCD), Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), March 19, 2015.

classified as either respirable particulate matter less than 10 micrometers in diameter (PM_{10}), or fine particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$). At the state level, the CARB also regulates these criteria air pollutants and other pollutants through the California Ambient Air Quality Standards (CAAQS). The NAAQS and CAAQS are shown in **Table A-1**.

Table A–1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.070 ppm
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	150 µg/m^3
	Annual Mean	20 µg/m^3	—
Fine Particulate Matter ($PM_{2.5}$)	24-hour	—	35 µg/m^3
	Annual Mean	12 µg/m^3	12.0 µg/m^3
Carbon Monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm
	Annual Mean	0.030 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm
	24-hour	0.04 ppm	0.14 ppm
	Annual Mean	—	0.030 ppm

Notes: ppm = parts per million; µg/m3= micrograms per cubic meter; "—" =no standard.
Source: CARB (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, May 2016.

Local Air Quality

The SJVAPCD maintains a network of monitoring stations within the SJVAB that monitor air quality and compliance with applicable ambient standards. The monitoring station closest to and most representative of the project area is in Stockton (Hazleton Street), approximately six miles northwest of the project area; where levels of ozone (O_3), particulate matter less than 10 micrometers (coarse or PM10), particulate matter less than 2.5 micrometers (fine or PM2.5), and nitrogen dioxide (NO_2) are recorded. **Table A-2** summarizes the most recent three years of data (2018 through 2020) the Stockton Hazleton Street Monitoring Station.

The SJVAB is currently designated "nonattainment" for the state 1-hour ozone standard, state and national 8-hour ozone standards, state PM10 standards, and for state and national PM2.5 standards. The SJVAB is designated "attainment" or "unclassifiable" with respect to the other ambient air quality standards.

Table A–2
Air Quality Data Summary (2018 through 2020)

Pollutant	Standard[a]	Monitoring Data by Year 2018	2019	2020
Ozone				
Highest 1 Hour Average (ppm)[b]	0.09	0.088	**0.098**	**0.100**
Days over State Standard		0	**1**	**1**
Highest 8 Hour Average (ppm)[b]	0.070	**0.077**	**0.077**	**0.074**
Days over National Standard		**1**	**2**	**2**
Nitrogen Dioxide (NO_2)				
Highest 1 Hour Average (ppm)[b]	0.180	0.065	0.072	0.060
Days over State Standard		0	0	0
Annual Average ($\mu g/m^3$)[b]	0.030/0.053	0.012	0.011	0.011
Coarse Particulate Matter (PM10)				
Highest 24 Hour Average ($\mu g/m^3$)[b]	50	**198.6**	**89.1**	**148.5**
Days over State Standard (estimated/measured)		**32/5**	**45/7**	***/12**
State Annual Average ($\mu g/m^3$)[b]	20	**29.5**	**25.2**	*
Fine Particulate Matter (PM2.5)				
Highest 24 Hour Average ($\mu g/m^3$)[b]	35	**188.0**	**50.1**	**130.7**
Days over National Standard (estimated/measured)		**25/25**	**6/6**	**23/23**
State Annual Average ($\mu g/m^3$)[b]	12	**17.4**	*	**14.3**

*NOTES: Values in **bold** are in excess of at least one applicable standard.*
Generally, state standards and national standards are not to be exceeded more than once per year.
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
PM10 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year. A "" denotes no information available.*

Source: California Air Resources Board, Top 4 Summary: Highest 4 Daily 24-hour PM2.5 Averages, https://www.arb.ca.gov/adam/topfour/topfourdisplay.php, Accessed June 8, 2022.

Air Quality Significance Thresholds

The significance of potential impacts was determined based on State CEQA Guidelines, Appendix G, and the SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)* (March 19, 2015). Using Appendix G evaluation thresholds, the proposed project would be considered to have significant air quality impacts if it were to:

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; or

D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The air quality analysis follows the methodology presented in the SJVAPCD's GAMAQI. The thresholds of significance applied to assess project-level air quality impacts are outlined in **Table A-3.**

Table A–3
SJVAPCD Air Quality Thresholds of Significance

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	*Emissions (tpy)*	*Emissions (tpy)*
CO	100	100	100
NOx	10	10	10
ROG	10	10	10
SOx	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Source: San Joaquin Valley Air Pollution Control District (SJVAPCD), Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), March 19, 2015.

Appendix A-2

Air Quality and GHG Emissions Calculations

Analysis Methodology

Intermittent (short-term construction emissions that occur from activities, such as site-grading and building construction) and long-term air quality impacts related to the operation of the project were evaluated. Regulatory models used to estimate air quality impacts include:

- California Emissions Estimator Model (CalEEMod) Version 2020.4.0[1] is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operation activities (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.
- Road Construction Emissions Model Version 9.0[2] is a spreadsheet-based model that estimates exhaust emissions from heavy-duty construction equipment, haul trucks, and worker commute trips as well as fugitive dust from the construction of a new roadway, road widening, roadway overpass, levee or pipeline projects.

Construction Activities

Construction activities associated with the project are estimated to commence in 2023 and are expected to require 12 to 14 months depending upon seasonal requirements. SJVAPCD thresholds of significance are annual-based thresholds and to be conservative project construction activities were assumed to be completed entirely within a one-year period (2023) even though construction could require several months of construction in 2024.

RNG Plant and Blower Station Construction

Construction of these project elements were estimated to require 6 days of site preparation, 18 days of grading, 192 days of building construction and equipment installation, 12 days of paving, and 12 days of minor architectural coating. If required, import of base material would be no more

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[1] California Air Pollution Control Officers Association (CAPCOA), California Emissions Estimator Model Version 2020.4.0, May 2021, http://www.aqmd.gov/caleemod/user's-guide, Accessed June 8, 2022.

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD), Road Construction Emissions Model Version 9.0, May 2018, https://www.airquality.org/residents/ceqa-land-use-planning/ceqa-guidance-tools, Accessed June 8, 2022.

than 5,000 cubic yards, which would result in 494 haul truck trips. Construction would also require 14 vendor medium heavy truck trips for importing construction materials and 30 vendor medium heavy truck trips for importing materials for paving. Construction would average approximately 15 workers per day. Construction equipment and other information is found in Appendix A-3 in the CalEEMod outputs.

Metering Station and Compressor Station Construction

Construction of these project elements were estimated to require 2 days of site preparation, 12 days of grading, and 24 days of building construction and equipment installation. Construction would require the import/export of 500 cubic yards, which would result in 49 haul truck trips. Construction would also require 3 vendor medium heavy truck trips for importing construction materials. Construction would average approximately 8 workers per day. Construction equipment and other information is found in Appendix A-3 in the CalEEMod outputs.

Ameresco Pipelines Construction (Blower Station to RNG Plant Pipeline)

Construction of these project elements were estimated to require 6 days of site preparation, 12 days of grading, and 42 days of pipeline installation. Construction would require the import/export of 740 cubic yards of select fill. Construction would also require 5 heavy truck trips for importing pipeline materials. Thus, it was estimated that 3 heavy truck round trips would occur each day of pipeline installation for a total of 126 heavy truck round trips. Construction would average approximately 6 workers per day. Construction equipment and other are found in Appendix A-3 in the RoadMod outputs.

PG&E Pipelines Construction (Metering Station to Existing PG&E Pipeline and Compressor Station to Existing PG&E Pipeline)

Construction of these project elements were estimated to require 10 days of site preparation, 50 days of grading/trenching, 50 days of pipeline installation, and 10 days of paving. Construction would require the import/export of 1,400 cubic yards of soil. Construction would also require 5 heavy truck trips for importing pipeline materials. Thus, it was estimated that 2 heavy truck round trips would occur each day of grading/trenching and 1 heavy truck round trip would occur each day of pipeline installation, for a total of 150 heavy truck round trips. Construction would average approximately 15 workers per day. Construction equipment and other are found in Appendix A-3 in the RoadMod outputs.

Operational Activities

Criteria Pollutant Emissions

The project would primarily emit criteria pollutant emissions from the thermal oxidizer and process enclosed flare at the RNG facility. Criteria pollutant emissions from motor vehicles and other minor sources would be negligible. Overall, the project would result in a reduction in all criteria pollutants due to decreased LFG flaring.[3]

GHG Emissions

Overall project operations would require 4,000 kW/hour, 6,000 gallons of water per year, and minimal solid waste (estimated at 500 pounds per year since the facilities are mostly unmanned and the RNG Plant would only require 2 operators, 5 days per week). It was assumed the project would generate 3 round trips per weekday and none on weekdays (2 employees 5 days per week for the RNG Plant and conservatively estimated one maintenance trip per day for the project facilities).

GHG emissions rates associated with electricity consumption were calculated using Pacific Gas & Electric's CO_2 intensity rate of 203.98 lbs/MWhr (CalEEMod default setting). Assuming this CO_2 intensity, energy usage would result in 3,273 metric tons of CO_2e/year. Water/wastewater and motor vehicles would generate approximately 5 metric tons of CO_2e/year. Thus, the project would generate approximately 3,278 metric tons of CO_2e/year. However, due to reduced flaring of landfill gas as a result of the project, the project would reduce GHG emissions by approximately 27,773 metric tons per year compared to the baseline condition. Thus, the overall project would reduce GHG emissions by 24,495 metric tons of CO_2e/year.[4]

[3] Tetra Tech, Authority to Construct/Permit to Operate Application, Renewable Natural Gas Facility Ameresco Forward RNG LLC, November 24, 2021.

[4] Tetra Tech, Estimated Greenhouse Gas Emissions at the Forward Landfill, December 20, 2021.

Appendix A-3 - Modeling Outputs

Total Project Emissions Summary

CalEEMod Output Files

- Annual – RNG Plant and Blower Station
- Annual – Metering and Compressor Stations

Roadway Construction Model Output Files

- Ameresco Pipelines
- PG&E Pipelines

Ameresco RNG Project Total Emissions

Construction	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	
Source	**ROG**	**NOx**	**CO**	**Sox**	**PM10**	**PM2.5**	**CO2e**
RNG Plant and Blower Station	0.095	0.676	0.651	0.002	0.100	0.050	168.090
Metering and Compressors Stations	0.011	0.099	0.095	0.000	0.007	0.004	20.893
Ameresco Pipelines	0.075	0.607	0.585	0.002	0.134	0.044	184.050
PG&E Pipelines	0.156	1.298	1.175	0.004	0.190	0.072	383.860
Total	**0.34**	**2.68**	**2.51**	**0.01**	**0.43**	**0.17**	**756.893**
SJVAPCD Thresholds	10	10	100	27	15	15	
Significant?	No	No	No	No	No	No	

Construction Fuel Usage Diesel	Construction Fuel Usage Gasoline
690 MT CO2	67 MT CO2
10.16 kg/CO2/gal	8.89 kg/CO2/gal
67,877 gals Diesel	7,579 gals Gas

Source: U.S. Energy Information Administration, 2016.

Operations	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	
Source	**ROG**	**NOx**	**CO**	**Sox**	**PM10**	**PM2.5**	**CO2e**
Thermal Oxidizer	7.72	6.72	22.39	2.24	11.07	11.07	
Process Enclosed Flare	1.7	2.08	6.92	0.41	2.15	2.15	
Total	9.42	8.8	29.31	2.65	13.22	13.22	3,278.00
Existing LFG Flare Emissions	13.12	30.88	123.52	11.9	10.38	10.38	27,773
Net Total Operational Emissions	**-3.7**	**-22.08**	**-94.21**	**-9.25**	**2.84**	**2.84**	**-24,495.00**
SJVAPCD Thresholds	10	10	100	27	15	15	
Significant?	No	No	No	No	No	No	

Ameresco RNG Plant and Blower Station - San Joaquin County, Annual

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

Ameresco RNG Plant and Blower Station

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	88.00	1000sqft	4.32	88,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**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 - RNG Plant would cover approximately 48,000 square feet of the 3.4 acre site. Blower station would encompass a 40,000 SF area at the Forward Landfill flare station.

Construction Phase - Applicant Data Request

Off-road Equipment - Applicant Data Request

Off-road Equipment - Applicant Data Request

Off-road Equipment - Applicant Data Request

Off-road Equipment -

Grading - Base material, if needed, will be less than 5,000 cubic yards

Trips and VMT - 30 truckloads of material for paving

Architectural Coating - Limited touchup painting only

Vehicle Trips - two operators weekdays 8am -5 pm, one extra round trip for weekly maintenance.

Ameresco RNG Plant and Blower Station - San Joaquin County, Annual

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

Area Coating - would not require repainting

Landscape Equipment -

Energy Use - Applicant Data Request

Water And Wastewater - Applicant Data Request

Solid Waste - Minimal waste - only waste generated from limited operational staff.

Construction Off-road Equipment Mitigation - Regulation VIII

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	44,000.00	5,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	132,000.00	0.00
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	12.00
tblConstructionPhase	NumDays	230.00	192.00
tblConstructionPhase	NumDays	8.00	18.00
tblConstructionPhase	NumDays	18.00	12.00
tblConstructionPhase	NumDays	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	2/22/2024	10/7/2023
tblConstructionPhase	PhaseEndDate	1/3/2024	9/9/2023
tblConstructionPhase	PhaseEndDate	2/15/2023	1/28/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	9/23/2023
tblConstructionPhase	PhaseEndDate	2/3/2023	1/7/2023
tblConstructionPhase	PhaseStartDate	1/30/2024	9/24/2023
tblConstructionPhase	PhaseStartDate	2/16/2023	1/29/2023

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tblConstructionPhase	PhaseStartDate	2/4/2023	1/8/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	9/10/2023
tblConstructionPhase	PhaseStartDate	1/28/2023	1/2/2023
tblEnergyUse	LightingElect	2.60	0.00
tblEnergyUse	NT24E	4.20	398.00
tblEnergyUse	NT24NG	0.06	0.00
tblEnergyUse	T24E	1.48	0.00
tblEnergyUse	T24NG	18.39	0.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	2.02	4.32
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType	Excavators	Rollers
tblOffRoadEquipment	OffRoadEquipmentType	Generator Sets	Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblSolidWaste	SolidWasteGenerationRate	109.12	0.25
tblTripsAndVMT	VendorTripNumber	0.00	30.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.07

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

tblWater	IndoorWaterUseRate	20,350,000.00	6,000.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0954	0.6758	0.6511	1.8500e-003	0.1083	0.0263	0.1345	0.0429	0.0245	0.0674	0.0000	165.1538	165.1538	0.0301	7.3200e-003	168.0897
Maximum	**0.0954**	**0.6758**	**0.6511**	**1.8500e-003**	**0.1083**	**0.0263**	**0.1345**	**0.0429**	**0.0245**	**0.0674**	**0.0000**	**165.1538**	**165.1538**	**0.0301**	**7.3200e-003**	**168.0897**

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	0.0954	0.6758	0.6511	1.8500e-003	0.0732	0.0263	0.0995	0.0260	0.0245	0.0504	0.0000	165.1537	165.1537	0.0301	7.3200e-003	168.0896
Maximum	**0.0954**	**0.6758**	**0.6511**	**1.8500e-003**	**0.0732**	**0.0263**	**0.0995**	**0.0260**	**0.0245**	**0.0504**	**0.0000**	**165.1537**	**165.1537**	**0.0301**	**7.3200e-003**	**168.0896**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**32.38**	**0.00**	**26.06**	**39.48**	**0.00**	**25.15**	**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**	0.3121	0.3121
2	**4-2-2023**	**7-1-2023**	0.2062	0.2062
3	**7-2-2023**	**9-30-2023**	0.2386	0.2386
		Highest	0.3121	0.3121

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	0.3438	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5700e-003	1.5700e-003	0.0000	0.0000	1.6800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3,240.5526	3,240.5526	0.5243	0.0636	3,272.5959
Mobile	2.0200e-003	3.2400e-003	0.0195	5.0000e-005	4.6500e-003	4.0000e-005	4.6900e-003	1.2400e-003	4.0000e-005	1.2800e-003	0.0000	4.3126	4.3126	2.3000e-004	2.2000e-004	4.3845
Waste						0.0000	0.0000		0.0000	0.0000	0.0508	0.0000	0.0508	3.0000e-003	0.0000	0.1257
Water						0.0000	0.0000		0.0000	0.0000	1.9000e-003	3.0000e-003	4.9100e-003	2.0000e-004	0.0000	0.0112
Total	**0.3458**	**3.2500e-003**	**0.0203**	**5.0000e-005**	**4.6500e-003**	**4.0000e-005**	**4.6900e-003**	**1.2400e-003**	**4.0000e-005**	**1.2800e-003**	**0.0527**	**3,244.8698**	**3,244.9225**	**0.5277**	**0.0638**	**3,277.1190**

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3438	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5700e-003	1.5700e-003	0.0000	0.0000	1.6800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3,240.5526	3,240.5526	0.5243	0.0636	3,272.5959
Mobile	2.0200e-003	3.2400e-003	0.0195	5.0000e-005	4.6500e-003	4.0000e-005	4.6900e-003	1.2400e-003	4.0000e-005	1.2800e-003	0.0000	4.3126	4.3126	2.3000e-004	2.2000e-004	4.3845
Waste						0.0000	0.0000		0.0000	0.0000	0.0508	0.0000	0.0508	3.0000e-003	0.0000	0.1257
Water						0.0000	0.0000		0.0000	0.0000	1.9000e-003	3.0000e-003	4.9100e-003	2.0000e-004	0.0000	0.0112
Total	**0.3458**	**3.2500e-003**	**0.0203**	**5.0000e-005**	**4.6500e-003**	**4.0000e-005**	**4.6900e-003**	**1.2400e-003**	**4.0000e-005**	**1.2800e-003**	**0.0527**	**3,244.8698**	**3,244.9225**	**0.5277**	**0.0638**	**3,277.1190**

	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	1. Site Preparation	Site Preparation	1/2/2023	1/7/2023	6	6	
2	2. Grading	Grading	1/8/2023	1/28/2023	6	18	
3	3. Building Construction	Building Construction	1/29/2023	9/9/2023	6	192	

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

4	4. Paving	Paving	9/10/2023	9/23/2023	6	12	
5	5. Architectural Coating	Architectural Coating	9/24/2023	10/7/2023	6	12	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 18

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 5,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
5. Architectural Coating	Air Compressors	1	6.00	78	0.48
4. Paving	Cement and Mortar Mixers	2	6.00	9	0.56
3. Building Construction	Off-Highway Trucks	1	2.00	402	0.38
3. Building Construction	Cranes	1	2.00	231	0.29
2. Grading	Rollers	1	8.00	80	0.38
3. Building Construction	Forklifts	2	2.00	89	0.20
3. Building Construction	Rollers	1	1.00	80	0.38
2. Grading	Graders	1	8.00	187	0.41
4. Paving	Pavers	1	8.00	130	0.42
4. Paving	Paving Equipment	2	6.00	132	0.36
4. Paving	Rollers	2	6.00	80	0.38
2. Grading	Rubber Tired Dozers	1	8.00	247	0.40
3. Building Construction	Tractors/Loaders/Backhoes	2	2.00	97	0.37
4. Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
1. Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
3. Building Construction	Welders	2	2.00	46	0.45

Trips and VMT

Appendix A-4

Greenhouse Gas Setting and Regulatory Context

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal (IPCC, 2007), with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years.

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change (IPCC) concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth's atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), ozone, and water vapor.

While the presence of the primary GHGs in the atmosphere are naturally occurring, CO_2, CH_4, and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur

hexafluoride, and are generated in certain industrial processes. Greenhouse gases are typically reported in "carbon dioxide-equivalent" measures (CO_2e).[1]

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.[2]

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On December 30, 2009, the Natural Resources Agency adopted amendments to the CEQA Guidelines, as required by SB 97. These CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

Assembly Bill 1493

In 2002, Assembly Bill (AB) 1493 was passed, which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by the CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent

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[1] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

[2] 2006 Final Climate Action Team Report to the Governor and Legislature. March 2006. http://www.climatechange.ca.gov/climate_action_team/reports/2006report/2006-04-03_FINAL_CAT_REPORT.PDF.

lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, state Senator Fran Pavley) would impose stricter standards than those under the Federal CAA, California applied to the USEPA for a waiver under the Federal CAA. This waiver was initially denied in 2008. In 2009, however, the USEPA granted the waiver.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger established Executive Order S-3-05, which sets forth the following target dates by which statewide GHG emissions would be progressively reduced: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2020 would represent an approximate 25 to 30 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. Under AB 32, CARB must adopt regulations to achieve reductions in GHG to meet the 1990 emissions cap by 2020.

Climate Change Scoping Plan

AB 32 required CARB to develop a Scoping Plan that describes the approach California will take to reduce GHG to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by CARB in 2008 and must be updated every five years. The initial AB 32 Scoping Plan contains the main strategies California will use to reduce the GHG that cause climate change. The initial Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 program implementation fee regulation to fund the program. In August 2011, the initial Scoping Plan was approved by CARB.

The 2013 Scoping Plan Update builds upon the initial Scoping Plan with new strategies and recommendations. The 2013 Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The 2013 Update defines CARB climate change priorities for the next five years and sets the groundwork to reach California's long-term climate goals set forth in Executive Orders S-3-05 and B-16-2012. The 2013 Update highlights California progress toward meeting the near-term 2020 GHG emission reduction goals defined in the initial Scoping Plan. In the 2013 Update, nine key focus areas were identified (energy, transportation, agriculture, water, waste management, and natural and working lands), along with short-lived climate pollutants, green buildings, and the cap-and-trade program. On May 22, 2014, the First Update to the Climate Change Scoping Plan was approved by the Board, along with the finalized environmental documents.

Executive Order No. B-30-15

On April 29, 2015, Executive Order No. B-30-15 was issued to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. Executive Order No. B-30-15 sets a new, interim, 2030 reduction goal intended to provide a smooth transition to the existing ultimate 2050 reduction goal set by Executive Order No. S-3-05 (signed by Governor Schwarzenegger in June 2005). It is designed so State agencies do not fall behind the pace of reductions necessary to reach the existing 2050 reduction goal. Executive Order No. B-30-15 orders "All State agencies with jurisdiction over sources of GHG emissions shall implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 targets." The Executive Order also states that "CARB shall update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent." CARB's second update to the Climate Change Scoping Plan (The 2017 Scoping Plan") reflects the 2030 reduction target and is described below.

Senate Bill 32

In September of 2016, Governor Brown signed Senate Bill (SB) 32 into law, which extended the goals of AB32 and set a goal 2030 goal of reducing GHG emissions 40 percent below 1990 levels by 2030. With SB 32, the Legislature passed companion legislation AB 197, which provided additional direction for developing the Scoping Plan.

In December of 2017, CARB adopted the second update to the Climate Change Scoping Plan, the 2017 Scoping Plan. The 2017 Scoping Plan provides a framework for achieving the 2030 target. The 2017 Scoping Plan Update builds upon the successful framework established by the initial Scoping Plan and the first update (the 2013 Update), while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The 2017 Plan includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and-Trade Program, which constraints and reduces emissions at covered sources. The 2017 Plan also noted that the Recycling and Waste Sector generates two percent of California's total GHG emissions.

California Green Building Standards Code

The California Green (CALGreen) Building Standards Code (California Code Regulations, Title 24, Part 11) is a comprehensive and uniform regulatory code for all residential, commercial and school buildings. The 2019 Standards were effective January 1, 2020.

CALGreen does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. CALGreen also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard, which buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

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

CALGreen contains requirements for construction site selection, storm water control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. CALGreen provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. CALGreen also requires building commissioning, which is a process for verifying that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency. The following provides examples of CALGreen requirements:

- **Designated parking.** Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles.

- **Recycling by Occupants.** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling.

- **Construction waste.** A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and-75 percent for new homes and 80-percent for commercial projects. All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled.

- **Wastewater reduction.** Each building shall reduce the generation of wastewater by installation of water-conserving fixtures or using nonpotable water systems.

- **Water use savings.** 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35, and 40-percent reductions.

- **Water meters.** Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day.

- **Irrigation efficiency.** Moisture-sensing irrigation systems for larger landscaped areas.

- **Materials pollution control.** Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard.

- **Building commissioning.** Mandatory inspections of energy systems (i.e. heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies.

Greenhouse Gas Regional Emission Estimates

In 2016, the United States emitted about 6,511 million metric tons of CO_2. Total U.S. emissions have increased by 2.4 percent from 1990 to 2016, and emissions decreased from 2015 to 2016 by 1.9 percent (126.8 million metric tons of CO_2). The decrease in total GHG emissions between 2015 and 2016 was driven in large part by a decrease in CO_2 emissions from fossil fuel combustion. The decrease in CO_2 emissions from fossil fuel combustion was a result of multiple factors, including substitution from coal to natural gas and other non-fossil energy sources in the electric power sector; and warmer winter conditions in 2016 resulting in a decreased demand for heating fuel in the residential and commercial sectors. Of the five major sectors nationwide — residential and commercial, industrial, agriculture, transportation, and electricity— electricity accounts for the highest fraction of GHG emissions (approximately 28 percent), closely followed by transportation (approximately 28 percent) and by industry (approximately 22 percent).[3]

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3 United States Environmental Protections Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, April 2018, https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2016

In 2016, California emitted approximately 429.4 million tons of CO_2e. This represents approximately 6.6 percent of total U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. California's gross emissions of GHGs decreased by 9.26 percent from 466.3 million metric tons of CO_2e in 2000, with a maximum of 492.7 million metric tons in 2004.[4] In 2016, the composition of GHG emissions in California (expressed as CO_2e) were as follows:

- CO_2 accounted for 83 percent;
- CH_4 accounted for 9 percent;
- N_2O accounted for 3 percent; and
- Fluorinated gases (hydrofluorocarbons (HFCs), perfluorinated compounds (PFCs), and sulfur hexafluoride (SF_6)) accounted for 5 percent.

Of these gases, the transportation is the source of approximately 41 percent of the State's GHG emissions, followed by industrial sources at 23 percent and electricity generation (both in-State and out-of-State) at 16 percent. Agriculture is the source of approximately 8 percent, residential activity is the source of about 7 percent, and commercial activities make up 5 percent.[5]

[4] California Air Resources Board, *Emissions Trends Report 2000-2016*, July 11, 2018, https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/ghg_inventory_trends_00-16.pdf

[5] California Air Resources Board, *Emissions Trends Report 2000-2016*, July 11, 2018, https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/ghg_inventory_trends_00-16.pdf

APPENDIX B: HEALTH RISK ASSESSMENT

TETRA TECH

Memo

To:	Alan Siegwarth, Ameresco
Cc:	Daniel Jones (RCH), Alex Newell (TT), Suzan Pankenier (TT), Nat Israel, (TT)
From:	Kendra Kent, Sr. Compliance Specialist KMK
Date:	September 20, 2022
Subject:	Ameresco Forward RNG Facility Health Risk Assessment

Tetra Tech was engaged by Ameresco Forward RNG LLC (Ameresco RNG) to assist in conducting a preliminary health risk assessment (HRA) for the proposed RNG facility currently under review by San Joaquin Valley Air Pollution Control District (SJVAPCD) for air permitting. This is only a quick assessment of the project and is not meant to replace or argue against the findings of the SJVAPCD. The SJVAPCD will conduct their own HRA on this project based on the air permit application information that was submitted and their permit engineer's evaluation; therefore, the final results may differ from those of Tetra Tech.

After researching, it was determined that there was no published HRA tool that could be utilized to run this assessment from the SJVAPCD. Therefore, Tetra Tech utilized the South Coast Air Quality Management District (AQMD) online HRA tool to do a baseline assessment of this project as the two Air Districts have similar limitations and requirements. Below is a discussion of the HRA that was conducted and its results.

Health Risk Assessment Tool

The risk assessment procedure and tool utilized was developed by AQMD staff for the adoption of Rule 1401 - New Source Review for Toxic Air Contaminants, in June 1990. The document describes the procedures for preparing risk assessments under Rule 1401 and Rule 212. The procedures and risk analysis tool are "living" documents. As new toxic air contaminants (TACs) are added, risk values changed, or procedures revised, these documents are updated by the AQMD. The current HRA tool available from the AQMD is RiskTool (V1.105) R040919 - South Coast AQMD Procedure 8.1 (RiskTool). This is an Excel based model that utilizes project or site specific stack and TAC data to evaluate the cancer chronic and acute risks associated with the project.

The following standard stack information was used for the evaluation of both the ZTOF Flare (Flare) and Thermal Oxidizer (TOx) related to this project. This information was derived from the application that was submitted to the SJVAPCD for evaluation for the issuance of an Authority to Construct and Permit to Operate.

1. Stack Data	**Input**	**Units**
Hours/Day	24	hrs/day
Days/Week	7	days/wk
Weeks/Year	52	wks/yr
Control Efficiency	0.980	
Does source have T-BACT?	NO	
Source type (Point or Volume)	P	P or V
Distance-Residential	637	meters
Distance-Commercial	914	meters
Meteorological Station	Van Nuys Airport*	
Project Duration (Short term options: 2, 5, or 9 years; Else 30 years)	30	years
Source Type	Other	
Screening Mode (**NO** = Tier 1 or Tier 2; **YES** = Tier 3)	NO	

*Van Nuys Airport is the furthest north airport designated in the model and is therefore the one utilized.

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In addition to the above standard stack information, the individual stack discharge heights were used for the Flare and TOx of 50 feet and 35 feet, respectively.

For the purpose of this evaluation, where available, site-specific landfill gas constituent concentrations were utilized for establishing the emission rates of the pertinent TACs. Where site-specific concentrations were not known, standard emission factors from AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Table 2.4-1, Nov. 1998, were used.

The full data used for these analyses can be found in Attachments of this Memo.

Evaluation of HRA Results

The RiskTool evaluates the project potential risk against the AQMD Rule 1401 requirements. In order for a project to pass the evaluation, it must meet the following requirements:

- The cumulative increase from all TACs emitted from a single piece of equipment in Maximum Individual Cancer Risk (MICR) shall not exceed:
    - one in one million (1.0 x 10-6 or 1E-06) if Best Available Control Technology for Toxics (TBACT) is not used; or,
    - ten in one million (10 x 10-6 or 10E-06) if T-BACT is used;
- The cumulative cancer burden from all TACs emitted from a single piece of equipment (increase in cancer cases in the population) shall not exceed 0.5; and,
- Neither the Chronic Hazard Index (HIC), the 8-hour Chronic Hazard Index (HIC8), nor the total Acute Hazard Index (HIA) from all TACs emitted from a single piece of equipment shall exceed 1.0 for any target organ system, or an alternate hazard index level deemed to be safe

Tetra Tech utilized the Tier 1 and Tier 2 Reports of the RiskTool to determine the cancer risks associated with this project. The individual results of each analysis are discussed in the next sections.

Tier 1 Analysis and Report Results

The Tier 1 Analysis and Report identifies whether a project may require a detailed risk analysis and is meant to be used for a single emission source and a single TAC but can be used for multiple pollutants as well.

Since the same standard stack data and TACs emission rates were used for both the Flare and TOx evaluations, their calculated risk was identical for both emission sources as the Tier 1 analysis does not take the stack height into consideration. The results of the Tier 1 Report indicates that both of the emission sources (Flare and TOx) passed the requirements of this level of evaluation. The results are summarized below.

TOx Tier 1 Results	
Cancer/Chronic ASI	**Acute ASI**
7.82E-01	9.41E-03
PASSED	PASSED

The full results of the Tier 1 Report can be found in Attachments of this Memo.

Tier 2 Analysis and Report:

The Tier 2 Analysis and Report includes procedures for determining the level of risk from an emission source for its cancer risk, cancer burden, HIA, HIC8, and HIC. If the estimated risk from Tier 2 screening is below AQMD Rule 1401 limits, then a more detailed evaluation is not necessary.

The Tier 2 screening utilizes the following information in determining a project's cancer risk:

- Maximum annual emission of each known carcinogen and non-cancer 8-hour and chronic TAC as well as the maximum hourly emissions of each non-cancer acute TAC;
- Distance from nearest receptor(s);
- Stack height;
- Operating schedule; and
- Geographic location.*

  *Note: RiskTool bases geographic location on set regional areas; therefore, the northern most regional area was selected.

For the purposes of this screening, it was assumed both emission sources (Flare and TOx) were in operation 24/7 for the entire year as the "worst case scenario." However, based on the permit application materials, the operating schedule for the flare is to be less than 365 days of the year.

The Tier 2 Report indicates that both of the emission sources (Flare and TOx) passed the requirements of MICR for this level of evaluation. The results are summarized below.

TOx Tier 2 MICR Results	
Residential	**Commercial**
1.63E-08	7.36E-10
PASSED	PASSED

Flare Tier 2 MICR Results	
Residential	**Commercial**
1.47E-08	7.05E-10
PASSED	PASSED

The full results of the Tier 2 Report can be found in Attachments of this Memo.

Summary

As mentioned previously, this is not an in depth analysis of the total project health risks. This evaluation was completed as a preliminary HRA for the proposed RNG project. The SJVAPCD will conduct their own HRA on this project based on the air permit application information and their permit engineer's evaluation.

The SJVAPCD evaluates projects based on the District's Risk Management Review (RMR-APR 1905_, California Environmental Quality Act (CEQA), and California Air Toxic "Hot Spots" Act (AB 2588) program thresholds as shown below. A project must meet these threshold requirements to pass the SJVAPCD evaluation.

SJVAPCD HRA Thresholds			
Permitting Risk Management Review (RMR)	**CEQA**	**AB 2588**	
		Prioritization	**HRA – If Necessary**
HRA Cancer Risk ≤ 20 in a million; and Non-cancer Risk of <1.0.	HRA Cancer Risk ≤ 20 in a million; and Non-cancer Risk of <1.0.	Low: ≤ 1 *Facility exempt from AB 2558.* Intermediate: 1 < Prioritization ≤ 10 *Facility to provide updates on a quadrennial basis.* High: Prioritization > 10 *Facility required to perform full HRA.*	Low: cancer risk ≤ 1 in a million **and** hazard index of <0.1 *Facility Exempt from AB 2558.* Intermediate: 1 ≤ cancer risk <10 in a million **or** 0.1 ≥ total hazard index ≤ 1.0 *Facility to provide updates on a quadrennial basis.* High: cancer risk ≥ 10 in a million **or** total hazard index > 1.0 *Public notice required.* Risk Reduction: cancer risk ≥ 100 in a million **or** total hazard index of > 5.0. *Public notice and Risk Reduction Audit Plan required.*

Since the requirements of AQMD, in general, are more stringent than the base requirements of the SJVAPCD evaluation, it is presumed that the evaluation of SJVAPCD will indicate similar results to those of the AQMD RiskTool.

ATTACHMENT 1 – THERMAL OXIDIZER TIER 1 AND TIER 2 REPORTS

TIER 1/TIER 2 SCREENING RISK ASSESSMENT DATA INPUT

(Procedure Version 8.1 & Package N, September 1, 2017) - Risk Tool V1.105

Application Deemed Complete Date	08/24/22
A/N	
Facility Name	Ameresco Forward

1. Stack Data	Input	Units
Hours/Day	24	hrs/day
Days/Week	7	days/wk
Weeks/Year	52	wks/yr
Control Efficiency	0.980	
Does source have T-BACT?	NO	
Source type (Point or Volume)	P	P or V
Stack Height or Building Height	35	feet
Building Area	5000	ft^2
Distance-Residential	637	meters
Distance-Commercial	914	meters
Meteorological Station	Van Nuys Airport	
Project Duration (Short term options: 2, 5, or 9 years; Else 30 years)	30	years

Conversion Units (select units From & To)

From: 1 feet

To: 0.3048 meter

Source Type	Other
Screening Mode (**NO** = Tier 1 or Tier 2; **YES** = Tier 3)	NO

FOR SOURCE TYPE OTHER THAN BOILER, CREMATORY, ICE, PRESSURE WASHER, OR SPRAY BOOTH, FILL IN THE USER DEFINED TABLE BELOW

Fac Name: Ameresco Forward A/N: 0

TAC Code	Compound	Emission Rate (lbs/hr)	Molecular Weight	R1 - Uncontrolled (lbs/hr)	Efficiency Factor (Fraction range 0-1)	R2- Controlled (lbs/hr)
H9	Hydrochloric Acid (Hydrogen Chloride)	7.04E-01	36.46	7.04E-01		0.01407085
T3	Toluene	1.91E-04	92.13	1.91E-04		3.8174E-06
I2	Isopropyl Alcohol (Isopropanol)	1.25E-01	60.09	1.25E-01		0.00249039
X1	Xylenes (Mixed Isomers)	2.55E-04	106.2	2.55E-04		5.0984E-06
H6	n-Hexane	3.66E-01	86.18	3.66E-01		0.00732628
M9	Methyl Ethyl Ketone (2-Butanone)	2.11E-02	72.12	2.11E-02		0.00042279
E3	Ethyl Benzene	1.36E-04	106.16	1.36E-04		2.7195E-06
M13	Methylene Chloride (Dichloromethane)	1.12E-02	84.94	1.12E-02		0.00022319
B1	Benzene	6.17E-03	78.11	6.17E-03		0.00012339
P2	Perchloroethylene (Tetrachloroethylene)	2.78E-06	165.83	2.78E-06		5.553E-08
V4	Vinyl Chloride (Chloroethylene)	4.22E-03	62.5	4.22E-03		8.4304E-05
T8	Trichloroethylene	3.40E-03	130.4	3.40E-03		6.8085E-05
D6	1,1,-Dichloroethane (Ethylidene Dichloride)	2.14E-03	98.9596	2.14E-03		4.2736E-05
E4	Ethyl Chloride (Chloroethane)	7.41E-04	64.52	7.41E-04		1.4821E-05
M8	Methyl Chloroform (1,1,1-Trichloroethane)	5.88E-04	133.42	5.88E-04		1.1768E-05
E6	Ethylene Dichloride (1,2-Dichloroethane)	3.70E-04	98.96	3.70E-04		7.4016E-06
D4	p-Dichlorobenzene	2.88E-04	147.01	2.88E-04		5.754E-06
C10	Chlorobenzene	7.65E-06	112.56	7.65E-06		1.5307E-07
V5	Vinylidene Chloride (1,1-Dichloroethylene)	1.79E-04	96.95	1.79E-04		3.5807E-06
C3	Carbon Disulfide	2.21E-06	76.14	2.21E-06		4.4285E-08
C32	Carbonyl Sulfide	4.06E-05	60.07	4.06E-05		8.1136E-07
C11	Chloroform	1.26E-05	119.38	1.26E-05		2.5266E-07
M3	Mercury and Compounds (Inorganic)	2.69E-05	200.59	2.69E-05		5.3824E-07
C5	Carbon Tetrachloride (Tetrachloromethane)	5.65E-06	153.82	5.65E-06		1.1308E-07
E5	Ethylene Dibromide (1,2-Dibromoethane)	1.73E-06	187.88	1.73E-06		3.4526E-08

TIER 1 SCREENING RISK ASSESSMENT REPORT

(Procedure Version 8.1 & Package N, September 1, 2017)

Application deemed complete date: 8/24/2022

A/N , Ameresco Forward

Equipment Type	Other		No T-BACT
Nearest Receptor Distance (actual)	637	meters	0
Receptor Distance (Table 1 Emission look up)	100	meters	0
			0

Tier 1 Results	
Cancer/Chronic ASI	**Acute ASI**
7.82E-01	9.41E-03
PASSED	PASSED

APPLICATION SCREENING INDEX CALCULATION

Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer/Chronic Pollutant Screening Level (lbs/yr) from Table 1	Acute Pollutant Screening Level (lbs/hr) from Table 1	Cancer/Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
Hydrochloric Acid (Hydrogen Chloride)	1.23E+02	1.41E-02	2.71E+03	2.90E+00	4.54E-02	4.85E-03
Toluene	3.33E-02	3.82E-06	9.03E+04	5.11E+01	3.69E-07	7.47E-08
Isopropyl Alcohol (Isopropanol)	2.18E+01	2.49E-03	2.11E+06	4.42E+00	1.03E-05	5.63E-04
Xylenes (Mixed Isomers)	4.45E-02	5.10E-06	2.11E+05	3.04E+01	2.11E-07	1.68E-07
n-Hexane	6.40E+01	7.33E-03	2.11E+06	0.00E+00	3.03E-05	
Methyl Ethyl Ketone (2-Butanone)	3.69E+00	4.23E-04	0.00E+00	1.79E+01		2.36E-05
Ethyl Benzene	2.38E-02	2.72E-06	5.11E+01	0.00E+00	4.65E-04	
Methylene Chloride (Dichloromethane)	1.95E+00	2.23E-04	1.27E+02	1.93E+01	1.54E-02	1.16E-05
Benzene	1.08E+00	1.23E-04	4.44E+00	3.73E-02	2.43E-01	3.31E-03
Perchloroethylene (Tetrachloroethylene)	4.85E-04	5.55E-08	2.12E+01	2.76E+01	2.29E-05	2.01E-09
Vinyl Chloride (Chloroethylene)	7.36E-01	8.43E-05	1.65E+00	2.48E+02	4.46E-01	3.40E-07
Trichloroethylene	5.95E-01	6.81E-05	6.35E+01	0.00E+00	9.37E-03	
1,1,-Dichloroethane (Ethylidene Dichloride)	3.73E-01	4.27E-05	7.79E+01	0.00E+00	4.79E-03	
Ethyl Chloride (Chloroethane)	1.29E-01	1.48E-05	9.03E+06	0.00E+00	1.43E-08	
Methyl Chloroform (1,1,1-Trichloroethane)	1.03E-01	1.18E-05	3.01E+05	9.38E+01	3.42E-07	1.25E-07
Ethylene Dichloride (1,2-Dichloroethane)	6.47E-02	7.40E-06	6.17E+00	0.00E+00	1.05E-02	
p-Dichlorobenzene	5.03E-02	5.75E-06	1.11E+01	0.00E+00	4.53E-03	
Chlorobenzene	1.34E-03	1.53E-07	3.01E+05	0.00E+00	4.44E-09	
Vinylidene Chloride (1,1-Dichloroethylene)	3.13E-02	3.58E-06	2.11E+04	0.00E+00	1.48E-06	
Carbon Disulfide	3.87E-04	4.43E-08	2.41E+05	8.56E+00	1.61E-09	5.17E-09
Carbonyl Sulfide	7.09E-03	8.11E-07	7.17E+02	9.11E-01	9.89E-06	8.91E-07
Chloroform	2.21E-03	2.53E-07	2.34E+01	2.07E-01	9.43E-05	1.22E-06
Mercury and Compounds (Inorganic)	4.70E-03	5.38E-07	2.34E+00	8.28E-04	2.01E-03	6.50E-04
Carbon Tetrachloride (Tetrachloromethane)	9.88E-04	1.13E-07	2.96E+00	2.62E+00	3.34E-04	4.32E-08
Ethylene Dibromide (1,2-Dibromoethane)	3.02E-04	3.45E-08	1.78E+00	0.00E+00	1.69E-04	
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
TOTAL (APPLICATION SCREENING INDEX)					**7.82E-01**	**9.41E-03**

EMISSIONS ARE ENTERED ON THE EMISSIONS WORKSHEET OR ON ONE OF EQUIPMENT WORKSHEETS

INPUT PARAMETERS ENTERED ON THE EMISSIONS SHEET ARE USED FOR TIERS 1 AND TIER 2 ANALYSES

TIER 2 SCREENING RISK ASSESSMENT REPORT

(Procedure Version 8.1 & Package N, September 1, 2017) - Risk Tool V1.105

A/N: 0 **Fac:** Ameresco Forward **Application deemed complete date:** 8/24/2022

1. Stack Data

Equipment Type	Other		0
			0
			0
Combustion Eff	0.98		0
	No T-BACT		
Operation Schedule	24	hrs/day	
	7	days/week	
	52	weeks/year	
Stack Height	35	ft	
Distance to Residential	637	m	
Distance to Commercial	914	m	
Meteorological Station	Van Nuys Airport		

2. Tier 2 Data

Dispersion Factors tables	Point Source
For Chronic X/Q	Table 6
For Acute X/Q max	Table 6.4

Dilution Factors

Receptor	X/Q (µg/m³)/(tons/yr)	X/Qmax (µg/m³)/(lbs/hr)
Residential	0.15	6.31
Commercial - Worker	0.08	3.51

Intake and Adjustment Factors

	Residential	Worker
Year of Exposure	30	
Combined Exposure Factor (CEF) - Table 4	677.40	55.86
Worker Adjustment Factor (WAF) - Table 5	1	1.00

A/N: 0 Application deemed complete date: 08/24/22

3. Rule 1401 Compound Data

Compound	R1 - Uncontrolled (lbs/hr)	R2 - Controlled (lbs/hr)	CP $(mg/kg\text{-}day)^{-1}$	MP MICR Resident	MP MICR Worker	MP Chronic Resident	MP Chronic Worker	REL Chronic ($\mu g/m^3$)	REL 8-hr Chronic ($\mu g/m^3$)	REL Acute ($\mu g/m^3$)	MWAF
Hydrochloric Acid (Hydrogen Chloride)	7.04E-01	1.41E-02	0.00E+00	1.00	1.00	1.00	1.00	9.00E+00	0.00E+00	2.10E+03	1
Toluene	1.91E-04	3.82E-06	0.00E+00	1.00	1.00	1.00	1.00	3.00E+02	0.00E+00	3.70E+04	1
Isopropyl Alcohol (Isopropanol)	1.25E-01	2.49E-03	0.00E+00	1.00	1.00	1.00	1.00	7.00E+03	0.00E+00	3.20E+03	1
Xylenes (Mixed Isomers)	2.55E-04	5.10E-06	0.00E+00	1.00	1.00	1.00	1.00	7.00E+02	0.00E+00	2.20E+04	1
n-Hexane	3.66E-01	7.33E-03	0.00E+00	1.00	1.00	1.00	1.00	7.00E+03	0.00E+00	0.00E+00	1
Methyl Ethyl Ketone (2-Butanone)	2.11E-02	4.23E-04	0.00E+00	1.00	1.00	1.00	1.00	0.00E+00	0.00E+00	1.30E+04	1
Ethyl Benzene	1.36E-04	2.72E-06	8.70E-03	1.00	1.00	1.00	1.00	2.00E+03	0.00E+00	0.00E+00	1
Methylene Chloride (Dichloromethane)	1.12E-02	2.23E-04	3.50E-03	1.00	1.00	1.00	1.00	4.00E+02	0.00E+00	1.40E+04	1
Benzene	6.17E-03	1.23E-04	1.00E-01	1.00	1.00	1.00	1.00	3.00E+00	3.00E+00	2.70E+01	1
Perchloroethylene (Tetrachloroethylene)	2.78E-06	5.55E-08	2.10E-02	1.00	1.00	1.00	1.00	3.50E+01	0.00E+00	2.00E+04	1
Vinyl Chloride (Chloroethylene)	4.22E-03	8.43E-05	2.70E-01	1.00	1.00	1.00	1.00	0.00E+00	0.00E+00	1.80E+05	1
Trichloroethylene	3.40E-03	6.81E-05	7.00E-03	1.00	1.00	1.00	1.00	6.00E+02	0.00E+00	0.00E+00	1
1,1,-Dichloroethane (Ethylidene Dichloride)	2.14E-03	4.27E-05	5.70E-03	1.00	1.00	1.00	1.00	0.00E+00	0.00E+00	0.00E+00	1
Ethyl Chloride (Chloroethane)	7.41E-04	1.48E-05	0.00E+00	1.00	1.00	1.00	1.00	3.00E+04	0.00E+00	0.00E+00	1
Methyl Chloroform (1,1,1-Trichloroethane)	5.88E-04	1.18E-05	0.00E+00	1.00	1.00	1.00	1.00	1.00E+03	0.00E+00	6.80E+04	1
Ethylene Dichloride (1,2-Dichloroethane)	3.70E-04	7.40E-06	7.20E-02	1.00	1.00	1.00	1.00	4.00E+02	0.00E+00	0.00E+00	1
p-Dichlorobenzene	2.88E-04	5.75E-06	4.00E-02	1.00	1.00	1.00	1.00	8.00E+02	0.00E+00	0.00E+00	1
Chlorobenzene	7.65E-06	1.53E-07	0.00E+00	1.00	1.00	1.00	1.00	1.00E+03	0.00E+00	0.00E+00	1
Vinylidene Chloride (1,1-Dichloroethylene)	1.79E-04	3.58E-06	0.00E+00	1.00	1.00	1.00	1.00	7.00E+01	0.00E+00	0.00E+00	1
Carbon Disulfide	2.21E-06	4.43E-08	0.00E+00	1.00	1.00	1.00	1.00	8.00E+02	0.00E+00	6.20E+03	1
Carbonyl Sulfide	4.06E-05	8.11E-07	0.00E+00	0.00	0.00	0.00	0.00	1.00E+01	1.00E+01	6.60E+02	0
Chloroform	1.26E-05	2.53E-07	1.90E-02	1.00	1.00	1.00	1.00	3.00E+02	0.00E+00	1.50E+02	1
Mercury and Compounds (Inorganic)	2.69E-05	5.38E-07	0.00E+00	1.00	1.00	3.86	2.11	3.00E-02	6.00E-02	6.00E-01	1
Carbon Tetrachloride (Tetrachloromethane)	5.65E-06	1.13E-07	1.50E-01	1.00	1.00	1.00	1.00	4.00E+01	0.00E+00	1.90E+03	1
Ethylene Dibromide (1,2-Dibromoethane)	1.73E-06	3.45E-08	2.50E-01	1.00	1.00	1.00	1.00	8.00E-01	0.00E+00	0.00E+00	1

4. Emission Calculations

Compound	R1 (lbs/hr)	R2 (lbs/hr)	R1 (lbs/day)	R2 (lbs/day)	R2 (lbs/yr)	R2 (tons/yr)
Hydrochloric Acid (Hydrogen Chloride)	7.04E-01	1.41E-02	1.69E+01	3.38E-01	1.23E+02	6.15E-02
Toluene	1.91E-04	3.82E-06	4.58E-03	9.16E-05	3.33E-02	1.67E-05
Isopropyl Alcohol (Isopropanol)	1.25E-01	2.49E-03	2.99E+00	5.98E-02	2.18E+01	1.09E-02
Xylenes (Mixed Isomers)	2.55E-04	5.10E-06	6.12E-03	1.22E-04	4.45E-02	2.23E-05
n-Hexane	3.66E-01	7.33E-03	8.79E+00	1.76E-01	6.40E+01	3.20E-02
Methyl Ethyl Ketone (2-Butanone)	2.11E-02	4.23E-04	5.07E-01	1.01E-02	3.69E+00	1.85E-03
Ethyl Benzene	1.36E-04	2.72E-06	3.26E-03	6.53E-05	2.38E-02	1.19E-05
Methylene Chloride (Dichloromethane)	1.12E-02	2.23E-04	2.68E-01	5.36E-03	1.95E+00	9.75E-04
Benzene	6.17E-03	1.23E-04	1.48E-01	2.96E-03	1.08E+00	5.39E-04
Perchloroethylene (Tetrachloroethylene)	2.78E-06	5.55E-08	6.66E-05	1.33E-06	4.85E-04	2.43E-07
Vinyl Chloride (Chloroethylene)	4.22E-03	8.43E-05	1.01E-01	2.02E-03	7.36E-01	3.68E-04
Trichloroethylene	3.40E-03	6.81E-05	8.17E-02	1.63E-03	5.95E-01	2.97E-04
1,1,-Dichloroethane (Ethylidene Dichloride)	2.14E-03	4.27E-05	5.13E-02	1.03E-03	3.73E-01	1.87E-04
Ethyl Chloride (Chloroethane)	7.41E-04	1.48E-05	1.78E-02	3.56E-04	1.29E-01	6.47E-05
Methyl Chloroform (1,1,1-Trichloroethane)	5.88E-04	1.18E-05	1.41E-02	2.82E-04	1.03E-01	5.14E-05
Ethylene Dichloride (1,2-Dichloroethane)	3.70E-04	7.40E-06	8.88E-03	1.78E-04	6.47E-02	3.23E-05
p-Dichlorobenzene	2.88E-04	5.75E-06	6.90E-03	1.38E-04	5.03E-02	2.51E-05
Chlorobenzene	7.65E-06	1.53E-07	1.84E-04	3.67E-06	1.34E-03	6.69E-07
Vinylidene Chloride (1,1-Dichloroethylene)	1.79E-04	3.58E-06	4.30E-03	8.59E-05	3.13E-02	1.56E-05
Carbon Disulfide	2.21E-06	4.43E-08	5.31E-05	1.06E-06	3.87E-04	1.93E-07
Carbonyl Sulfide	4.06E-05	8.11E-07	9.74E-04	1.95E-05	7.09E-03	3.54E-06
Chloroform	1.26E-05	2.53E-07	3.03E-04	6.06E-06	2.21E-03	1.10E-06
Mercury and Compounds (Inorganic)	2.69E-05	5.38E-07	6.46E-04	1.29E-05	4.70E-03	2.35E-06
Carbon Tetrachloride (Tetrachloromethane)	5.65E-06	1.13E-07	1.36E-04	2.71E-06	9.88E-04	4.94E-07
Ethylene Dibromide (1,2-Dibromoethane)	1.73E-06	3.45E-08	4.14E-05	8.29E-07	3.02E-04	1.51E-07
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**1.25E+00**	**2.49E-02**	**2.99E+01**	**5.98E-01**	**2.18E+02**	**1.09E-01**

TIER 2 RESULTS A/N: 0 Application deemed complete date: 08/24/22

5a. MICR

MICR Resident = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) Resident * CEF Resident * MP Resident * 1e-6 * MWAF

MICR Worker = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) Worker * CEF Worker* MP Worker* WAF Worker* 1e-6 * MWAF

Compound	Residential	Commercial
Hydrochloric Acid (Hydrogen Chloride)	0.00E+00	0.00E+00
Toluene	0.00E+00	0.00E+00
Isopropyl Alcohol (Isopropanol)	0.00E+00	0.00E+00
Xylenes (Mixed Isomers)	0.00E+00	0.00E+00
n-Hexane	0.00E+00	0.00E+00
Methyl Ethyl Ketone (2-Butanone)	0.00E+00	0.00E+00
Ethyl Benzene	1.03E-11	4.66E-13
Methylene Chloride (Dichloromethane)	3.40E-10	1.54E-11
Benzene	5.37E-09	2.43E-10
Perchloroethylene (Tetrachloroethylene)	5.08E-13	2.29E-14
Vinyl Chloride (Chloroethylene)	9.91E-09	4.48E-10
Trichloroethylene	2.07E-10	9.38E-12
1,1,-Dichloroethane (Ethylidene Dichloride)	1.06E-10	4.79E-12
Ethyl Chloride (Chloroethane)	0.00E+00	0.00E+00
Methyl Chloroform (1,1,1-Trichloroethane)	0.00E+00	0.00E+00
Ethylene Dichloride (1,2-Dichloroethane)	2.32E-10	1.05E-11
p-Dichlorobenzene	1.00E-10	4.53E-12
Chlorobenzene	0.00E+00	0.00E+00
Vinylidene Chloride (1,1-Dichloroethylene)	0.00E+00	0.00E+00
Carbon Disulfide	0.00E+00	0.00E+00
Carbonyl Sulfide	0.00E+00	0.00E+00
Chloroform	2.09E-12	9.44E-14
Mercury and Compounds (Inorganic)	0.00E+00	0.00E+00
Carbon Tetrachloride (Tetrachloromethane)	7.38E-12	3.34E-13
Ethylene Dibromide (1,2-Dibromoethane)	3.76E-12	1.70E-13
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
Total	**1.63E-08**	**7.36E-10**
	PASS	**PASS**

5b. Is Cancer Burden Calculation Needed (MICR >1E-6)? **NO**

New X/Q at which $MICR_{70yr}$ is one-in-a-million [(µg/m³)/(tons/yr)]:	0.00E+00
New Distance, interpolated from X/Q table using New X/Q (meter):	
Zone Impact Area (km²):	0.00E+00
Zone of Impact Population (7000 person/km²):	0.00E+00
Cancer Burden:	**0.00E+00**

6. Hazard Index Summary **A/N:** 0 **Application deemed complete date:** 08/24/22

HIA = [Q(lb/hr) * (X/Q)max * MWAF]/ Acute REL
HIC = [Q(ton/yr) * (X/Q) * MP * MWAF] / Chronic REL
HIC 8-hr= [Q(ton/yr) * (X/Q) * WAF * MWAF] / 8-hr Chronic REL

Target Organs	Acute	Chronic	8-hr Chronic	Acute Pass/Fail	Chronic Pass/Fail	8-hr Chronic Pass/Fail
Alimentary system (liver) - AL	3.76E-10	5.41E-08	0.00E+00	Pass	Pass	Pass
Bones and teeth - BN		0.00E+00	0.00E+00	Pass	Pass	Pass
Cardiovascular system - CV	1.01E-07	3.59E-07	0.00E+00	Pass	Pass	Pass
Developmental - DEV	3.45E-05	4.48E-05	5.76E-06	Pass	Pass	Pass
Endocrine system - END		8.74E-10	0.00E+00	Pass	Pass	Pass
Eye	4.74E-05	7.76E-08	0.00E+00	Pass	Pass	Pass
Hematopoietic system - HEM	2.89E-05	2.64E-05	2.64E-05	Pass	Pass	Pass
Immune system - IMM	2.89E-05	0.00E+00	0.00E+00	Pass	Pass	Pass
Kidney - KID		4.47E-05	5.76E-06	Pass	Pass	Pass
Nervous system - NS	5.78E-06	4.56E-05	5.76E-06	Pass	Pass	Pass
Reproductive system - REP	3.45E-05	4.48E-05	5.76E-06	Pass	Pass	Pass
Respiratory system - RESP	4.74E-05	1.00E-03	0.00E+00	Pass	Pass	Pass
Skin	0.00E+00	0.00E+00	0.00E+00	Pass	Pass	Pass

A/N: 0 **Application deemed complete date:** 08/24/22

6a. Hazard Index Acute - Resident

HIA = [Q(lb/hr) * (X/Q)max resident * MWAF] / Acute REL

	HIA - Residential									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)				4.23E-05					4.23E-05	
Toluene			6.51E-10	6.51E-10			6.51E-10	6.51E-10	6.51E-10	
Isopropyl Alcohol (Isopropanol)				4.91E-06					4.91E-06	
Xylenes (Mixed Isomers)				1.46E-09			1.46E-09		1.46E-09	
n-Hexane										
Methyl Ethyl Ketone (2-Butanone)				2.05E-07					2.05E-07	
Ethyl Benzene										
Methylene Chloride (Dichloromethane)		1.01E-07					1.01E-07			
Benzene			2.89E-05		2.89E-05	2.89E-05		2.89E-05		
Perchloroethylene (Tetrachloroethylene)				1.75E-11			1.75E-11		1.75E-11	
Vinyl Chloride (Chloroethylene)				2.96E-09			2.96E-09		2.96E-09	
Trichloroethylene										
1,1,-Dichloroethane (Ethylidene Dichloride)										
Ethyl Chloride (Chloroethane)										
Methyl Chloroform (1,1,1-Trichloroethane)							1.09E-09			
Ethylene Dichloride (1,2-Dichloroethane)										
p-Dichlorobenzene										
Chlorobenzene										
Vinylidene Chloride (1,1-Dichloroethylene)										
Carbon Disulfide			4.51E-11				4.51E-11	4.51E-11		
Carbonyl Sulfide							0.00E+00			
Chloroform			1.06E-08				1.06E-08	1.06E-08	1.06E-08	
Mercury and Compounds (Inorganic)			5.66E-06				5.66E-06	5.66E-06		
Carbon Tetrachloride (Tetrachloromethane)	3.76E-10		3.76E-10				3.76E-10	3.76E-10		
Ethylene Dibromide (1,2-Dibromoethane)										
Total	3.76E-10	1.01E-07	3.45E-05	4.74E-05	2.89E-05	2.89E-05	5.78E-06	3.45E-05	4.74E-05	0.00E+00

6a. Hazard Index Acute - Worker **A/N:** 0 **Application deemed complete date:** 08/24/22

HIA = [Q(lb/hr) * (X/Q)max Worker * MWAF] / Acute REL

	HIA - Commercial									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)				2.35E-05					2.35E-05	
Toluene			3.62E-10	3.62E-10			3.62E-10	3.62E-10	3.62E-10	
Isopropyl Alcohol (Isopropanol)				2.73E-06					2.73E-06	
Xylenes (Mixed Isomers)				8.14E-10			8.14E-10		8.14E-10	
n-Hexane										
Methyl Ethyl Ketone (2-Butanone)				1.14E-07					1.14E-07	
Ethyl Benzene										
Methylene Chloride (Dichloromethane)		5.60E-08					5.60E-08			
Benzene			1.60E-05		1.60E-05	1.60E-05		1.60E-05		
Perchloroethylene (Tetrachloroethylene)				9.75E-12			9.75E-12		9.75E-12	
Vinyl Chloride (Chloroethylene)				1.64E-09			1.64E-09		1.64E-09	
Trichloroethylene										
1,1,-Dichloroethane (Ethylidene Dichloride)										
Ethyl Chloride (Chloroethane)										
Methyl Chloroform (1,1,1-Trichloroethane)							6.07E-10			
Ethylene Dichloride (1,2-Dichloroethane)										
p-Dichlorobenzene										
Chlorobenzene										
Vinylidene Chloride (1,1-Dichloroethylene)										
Carbon Disulfide			2.51E-11				2.51E-11	2.51E-11		
Carbonyl Sulfide							0.00E+00			
Chloroform			5.91E-09				5.91E-09	5.91E-09	5.91E-09	
Mercury and Compounds (Inorganic)			3.15E-06				3.15E-06	3.15E-06		
Carbon Tetrachloride (Tetrachloromethane)	2.09E-10		2.09E-10				2.09E-10	2.09E-10		
Ethylene Dibromide (1,2-Dibromoethane)										
Total	2.09E-10	5.60E-08	1.92E-05	2.64E-05	1.60E-05	1.60E-05	3.21E-06	1.92E-05	2.64E-05	0.00E+00

A/N: 0 **Application deemed complete date:** 08/24/22

6b. Hazard Index Chronic - Resident

HIC = [Q(ton/yr) * (X/Q) Resident * MP Chronic Resident * MWAF] / Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)												1.00E-03	
Toluene				8.18E-09						8.18E-09	8.18E-09	8.18E-09	
Isopropyl Alcohol (Isopropanol)				2.29E-07					2.29E-07		2.29E-07		
Xylenes (Mixed Isomers)						4.68E-09				4.68E-09		4.68E-09	
n-Hexane										6.73E-07			
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene	8.74E-10			8.74E-10	8.74E-10				8.74E-10		8.74E-10		
Methylene Chloride (Dichloromethane)			3.59E-07							3.59E-07			
Benzene							2.64E-05						
Perchloroethylene (Tetrachloroethylene)	1.02E-09								1.02E-09				
Vinyl Chloride (Chloroethylene)													
Trichloroethylene						7.29E-08				7.29E-08			
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)	3.17E-10			3.17E-10							3.17E-10		
Methyl Chloroform (1,1,1-Trichloroethane)										7.56E-09			
Ethylene Dichloride (1,2-Dichloroethane)	1.19E-08												
p-Dichlorobenzene	4.62E-09								4.62E-09	4.62E-09		4.62E-09	
Chlorobenzene	9.84E-11			9.84E-11					9.84E-11		9.84E-11		
Vinylidene Chloride (1,1-Dichloroethylene)	3.29E-08												
Carbon Disulfide				3.56E-11						3.56E-11	3.56E-11		
Carbonyl Sulfide										0.00E+00			
Chloroform	5.41E-10			5.41E-10					5.41E-10		5.41E-10		
Mercury and Compounds (Inorganic)				4.45E-05					4.45E-05	4.45E-05	4.45E-05		
Carbon Tetrachloride (Tetrachloromethane)	1.82E-09			1.82E-09						1.82E-09	1.82E-09		
Ethylene Dibromide (1,2-Dibromoethane)				2.77E-08							2.77E-08		
Total	5.41E-08	0.00E+00	3.59E-07	4.48E-05	8.74E-10	7.76E-08	2.64E-05	0.00E+00	4.47E-05	4.56E-05	4.48E-05	1.00E-03	0.00E+00

A/N: 0 **Application deemed complete date:** 08/24/22

6b. Hazard Index Chronic - Worker

HIC = [Q(ton/yr) * (X/Q) * MP Chronic Worker * MWAF] / Chronic REL

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)												5.51E-04	
Toluene				4.48E-09						4.48E-09	4.48E-09	4.48E-09	
Isopropyl Alcohol (Isopropanol)				1.25E-07					1.25E-07		1.25E-07		
Xylenes (Mixed Isomers)						2.57E-09				2.57E-09		2.57E-09	
n-Hexane										3.69E-07			
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene	4.79E-10			4.79E-10	4.79E-10				4.79E-10		4.79E-10		
Methylene Chloride (Dichloromethane)			1.97E-07							1.97E-07			
Benzene							1.45E-05						
Perchloroethylene (Tetrachloroethylene)	5.59E-10								5.59E-10				
Vinyl Chloride (Chloroethylene)													
Trichloroethylene						4.00E-08				4.00E-08			
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)	1.74E-10			1.74E-10							1.74E-10		
Methyl Chloroform (1,1,1-Trichloroethane)										4.15E-09			
Ethylene Dichloride (1,2-Dichloroethane)	6.52E-09												
p-Dichlorobenzene	2.53E-09								2.53E-09	2.53E-09		2.53E-09	
Chlorobenzene	5.39E-11			5.39E-11					5.39E-11		5.39E-11		
Vinylidene Chloride (1,1-Dichloroethylene)	1.80E-08												
Carbon Disulfide				1.95E-11						1.95E-11	1.95E-11		
Carbonyl Sulfide										0.00E+00			
Chloroform	2.97E-10			2.97E-10					2.97E-10		2.97E-10		
Mercury and Compounds (Inorganic)				1.33E-05					1.33E-05	1.33E-05	1.33E-05		
Carbon Tetrachloride (Tetrachloromethane)	9.96E-10			9.96E-10						9.96E-10	9.96E-10		
Ethylene Dibromide (1,2-Dibromoethane)				1.52E-08							1.52E-08		
Total	2.96E-08	0.00E+00	1.97E-07	1.35E-05	4.79E-10	4.25E-08	1.45E-05	0.00E+00	1.35E-05	1.39E-05	1.35E-05	5.51E-04	0.00E+00

6c. 8-hour Hazard Index Chronic - Resident **A/N:** 0 **Application deemed complete date:** 08/24/22

HIC 8-hr = [Q(ton/yr) * (X/Q) Resident * WAF Resident * MWAF] / 8-hr Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)													
Toluene													
Isopropyl Alcohol (Isopropanol)													
Xylenes (Mixed Isomers)													
n-Hexane													
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene													
Methylene Chloride (Dichloromethane)													
Benzene							2.64E-05						
Perchloroethylene (Tetrachloroethylene)													
Vinyl Chloride (Chloroethylene)													
Trichloroethylene													
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)													
Methyl Chloroform (1,1,1-Trichloroethane)													
Ethylene Dichloride (1,2-Dichloroethane)													
p-Dichlorobenzene													
Chlorobenzene													
Vinylidene Chloride (1,1-Dichloroethylene)													
Carbon Disulfide													
Carbonyl Sulfide										0.00E+00			
Chloroform													
Mercury and Compounds (Inorganic)				5.76E-06					5.76E-06	5.76E-06	5.76E-06		
Carbon Tetrachloride (Tetrachloromethane)													
Ethylene Dibromide (1,2-Dibromoethane)													
Total	0.00E+00	0.00E+00	0.00E+00	5.76E-06	0.00E+00	0.00E+00	2.64E-05	0.00E+00	5.76E-06	5.76E-06	5.76E-06	0.00E+00	0.00E+00

A/N: 0 **Application deemed complete date:** 08/24/22

6c. 8-hour Hazard Index Chronic - Worker

HIC 8-hr = [Q(ton/yr) * (X/Q) Worker * WAF Worker * MWAF] / 8-hr Chronic REL

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)													
Toluene													
Isopropyl Alcohol (Isopropanol)													
Xylenes (Mixed Isomers)													
n-Hexane													
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene													
Methylene Chloride (Dichloromethane)													
Benzene							1.45E-05						
Perchloroethylene (Tetrachloroethylene)													
Vinyl Chloride (Chloroethylene)													
Trichloroethylene													
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)													
Methyl Chloroform (1,1,1-Trichloroethane)													
Ethylene Dichloride (1,2-Dichloroethane)													
p-Dichlorobenzene													
Chlorobenzene													
Vinylidene Chloride (1,1-Dichloroethylene)													
Carbon Disulfide													
Carbonyl Sulfide										0.00E+00			
Chloroform													
Mercury and Compounds (Inorganic)				3.16E-06					3.16E-06	3.16E-06	3.16E-06		
Carbon Tetrachloride (Tetrachloromethane)													
Ethylene Dibromide (1,2-Dibromoethane)													
Total	0.00E+00	0.00E+00	0.00E+00	3.16E-06	0.00E+00	0.00E+00	1.45E-05	0.00E+00	3.16E-06	3.16E-06	3.16E-06	0.00E+00	0.00E+00

ATTACHMENT 2 – FLARE TIER 1 AND TIER 2 REPORTS

TIER 1/TIER 2 SCREENING RISK ASSESSMENT DATA INPUT

(Procedure Version 8.1 & Package N, September 1, 2017) - Risk Tool V1.105

Application Deemed Complete Date	08/24/22
A/N	
Facility Name	Ameresco Forward

1. Stack Data	**Input**	**Units**
Hours/Day	24	hrs/day
Days/Week	7	days/wk
Weeks/Year	52	wks/yr
Control Efficiency	0.980	
Does source have T-BACT?	NO	
Source type (Point or Volume)	P	P or V
Stack Height or Building Height	50	feet
Building Area	5000	ft^2
Distance-Residential	637	meters
Distance-Commercial	914	meters
Meteorological Station	Van Nuys Airport	
Project Duration (Short term options: 2, 5, or 9 years; Else 30 years)	30	years

Conversion Units (select units From & To)

From: 1 feet

To: 0.3048 meter

Source Type	Other
Screening Mode (**NO** = Tier 1 or Tier 2; **YES** = Tier 3)	NO

FOR SOURCE TYPE OTHER THAN BOILER, CREMATORY, ICE, PRESSURE WASHER, OR SPRAY BOOTH, FILL IN THE USER DEFINED TABLE BELOW

Fac Name: Ameresco Forward A/N: 0

TAC Code	Compound	Emission Rate (lbs/hr)	Molecular Weight	R1 - Uncontrolled (lbs/hr)	Efficiency Factor (Fraction range 0-1)	R2- Controlled (lbs/hr)
H9	Hydrochloric Acid (Hydrogen Chloride)	7.04E-01	36.46	7.04E-01		0.01407085
T3	Toluene	1.91E-04	92.13	1.91E-04		3.8174E-06
I2	Isopropyl Alcohol (Isopropanol)	1.25E-01	60.09	1.25E-01		0.00249039
X1	Xylenes (Mixed Isomers)	2.55E-04	106.2	2.55E-04		5.0984E-06
H6	n-Hexane	3.66E-01	86.18	3.66E-01		0.00732628
M9	Methyl Ethyl Ketone (2-Butanone)	2.11E-02	72.12	2.11E-02		0.00042279
E3	Ethyl Benzene	1.36E-04	106.16	1.36E-04		2.7195E-06
M13	Methylene Chloride (Dichloromethane)	1.12E-02	84.94	1.12E-02		0.00022319
B1	Benzene	6.17E-03	78.11	6.17E-03		0.00012339
P2	Perchloroethylene (Tetrachloroethylene)	2.78E-06	165.83	2.78E-06		5.553E-08
V4	Vinyl Chloride (Chloroethylene)	4.22E-03	62.5	4.22E-03		8.4304E-05
T8	Trichloroethylene	3.40E-03	130.4	3.40E-03		6.8085E-05
D6	1,1,-Dichloroethane (Ethylidene Dichloride)	2.14E-03	98.9596	2.14E-03		4.2736E-05
E4	Ethyl Chloride (Chloroethane)	7.41E-04	64.52	7.41E-04		1.4821E-05
M8	Methyl Chloroform (1,1,1-Trichloroethane)	5.88E-04	133.42	5.88E-04		1.1768E-05
E6	Ethylene Dichloride (1,2-Dichloroethane)	3.70E-04	98.96	3.70E-04		7.4016E-06
D4	p-Dichlorobenzene	2.88E-04	147.01	2.88E-04		5.754E-06
C10	Chlorobenzene	7.65E-06	112.56	7.65E-06		1.5307E-07
V5	Vinylidene Chloride (1,1-Dichloroethylene)	1.79E-04	96.95	1.79E-04		3.5807E-06
C3	Carbon Disulfide	2.21E-06	76.14	2.21E-06		4.4285E-08
C32	Carbonyl Sulfide	4.06E-05	60.07	4.06E-05		8.1136E-07
C11	Chloroform	1.26E-05	119.38	1.26E-05		2.5266E-07
M3	Mercury and Compounds (Inorganic)	2.69E-05	200.59	2.69E-05		5.3824E-07
C5	Carbon Tetrachloride (Tetrachloromethane)	5.65E-06	153.82	5.65E-06		1.1308E-07
E5	Ethylene Dibromide (1,2-Dibromoethane)	1.73E-06	187.88	1.73E-06		3.4526E-08

TIER 1 SCREENING RISK ASSESSMENT REPORT

(Procedure Version 8.1 & Package N, September 1, 2017)

Application deemed complete date: 8/24/2022

A/N , Ameresco Forward

Equipment Type	Other		No T-BACT
Nearest Receptor Distance (actual)	637	meters	0
Receptor Distance (Table 1 Emission look up)	100	meters	0
			0

Tier 1 Results	
Cancer/Chronic ASI	**Acute ASI**
7.82E-01	9.41E-03
PASSED	PASSED

APPLICATION SCREENING INDEX CALCULATION

Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer/Chronic Pollutant Screening Level (lbs/yr) from Table 1	Acute Pollutant Screening Level (lbs/hr) from Table 1	Cancer/Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
Hydrochloric Acid (Hydrogen Chloride)	1.23E+02	1.41E-02	2.71E+03	2.90E+00	4.54E-02	4.85E-03
Toluene	3.33E-02	3.82E-06	9.03E+04	5.11E+01	3.69E-07	7.47E-08
Isopropyl Alcohol (Isopropanol)	2.18E+01	2.49E-03	2.11E+06	4.42E+00	1.03E-05	5.63E-04
Xylenes (Mixed Isomers)	4.45E-02	5.10E-06	2.11E+05	3.04E+01	2.11E-07	1.68E-07
n-Hexane	6.40E+01	7.33E-03	2.11E+06	0.00E+00	3.03E-05	
Methyl Ethyl Ketone (2-Butanone)	3.69E+00	4.23E-04	0.00E+00	1.79E+01		2.36E-05
Ethyl Benzene	2.38E-02	2.72E-06	5.11E+01	0.00E+00	4.65E-04	
Methylene Chloride (Dichloromethane)	1.95E+00	2.23E-04	1.27E+02	1.93E+01	1.54E-02	1.16E-05
Benzene	1.08E+00	1.23E-04	4.44E+00	3.73E-02	2.43E-01	3.31E-03
Perchloroethylene (Tetrachloroethylene)	4.85E-04	5.55E-08	2.12E+01	2.76E+01	2.29E-05	2.01E-09
Vinyl Chloride (Chloroethylene)	7.36E-01	8.43E-05	1.65E+00	2.48E+02	4.46E-01	3.40E-07
Trichloroethylene	5.95E-01	6.81E-05	6.35E+01	0.00E+00	9.37E-03	
1,1,-Dichloroethane (Ethylidene Dichloride)	3.73E-01	4.27E-05	7.79E+01	0.00E+00	4.79E-03	
Ethyl Chloride (Chloroethane)	1.29E-01	1.48E-05	9.03E+06	0.00E+00	1.43E-08	
Methyl Chloroform (1,1,1-Trichloroethane)	1.03E-01	1.18E-05	3.01E+05	9.38E+01	3.42E-07	1.25E-07
Ethylene Dichloride (1,2-Dichloroethane)	6.47E-02	7.40E-06	6.17E+00	0.00E+00	1.05E-02	
p-Dichlorobenzene	5.03E-02	5.75E-06	1.11E+01	0.00E+00	4.53E-03	
Chlorobenzene	1.34E-03	1.53E-07	3.01E+05	0.00E+00	4.44E-09	
Vinylidene Chloride (1,1-Dichloroethylene)	3.13E-02	3.58E-06	2.11E+04	0.00E+00	1.48E-06	
Carbon Disulfide	3.87E-04	4.43E-08	2.41E+05	8.56E+00	1.61E-09	5.17E-09
Carbonyl Sulfide	7.09E-03	8.11E-07	7.17E+02	9.11E-01	9.89E-06	8.91E-07
Chloroform	2.21E-03	2.53E-07	2.34E+01	2.07E-01	9.43E-05	1.22E-06
Mercury and Compounds (Inorganic)	4.70E-03	5.38E-07	2.34E+00	8.28E-04	2.01E-03	6.50E-04
Carbon Tetrachloride (Tetrachloromethane)	9.88E-04	1.13E-07	2.96E+00	2.62E+00	3.34E-04	4.32E-08
Ethylene Dibromide (1,2-Dibromoethane)	3.02E-04	3.45E-08	1.78E+00	0.00E+00	1.69E-04	
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
	0.00E+00		0.00E+00	0.00E+00		
TOTAL (APPLICATION SCREENING INDEX)					**7.82E-01**	**9.41E-03**

EMISSIONS ARE ENTERED ON THE EMISSIONS WORKSHEET OR ON ONE OF EQUIPMENT WORKSHEETS

INPUT PARAMETERS ENTERED ON THE EMISSIONS SHEET ARE USED FOR TIERS 1 AND TIER 2 ANALYSES

TIER 2 SCREENING RISK ASSESSMENT REPORT

(Procedure Version 8.1 & Package N, September 1, 2017) - Risk Tool V1.105

A/N: 0 **Fac:** Ameresco Forward **Application deemed complete date:** 8/24/2022

1. Stack Data

Equipment Type	Other		0
			0
			0
Combustion Eff	0.98		0
	No T-BACT		
Operation Schedule	24	hrs/day	
	7	days/week	
	52	weeks/year	
Stack Height	50	ft	
Distance to Residential	637	m	
Distance to Commercial	914	m	
Meteorological Station	Van Nuys Airport		

2. Tier 2 Data

Dispersion Factors tables	Point Source
For Chronic X/Q	Table 6
For Acute X/Q max	Table 6.4

Dilution Factors

Receptor	X/Q (µg/m³)/(tons/yr)	X/Qmax (µg/m³)/(lbs/hr)
Residential	0.13	5.72
Commercial - Worker	0.08	3.51

Intake and Adjustment Factors

	Residential	Worker
Year of Exposure	30	
Combined Exposure Factor (CEF) - Table 4	677.40	55.86
Worker Adjustment Factor (WAF) - Table 5	1	1.00

A/N: 0 Application deemed complete date: 08/24/22

3. Rule 1401 Compound Data

Compound	R1 - Uncontrolled (lbs/hr)	R2 - Controlled (lbs/hr)	CP $(mg/kg\text{-}day)^{-1}$	MP MICR Resident	MP MICR Worker	MP Chronic Resident	MP Chronic Worker	REL Chronic ($\mu g/m^3$)	REL 8-hr Chronic ($\mu g/m^3$)	REL Acute ($\mu g/m^3$)	MWAF
Hydrochloric Acid (Hydrogen Chloride)	7.04E-01	1.41E-02	0.00E+00	1.00	1.00	1.00	1.00	9.00E+00	0.00E+00	2.10E+03	1
Toluene	1.91E-04	3.82E-06	0.00E+00	1.00	1.00	1.00	1.00	3.00E+02	0.00E+00	3.70E+04	1
Isopropyl Alcohol (Isopropanol)	1.25E-01	2.49E-03	0.00E+00	1.00	1.00	1.00	1.00	7.00E+03	0.00E+00	3.20E+03	1
Xylenes (Mixed Isomers)	2.55E-04	5.10E-06	0.00E+00	1.00	1.00	1.00	1.00	7.00E+02	0.00E+00	2.20E+04	1
n-Hexane	3.66E-01	7.33E-03	0.00E+00	1.00	1.00	1.00	1.00	7.00E+03	0.00E+00	0.00E+00	1
Methyl Ethyl Ketone (2-Butanone)	2.11E-02	4.23E-04	0.00E+00	1.00	1.00	1.00	1.00	0.00E+00	0.00E+00	1.30E+04	1
Ethyl Benzene	1.36E-04	2.72E-06	8.70E-03	1.00	1.00	1.00	1.00	2.00E+03	0.00E+00	0.00E+00	1
Methylene Chloride (Dichloromethane)	1.12E-02	2.23E-04	3.50E-03	1.00	1.00	1.00	1.00	4.00E+02	0.00E+00	1.40E+04	1
Benzene	6.17E-03	1.23E-04	1.00E-01	1.00	1.00	1.00	1.00	3.00E+00	3.00E+00	2.70E+01	1
Perchloroethylene (Tetrachloroethylene)	2.78E-06	5.55E-08	2.10E-02	1.00	1.00	1.00	1.00	3.50E+01	0.00E+00	2.00E+04	1
Vinyl Chloride (Chloroethylene)	4.22E-03	8.43E-05	2.70E-01	1.00	1.00	1.00	1.00	0.00E+00	0.00E+00	1.80E+05	1
Trichloroethylene	3.40E-03	6.81E-05	7.00E-03	1.00	1.00	1.00	1.00	6.00E+02	0.00E+00	0.00E+00	1
1,1,-Dichloroethane (Ethylidene Dichloride)	2.14E-03	4.27E-05	5.70E-03	1.00	1.00	1.00	1.00	0.00E+00	0.00E+00	0.00E+00	1
Ethyl Chloride (Chloroethane)	7.41E-04	1.48E-05	0.00E+00	1.00	1.00	1.00	1.00	3.00E+04	0.00E+00	0.00E+00	1
Methyl Chloroform (1,1,1-Trichloroethane)	5.88E-04	1.18E-05	0.00E+00	1.00	1.00	1.00	1.00	1.00E+03	0.00E+00	6.80E+04	1
Ethylene Dichloride (1,2-Dichloroethane)	3.70E-04	7.40E-06	7.20E-02	1.00	1.00	1.00	1.00	4.00E+02	0.00E+00	0.00E+00	1
p-Dichlorobenzene	2.88E-04	5.75E-06	4.00E-02	1.00	1.00	1.00	1.00	8.00E+02	0.00E+00	0.00E+00	1
Chlorobenzene	7.65E-06	1.53E-07	0.00E+00	1.00	1.00	1.00	1.00	1.00E+03	0.00E+00	0.00E+00	1
Vinylidene Chloride (1,1-Dichloroethylene)	1.79E-04	3.58E-06	0.00E+00	1.00	1.00	1.00	1.00	7.00E+01	0.00E+00	0.00E+00	1
Carbon Disulfide	2.21E-06	4.43E-08	0.00E+00	1.00	1.00	1.00	1.00	8.00E+02	0.00E+00	6.20E+03	1
Carbonyl Sulfide	4.06E-05	8.11E-07	0.00E+00	0.00	0.00	0.00	0.00	1.00E+01	1.00E+01	6.60E+02	0
Chloroform	1.26E-05	2.53E-07	1.90E-02	1.00	1.00	1.00	1.00	3.00E+02	0.00E+00	1.50E+02	1
Mercury and Compounds (Inorganic)	2.69E-05	5.38E-07	0.00E+00	1.00	1.00	3.86	2.11	3.00E-02	6.00E-02	6.00E-01	1
Carbon Tetrachloride (Tetrachloromethane)	5.65E-06	1.13E-07	1.50E-01	1.00	1.00	1.00	1.00	4.00E+01	0.00E+00	1.90E+03	1
Ethylene Dibromide (1,2-Dibromoethane)	1.73E-06	3.45E-08	2.50E-01	1.00	1.00	1.00	1.00	8.00E-01	0.00E+00	0.00E+00	1

4. Emission Calculations

Compound	R1 (lbs/hr)	R2 (lbs/hr)	R1 (lbs/day)	R2 (lbs/day)	R2 (lbs/yr)	R2 (tons/yr)
Hydrochloric Acid (Hydrogen Chloride)	7.04E-01	1.41E-02	1.69E+01	3.38E-01	1.23E+02	6.15E-02
Toluene	1.91E-04	3.82E-06	4.58E-03	9.16E-05	3.33E-02	1.67E-05
Isopropyl Alcohol (Isopropanol)	1.25E-01	2.49E-03	2.99E+00	5.98E-02	2.18E+01	1.09E-02
Xylenes (Mixed Isomers)	2.55E-04	5.10E-06	6.12E-03	1.22E-04	4.45E-02	2.23E-05
n-Hexane	3.66E-01	7.33E-03	8.79E+00	1.76E-01	6.40E+01	3.20E-02
Methyl Ethyl Ketone (2-Butanone)	2.11E-02	4.23E-04	5.07E-01	1.01E-02	3.69E+00	1.85E-03
Ethyl Benzene	1.36E-04	2.72E-06	3.26E-03	6.53E-05	2.38E-02	1.19E-05
Methylene Chloride (Dichloromethane)	1.12E-02	2.23E-04	2.68E-01	5.36E-03	1.95E+00	9.75E-04
Benzene	6.17E-03	1.23E-04	1.48E-01	2.96E-03	1.08E+00	5.39E-04
Perchloroethylene (Tetrachloroethylene)	2.78E-06	5.55E-08	6.66E-05	1.33E-06	4.85E-04	2.43E-07
Vinyl Chloride (Chloroethylene)	4.22E-03	8.43E-05	1.01E-01	2.02E-03	7.36E-01	3.68E-04
Trichloroethylene	3.40E-03	6.81E-05	8.17E-02	1.63E-03	5.95E-01	2.97E-04
1,1,-Dichloroethane (Ethylidene Dichloride)	2.14E-03	4.27E-05	5.13E-02	1.03E-03	3.73E-01	1.87E-04
Ethyl Chloride (Chloroethane)	7.41E-04	1.48E-05	1.78E-02	3.56E-04	1.29E-01	6.47E-05
Methyl Chloroform (1,1,1-Trichloroethane)	5.88E-04	1.18E-05	1.41E-02	2.82E-04	1.03E-01	5.14E-05
Ethylene Dichloride (1,2-Dichloroethane)	3.70E-04	7.40E-06	8.88E-03	1.78E-04	6.47E-02	3.23E-05
p-Dichlorobenzene	2.88E-04	5.75E-06	6.90E-03	1.38E-04	5.03E-02	2.51E-05
Chlorobenzene	7.65E-06	1.53E-07	1.84E-04	3.67E-06	1.34E-03	6.69E-07
Vinylidene Chloride (1,1-Dichloroethylene)	1.79E-04	3.58E-06	4.30E-03	8.59E-05	3.13E-02	1.56E-05
Carbon Disulfide	2.21E-06	4.43E-08	5.31E-05	1.06E-06	3.87E-04	1.93E-07
Carbonyl Sulfide	4.06E-05	8.11E-07	9.74E-04	1.95E-05	7.09E-03	3.54E-06
Chloroform	1.26E-05	2.53E-07	3.03E-04	6.06E-06	2.21E-03	1.10E-06
Mercury and Compounds (Inorganic)	2.69E-05	5.38E-07	6.46E-04	1.29E-05	4.70E-03	2.35E-06
Carbon Tetrachloride (Tetrachloromethane)	5.65E-06	1.13E-07	1.36E-04	2.71E-06	9.88E-04	4.94E-07
Ethylene Dibromide (1,2-Dibromoethane)	1.73E-06	3.45E-08	4.14E-05	8.29E-07	3.02E-04	1.51E-07
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**1.25E+00**	**2.49E-02**	**2.99E+01**	**5.98E-01**	**2.18E+02**	**1.09E-01**

TIER 2 RESULTS

A/N: 0 Application deemed complete date: 08/24/22

5a. MICR

MICR Resident = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) Resident * CEF Resident * MP Resident * 1e-6 * MWAF

MICR Worker = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) Worker * CEF Worker* MP Worker* WAF Worker* 1e-6 * MWAF

Compound	Residential	Commercial
Hydrochloric Acid (Hydrogen Chloride)	0.00E+00	0.00E+00
Toluene	0.00E+00	0.00E+00
Isopropyl Alcohol (Isopropanol)	0.00E+00	0.00E+00
Xylenes (Mixed Isomers)	0.00E+00	0.00E+00
n-Hexane	0.00E+00	0.00E+00
Methyl Ethyl Ketone (2-Butanone)	0.00E+00	0.00E+00
Ethyl Benzene	9.28E-12	4.46E-13
Methylene Chloride (Dichloromethane)	3.06E-10	1.47E-11
Benzene	4.84E-09	2.32E-10
Perchloroethylene (Tetrachloroethylene)	4.58E-13	2.20E-14
Vinyl Chloride (Chloroethylene)	8.93E-09	4.29E-10
Trichloroethylene	1.87E-10	8.98E-12
1,1,-Dichloroethane (Ethylidene Dichloride)	9.56E-11	4.59E-12
Ethyl Chloride (Chloroethane)	0.00E+00	0.00E+00
Methyl Chloroform (1,1,1-Trichloroethane)	0.00E+00	0.00E+00
Ethylene Dichloride (1,2-Dichloroethane)	2.09E-10	1.00E-11
p-Dichlorobenzene	9.03E-11	4.34E-12
Chlorobenzene	0.00E+00	0.00E+00
Vinylidene Chloride (1,1-Dichloroethylene)	0.00E+00	0.00E+00
Carbon Disulfide	0.00E+00	0.00E+00
Carbonyl Sulfide	0.00E+00	0.00E+00
Chloroform	1.88E-12	9.04E-14
Mercury and Compounds (Inorganic)	0.00E+00	0.00E+00
Carbon Tetrachloride (Tetrachloromethane)	6.66E-12	3.19E-13
Ethylene Dibromide (1,2-Dibromoethane)	3.39E-12	1.63E-13
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
	0.00E+00	0.00E+00
Total	**1.47E-08**	**7.05E-10**
	PASS	**PASS**

5b. Is Cancer Burden Calculation Needed (MICR >1E-6)? **NO**

New X/Q at which $MICR_{70yr}$ is one-in-a-million [(µg/m³)/(tons/yr)]:	0.00E+00
New Distance, interpolated from X/Q table using New X/Q (meter):	
Zone Impact Area (km²):	0.00E+00
Zone of Impact Population (7000 person/km²):	0.00E+00
Cancer Burden:	**0.00E+00**

6. Hazard Index Summary **A/N:** 0 **Application deemed complete date:** 08/24/22

HIA = [Q(lb/hr) * (X/Q)max * MWAF]/ Acute REL
HIC = [Q(ton/yr) * (X/Q) * MP * MWAF] / Chronic REL
HIC 8-hr= [Q(ton/yr) * (X/Q) * WAF * MWAF] / 8-hr Chronic REL

Target Organs	Acute	Chronic	8-hr Chronic	Acute Pass/Fail	Chronic Pass/Fail	8-hr Chronic Pass/Fail
Alimentary system (liver) - AL	3.41E-10	4.87E-08	0.00E+00	Pass	Pass	Pass
Bones and teeth - BN		0.00E+00	0.00E+00	Pass	Pass	Pass
Cardiovascular system - CV	9.13E-08	3.23E-07	0.00E+00	Pass	Pass	Pass
Developmental - DEV	3.13E-05	4.04E-05	5.20E-06	Pass	Pass	Pass
Endocrine system - END		7.88E-10	0.00E+00	Pass	Pass	Pass
Eye	4.30E-05	6.99E-08	0.00E+00	Pass	Pass	Pass
Hematopoietic system - HEM	2.62E-05	2.38E-05	2.38E-05	Pass	Pass	Pass
Immune system - IMM	2.62E-05	0.00E+00	0.00E+00	Pass	Pass	Pass
Kidney - KID		4.03E-05	5.20E-06	Pass	Pass	Pass
Nervous system - NS	5.24E-06	4.11E-05	5.20E-06	Pass	Pass	Pass
Reproductive system - REP	3.13E-05	4.04E-05	5.20E-06	Pass	Pass	Pass
Respiratory system - RESP	4.30E-05	9.06E-04	0.00E+00	Pass	Pass	Pass
Skin	0.00E+00	0.00E+00	0.00E+00	Pass	Pass	Pass

A/N: 0 **Application deemed complete date:** 08/24/22

6a. Hazard Index Acute - Resident

HIA = [Q(lb/hr) * (X/Q)max resident * MWAF] / Acute REL

	HIA - Residential									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)				3.84E-05					3.84E-05	
Toluene			5.91E-10	5.91E-10			5.91E-10	5.91E-10	5.91E-10	
Isopropyl Alcohol (Isopropanol)				4.45E-06					4.45E-06	
Xylenes (Mixed Isomers)				1.33E-09			1.33E-09		1.33E-09	
n-Hexane										
Methyl Ethyl Ketone (2-Butanone)				1.86E-07					1.86E-07	
Ethyl Benzene										
Methylene Chloride (Dichloromethane)		9.13E-08					9.13E-08			
Benzene			2.62E-05		2.62E-05	2.62E-05		2.62E-05		
Perchloroethylene (Tetrachloroethylene)				1.59E-11			1.59E-11		1.59E-11	
Vinyl Chloride (Chloroethylene)				2.68E-09			2.68E-09		2.68E-09	
Trichloroethylene										
1,1,-Dichloroethane (Ethylidene Dichloride)										
Ethyl Chloride (Chloroethane)										
Methyl Chloroform (1,1,1-Trichloroethane)							9.91E-10			
Ethylene Dichloride (1,2-Dichloroethane)										
p-Dichlorobenzene										
Chlorobenzene										
Vinylidene Chloride (1,1-Dichloroethylene)										
Carbon Disulfide			4.09E-11				4.09E-11	4.09E-11		
Carbonyl Sulfide							0.00E+00			
Chloroform			9.64E-09				9.64E-09	9.64E-09	9.64E-09	
Mercury and Compounds (Inorganic)			5.13E-06				5.13E-06	5.13E-06		
Carbon Tetrachloride (Tetrachloromethane)	3.41E-10		3.41E-10				3.41E-10	3.41E-10		
Ethylene Dibromide (1,2-Dibromoethane)										
Total	3.41E-10	9.13E-08	3.13E-05	4.30E-05	2.62E-05	2.62E-05	5.24E-06	3.13E-05	4.30E-05	0.00E+00

6a. Hazard Index Acute - Worker **A/N:** 0 **Application deemed complete date:** 08/24/22

HIA = [Q(lb/hr) * (X/Q)max Worker * MWAF] / Acute REL

	HIA - Commercial									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)				2.35E-05					2.35E-05	
Toluene			3.62E-10	3.62E-10			3.62E-10	3.62E-10	3.62E-10	
Isopropyl Alcohol (Isopropanol)				2.73E-06					2.73E-06	
Xylenes (Mixed Isomers)				8.13E-10			8.13E-10		8.13E-10	
n-Hexane										
Methyl Ethyl Ketone (2-Butanone)				1.14E-07					1.14E-07	
Ethyl Benzene										
Methylene Chloride (Dichloromethane)		5.59E-08					5.59E-08			
Benzene			1.60E-05		1.60E-05	1.60E-05		1.60E-05		
Perchloroethylene (Tetrachloroethylene)				9.74E-12			9.74E-12		9.74E-12	
Vinyl Chloride (Chloroethylene)				1.64E-09			1.64E-09		1.64E-09	
Trichloroethylene										
1,1,-Dichloroethane (Ethylidene Dichloride)										
Ethyl Chloride (Chloroethane)										
Methyl Chloroform (1,1,1-Trichloroethane)							6.07E-10			
Ethylene Dichloride (1,2-Dichloroethane)										
p-Dichlorobenzene										
Chlorobenzene										
Vinylidene Chloride (1,1-Dichloroethylene)										
Carbon Disulfide			2.51E-11				2.51E-11	2.51E-11		
Carbonyl Sulfide							0.00E+00			
Chloroform			5.91E-09				5.91E-09	5.91E-09	5.91E-09	
Mercury and Compounds (Inorganic)			3.15E-06				3.15E-06	3.15E-06		
Carbon Tetrachloride (Tetrachloromethane)	2.09E-10		2.09E-10				2.09E-10	2.09E-10		
Ethylene Dibromide (1,2-Dibromoethane)										
Total	2.09E-10	5.59E-08	1.92E-05	2.64E-05	1.60E-05	1.60E-05	3.21E-06	1.92E-05	2.64E-05	0.00E+00

A/N: 0 **Application deemed complete date:** 08/24/22

6b. Hazard Index Chronic - Resident

HIC = [Q(ton/yr) * (X/Q) Resident * MP Chronic Resident * MWAF] / Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)												9.06E-04	
Toluene				7.37E-09						7.37E-09	7.37E-09	7.37E-09	
Isopropyl Alcohol (Isopropanol)				2.06E-07					2.06E-07		2.06E-07		
Xylenes (Mixed Isomers)						4.22E-09				4.22E-09		4.22E-09	
n-Hexane										6.06E-07			
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene	7.88E-10			7.88E-10	7.88E-10				7.88E-10		7.88E-10		
Methylene Chloride (Dichloromethane)			3.23E-07							3.23E-07			
Benzene							2.38E-05						
Perchloroethylene (Tetrachloroethylene)	9.19E-10								9.19E-10				
Vinyl Chloride (Chloroethylene)													
Trichloroethylene						6.57E-08				6.57E-08			
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)	2.86E-10			2.86E-10							2.86E-10		
Methyl Chloroform (1,1,1-Trichloroethane)										6.82E-09			
Ethylene Dichloride (1,2-Dichloroethane)	1.07E-08												
p-Dichlorobenzene	4.17E-09								4.17E-09	4.17E-09		4.17E-09	
Chlorobenzene	8.87E-11			8.87E-11					8.87E-11		8.87E-11		
Vinylidene Chloride (1,1-Dichloroethylene)	2.96E-08												
Carbon Disulfide				3.21E-11						3.21E-11	3.21E-11		
Carbonyl Sulfide										0.00E+00			
Chloroform	4.88E-10			4.88E-10					4.88E-10		4.88E-10		
Mercury and Compounds (Inorganic)				4.01E-05					4.01E-05	4.01E-05	4.01E-05		
Carbon Tetrachloride (Tetrachloromethane)	1.64E-09			1.64E-09						1.64E-09	1.64E-09		
Ethylene Dibromide (1,2-Dibromoethane)				2.50E-08							2.50E-08		
Total	4.87E-08	0.00E+00	3.23E-07	4.04E-05	7.88E-10	6.99E-08	2.38E-05	0.00E+00	4.03E-05	4.11E-05	4.04E-05	9.06E-04	0.00E+00

A/N: 0 **Application deemed complete date:** 08/24/22

6b. Hazard Index Chronic - Worker

HIC = [Q(ton/yr) * (X/Q) * MP Chronic Worker * MWAF] / Chronic REL

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)												5.27E-04	
Toluene				4.29E-09						4.29E-09	4.29E-09	4.29E-09	
Isopropyl Alcohol (Isopropanol)				1.20E-07					1.20E-07		1.20E-07		
Xylenes (Mixed Isomers)						2.46E-09				2.46E-09		2.46E-09	
n-Hexane										3.53E-07			
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene	4.59E-10			4.59E-10	4.59E-10				4.59E-10		4.59E-10		
Methylene Chloride (Dichloromethane)			1.88E-07							1.88E-07			
Benzene							1.39E-05						
Perchloroethylene (Tetrachloroethylene)	5.35E-10								5.35E-10				
Vinyl Chloride (Chloroethylene)													
Trichloroethylene						3.83E-08				3.83E-08			
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)	1.67E-10			1.67E-10							1.67E-10		
Methyl Chloroform (1,1,1-Trichloroethane)										3.97E-09			
Ethylene Dichloride (1,2-Dichloroethane)	6.24E-09												
p-Dichlorobenzene	2.43E-09								2.43E-09	2.43E-09		2.43E-09	
Chlorobenzene	5.16E-11			5.16E-11					5.16E-11		5.16E-11		
Vinylidene Chloride (1,1-Dichloroethylene)	1.72E-08												
Carbon Disulfide				1.87E-11						1.87E-11	1.87E-11		
Carbonyl Sulfide										0.00E+00			
Chloroform	2.84E-10			2.84E-10					2.84E-10		2.84E-10		
Mercury and Compounds (Inorganic)				1.28E-05					1.28E-05	1.28E-05	1.28E-05		
Carbon Tetrachloride (Tetrachloromethane)	9.53E-10			9.53E-10						9.53E-10	9.53E-10		
Ethylene Dibromide (1,2-Dibromoethane)				1.46E-08							1.46E-08		
Total	2.84E-08	0.00E+00	1.88E-07	1.29E-05	4.59E-10	4.07E-08	1.39E-05	0.00E+00	1.29E-05	1.34E-05	1.29E-05	5.27E-04	0.00E+00

6c. 8-hour Hazard Index Chronic - Resident **A/N:** 0 **Application deemed complete date:** 08/24/22

HIC 8-hr = [Q(ton/yr) * (X/Q) Resident * WAF Resident * MWAF] / 8-hr Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)													
Toluene													
Isopropyl Alcohol (Isopropanol)													
Xylenes (Mixed Isomers)													
n-Hexane													
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene													
Methylene Chloride (Dichloromethane)													
Benzene							2.38E-05						
Perchloroethylene (Tetrachloroethylene)													
Vinyl Chloride (Chloroethylene)													
Trichloroethylene													
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)													
Methyl Chloroform (1,1,1-Trichloroethane)													
Ethylene Dichloride (1,2-Dichloroethane)													
p-Dichlorobenzene													
Chlorobenzene													
Vinylidene Chloride (1,1-Dichloroethylene)													
Carbon Disulfide													
Carbonyl Sulfide										0.00E+00			
Chloroform													
Mercury and Compounds (Inorganic)				5.20E-06					5.20E-06	5.20E-06	5.20E-06		
Carbon Tetrachloride (Tetrachloromethane)													
Ethylene Dibromide (1,2-Dibromoethane)													
Total	0.00E+00	0.00E+00	0.00E+00	5.20E-06	0.00E+00	0.00E+00	2.38E-05	0.00E+00	5.20E-06	5.20E-06	5.20E-06	0.00E+00	0.00E+00

A/N: 0 **Application deemed complete date:** 08/24/22

6c. 8-hour Hazard Index Chronic - Worker

HIC 8-hr = [Q(ton/yr) * (X/Q) Worker * WAF Worker * MWAF] / 8-hr Chronic REL

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Hydrochloric Acid (Hydrogen Chloride)													
Toluene													
Isopropyl Alcohol (Isopropanol)													
Xylenes (Mixed Isomers)													
n-Hexane													
Methyl Ethyl Ketone (2-Butanone)													
Ethyl Benzene													
Methylene Chloride (Dichloromethane)													
Benzene							1.39E-05						
Perchloroethylene (Tetrachloroethylene)													
Vinyl Chloride (Chloroethylene)													
Trichloroethylene													
1,1,-Dichloroethane (Ethylidene Dichloride)													
Ethyl Chloride (Chloroethane)													
Methyl Chloroform (1,1,1-Trichloroethane)													
Ethylene Dichloride (1,2-Dichloroethane)													
p-Dichlorobenzene													
Chlorobenzene													
Vinylidene Chloride (1,1-Dichloroethylene)													
Carbon Disulfide													
Carbonyl Sulfide										0.00E+00			
Chloroform													
Mercury and Compounds (Inorganic)				3.02E-06					3.02E-06	3.02E-06	3.02E-06		
Carbon Tetrachloride (Tetrachloromethane)													
Ethylene Dibromide (1,2-Dibromoethane)													
Total	0.00E+00	0.00E+00	0.00E+00	3.02E-06	0.00E+00	0.00E+00	1.39E-05	0.00E+00	3.02E-06	3.02E-06	3.02E-06	0.00E+00	0.00E+00

APPENDIX C: NOISE CALCULATIONS

AMERESCO FORWARD LANDFILL UPGRADE PROJECT NOISE AND VIBRATION ASSESSMENT

San Joaquin County, California

May 18, 2023

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I&R Project: 20-140

INTRODUCTION

Ameresco Forward, LLC (Ameresco) is proposing to upgrade the existing Landfill Gas to Energy (LFGTE) facility at the Forward, Inc. Landfill (Forward Landfill). The Forward Landfill is an existing Class II waste disposal and resource recovery facility located near Manteca in San Joaquin County, California. The project would expand Ameresco's existing LFGTE at the Forward Landfill by building a new facility (using a combination of media beds and membranes) to treat the landfill gas to meet PG&E's Rule 21 pipeline quality requirements for renewable natural gas (RNG) from landfill gas (LFG), and to compress and transfer the RNG via pipeline to Pacific Gas and Electric Company (PG&E). The RNG plant expansion allows for continued beneficial reuse of LFG by producing RNG from the LFG currently generated at the landfill and flared to the atmosphere without any beneficial reuse. Such beneficial reuse is supported by the U.S. Environmental Protection Agency (EPA), through its Landfill Methane Outreach Program (LMOP), and by the California Energy Commission (CEC), which has identified LFG as a renewable energy source.

This report evaluates the project's potential to result in significant noise or vibration impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into two sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses the results of the ambient noise monitoring survey completed to document existing noise levels at receptors in the project vicinity; and 2) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, and provides a discussion of each project impact with respect to applicable significance thresholds.

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise - Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA DNL. Typically, the highest steady traffic noise level during the daytime is about equal to the DNL and nighttime levels are 10 dB lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12 to 17 dB with open windows. With standard construction and closed windows in good condition, the noise attenuation factor is around 20 dB for an older structure and 25 dB for a newer dwelling. Sleep and speech interference is therefore of concern when exterior noise levels are about 57 to 62 dBA DNL with open windows and 65 to 70 dBA DNL if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, DNL or L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception of vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk of damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is in a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

Regulatory Background

The State of California and San Joaquin County have established regulatory criteria that are applicable in this assessment. The California Environmental Quality Act (CEQA) Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

State CEQA Guidelines. The CEQA contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

(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, if the project would expose people residing or working in the project area to excessive noise levels.

Checklist items (a) and (b) would be applicable to the project. The project does not propose any noise sensitive land uses; therefore, the project would not expose people residing or working in

the project area to excessive aircraft noise levels. Checklist item (c) is not carried further in this analysis.

San Joaquin County General Plan. A goal of the San Joaquin General Plan Public Health and Safety Element is to protect county residents from the harmful and nuisance effects of exposure to excessive noise. The following noise goals and policies would be applicable to the Project:

TM-7.7 Truck Traffic Noise Minimization. The County shall seek to minimize noise and other impacts of truck traffic, deliveries, and staging in residential neighborhoods.

Noise Level Standards: Table PHS-1 summarizes the noise level standards for noise-sensitive uses (e.g., residential development, lodging, hospitals, nursing homes, schools, day care centers) at outdoor activity areas affected by non-transportation noise sources in the County. Table PHS-2 presents the noise and land use compatibility standards for various land uses. In addition to these standards, the policies in this section address ways to reduce or eliminate existing and future conflicts between land uses and noise.

TABLE PHS-1 NON-TRANSPORTATION NOISE LEVEL PERFORMANCE STANDARDS FOR NOISE SENSITIVE USES AT OUTDOOR ACTIVITY AREAS[1]

Noise Level Descriptor	Daytime[2] (7 am to 10 pm)	Nighttime[2] (10 pm to 7am)
Hourly L_{eq}, dBA	50	45
Maximum Level, L_{max}, dBA	70	65

Notes: These standards apply to new or existing residential areas affected by new or existing non-transportation sources.
1 Where the location of outdoor activity areas is unknown or is not applicable, the noise standard shall be applied at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards shall be applied on the receiving side of noise barriers or other property line noise mitigation measures.
2 Each of the noise level standards specified shall be reduced by 5 dB for impulsive noise, single tone noise, or noise consisting primarily of speech or music.

TABLE PHS-2 MAXIMUM ALLOWABLE NOISE EXPOSURE FROM TRANSPORTATION NOISE SOURCES

Noise Sensitive Land Use Types	Outdoor Activity Areas[1] (dBA, L_{dn})	Interior Spaces (dBA L_{dn})
Residential	65	45
Administrative Office	-	45
Child Care Services and Centers	-	45
Community Assembly	65	45
Cultural and Library Services	-	45
Educational Services	-	45
Funeral and Interment Services	65	45
Lodging Services	65	45
Medical Services	65	45
Professional Services	-	45
Public Services (excluding hospitals)	-	45
Public Services (hospitals)	65	45
Recreation – Indoor Spectator	-	45
Religious Assembly	65	45

Notes: These standards apply to new or existi65ng residential areas affected by new or existing non-transportation sources.
1 Where the location of outdoor activity areas is unknown or is not applicable, the noise standard shall be applied at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards shall be applied on the receiving side of noise barriers or other property line noise mitigation measures.

PHS-9.1 Noise Standards for New Land Uses. The County shall require new development to comply with the noise standards shown in Tables PHS-1 and PHS-2 through proper site and building design, such as building orientation, setbacks, barriers, and building construction practices.

PHS-9.2 Airport Noise Compatibility Criteria. The County shall require new development within airport areas of influence be consistent with the Airport Noise Compatibility Criteria in the Airport Land Use Compatibility Plan.

PHS-9.4 Acceptable Vibration Levels. The County shall require construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby vibration-sensitive uses based on FTA criteria.

PHS-9.6 Enforcement of State and Federal Noise Regulations. The County shall continue to enforce State and Federal noise laws regarding vehicle operation, equipment, and building insulation.

San Joaquin County Municipal Code. The San Joaquin County Municipal Code contains the following regulations that are applicable to the Project:

9-1025.9M - NOISE.
The regulations concerning noise shall be as specified in the development title with the following modifications:

a) Standards for Commercial and Industrial Uses. For new commercial uses, industrial uses or utilities, the exterior, non-transportation noise level performance standards specified in Table 9-1025.9M shall be applicable.

TABLE 9-1025.9M EXTERIOR NON-TRANSPORTATION NOISE LEVEL STANDARDS

Noise Level Descriptor	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7am)
Hourly L_{eq}, dBA	55	50
Note: Each of the above noise levels may be lowered by five (5) dB for simple tone noises or for noises consisting primarily of speech or music.		

9-1025.9 - NOISE. All uses and property shall be subject to the following provisions concerning noise levels:

b) Stationary Noise Sources.
   ii. Proposed projects that will create new stationary noise sources or expand existing stationary noise sources shall be required to mitigate the noise levels from these stationary noise sources so as not to exceed the noise level standards specified in Table 9-1025.9, Part II.

c) Exemptions. The following shall be exempt from the provisions of this Chapter:
   ii. Any mechanical device, apparatus or equipment used, related to, or connected with, emergency activities or emergency work;
   iii. Noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day;
   iv. Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities;
   v. Noise sources associated with the collection of waste or garbage;
   vi. Any activity whose regulation has been preempted by State or Federal law.

d) Acoustical Study. The Review Authority shall require the preparation of an acoustical study in instances where it has determined that a project may expose existing or proposed noise sensitive land uses to noise levels exceeding the noise standards specified in Table 9-1025.9. This determination shall be based on the existing or future sixty-five (65) dB L_{dn} noise contour in the General Plan, the proximity of new noise sensitive land uses to known noise sources, or the knowledge that a potential for adverse noise impacts exists. The study shall be paid for by the applicant and shall be prepared by a person or persons selected by the Director. The Director shall select the consultant from the County's consultant list. The acoustical study shall include the following information:
   i. A general description of the project, with appropriate maps, and the noise sources of concern;
   ii. A description of the methodology that will be used to assess noise impacts, including a listing of all assumptions and data used in any computer models.
      A. Computer models that will be used for noise predictions shall be standard versions approved by the FHWA, FAA, Caltrans, or other government agencies.

B. For traffic noise studies, the computer models, SOUND32 or other proprietary models based on the 1978 "FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108)" shall be used. The FHWA's new "Traffic Noise Model" (TNM) shall be used after its phase in date. For aircraft noise studies, the latest version of the FAA's "Integrated Noise Model" (INM) shall be used.
C. If standard government approved models do not exist (e.g., railroad and industrial noise sources), a description of the model shall be provided.

iii. A description of existing and future noise levels together with a comparison of these noise levels to the noise level standards specified in Table 9-1025.9.
iv. Recommended mitigation measures to achieve compliance with the standards specified by Table 9-1025.9 (i.e., noise barriers, site design, setbacks, equipment modification, structure sound proofing), or a detailed explanation stating why mitigation is infeasible.

e) Measurement. When noise level measurements are conducted, sound level meters meeting Type 1 (precision) or Type 2 (general purpose) sound level meter/microphone combinations shall be used.
i. Sound level meters shall be properly calibrated before use and used according to the manufacturer's instructions;
ii. All measurements shall be in terms of A-weighted decibels using slow meter response, except for impulsive noise which shall be measured using fast meter response.
iii. Measurements shall include sufficient sampling periods and locations to adequately describe local conditions and significant noise sources.

f) Prohibited Activities. The outdoor operation of any industrial, commercial, or residential property maintenance tool or equipment powered by an internal combustion engine or electric motor including, but not limited to, leaf blower, chainsaw, lawn mower, hedger, and vacuum cleaner is prohibited within 500 feet of a residence located in a residential zone between the hours of 9:00 p.m. and 8:00 a.m.

TABLE 9-1025.9 MAXIMUM ALLOWABLE NOISE EXPOSURE
PART II STATIONARY NOISE SOURCES

Noise Level Descriptor	Outdoor Activity Areas[1] Daytime[2] (7 am to 10 pm)	Outdoor Activity Areas[1] Nighttime[2] (10 pm to 7am)
Hourly L_{eq}, dBA	50	45
Maximum Level, L_{max}, dBA	70	65

Notes: These standards apply to new or existing residential areas affected by new or existing non-transportation sources.
1 Where the location of outdoor activity areas is unknown or is not applicable, the noise standard shall be applied at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards shall be applied on the receiving side of noise barriers or other property line noise mitigation measures.
2 Each of the noise level standards specified shall be reduced by 5 dB for impulsive noise, single tone noise, or noise consisting primarily of speech or music.

9-1022.5 - NOISE ATTENUATION WALLS.
Walls, fences, berms, and/or landscaping for the purpose of noise attenuation may be required in any zone when adjacent to a high noise generator such as a major roadway or railroad. Noise attenuation requirements shall be developed in response to the noise level and source affecting specific property. Where noise attenuation walls are required, height and yard restrictions for walls may be waived by the Director as required for effective noise reduction.

Existing Noise Environment

Upgrades to the LFGTE facility are proposed to be located in the northwest portion of Forward Landfill, north of the location of the former Covanta LFGTE. The site is located in an agricultural area. The topography of the site and vicinity is essentially flat, at an approximate elevation of 40-ft above mean sea level. The site would be graded to keep the facility above the 100-year flood elevation and to provide suitable foundation support for the equipment and access roads. Fill material would be obtained from onsite excavations. Excess excavated soil would be used for general landfill operations.

The proposed pipeline from the new compressor plant to the conditioning plant crosses the North Fork of the South Branch of Littlejohns Creek just west of the existing Ameresco LFGTE facility and then parallels the north side of the creek, just south of the existing Forward Landfill soil borrow pit. The proposed conditioning plant site is adjacent to, and just west of, a Forward Landfill borrow pit, which provides earthen cover to facilitate landfill operations. The North Fork of the South Branch of Littlejohns Creek is located south of the proposed conditioning plant site. To the north and west (across Newcastle Road) are agricultural lands. Further north is the N. A. Chaderjian Youth Correctional Facility. Stockton Airport is about one mile to the west. The nearest residences (other than the correctional facility) are about 2,000 feet north of the site, on Newcastle Road.

A noise monitoring survey was performed to quantify and characterize ambient noise levels at the site and in the project vicinity between Tuesday, October 6, 2020 and Thursday, October 8, 2020. The monitoring survey included three long-term noise measurements to quantify the daily trend in noise levels at noise sensitive locations near the project site (LT-1 and LT-2) and of existing on-site equipment (LT-3). Figure 1 shows the locations of the long-term noise measurements. Attended short-term measurements were made to establish the noise levels generated by equipment at the existing Ameresco LFGTE plant. The primary noise sources at noise sensitive areas in the vicinity of the project site are traffic on local roadways, agricultural operations, and occasional aircraft and helicopter overflights. Noise levels from the existing LFGTE plant are not audible at the nearest noise sensitive land uses. The daily trends in noise levels at the long-term measurement locations are shown in Appendix A. A summary of the short-term measurement results is shown in Table 4.

Long-term noise measurement LT-1 was made along Newcastle Road, southwest of the correctional facility. The primary noise sources at this location included intermittent local traffic, farming operations and occasional aircraft overflights. Hourly average noise levels at this location ranged from 45 to 64 dBA L_{eq} with similar levels during both daytime and nighttime periods. The day-night average noise level on Wednesday, October 7, 2020 was 65 dBA L_{dn}.

Long-term noise measurement LT-2 was made along Austin Road, adjacent to the residence located north of the existing Ameresco LFGTE plant. Noise from the existing plant was not audible at this location. The primary noise sources at this location included traffic on Austin Road and farming operations. Rumble strips are placed in the median and at the edge of Austin Road, resulting in increased noise levels during rumble strip strikes. Hourly average noise levels at this location ranged from 61 to 75 dBA L_{eq} during the day and from 53 to 74 dBA L_{eq} at night. The day-night average noise level on Wednesday, October 7, 2020 was 75 dBA L_{dn}.

Long-term noise measurement LT-3 was made northeast of the existing Ameresco LFGTE plant. The ambient noise environment at this site was generated primarily by existing LFGTE operations, with intermittent truck passbys generating maximum instantaneous noise levels. LFGTE plant operations generated a steady noise level of 66 to 67 dBA L_{eq} during daytime and nighttime hours, resulting in a day-night average noise level of 73 dBA L_{dn}.

Additional on-site measurements were made to establish the noise levels generated by existing equipment at the LFGTE plant. Noise levels were measured at two to three setbacks from each primary noise generating source and outside the plant facility with the doors in the closed position. We understand that the doors of this facility remain closed. Figure 2 shows a close-up aerial image of the existing power plant and on-site noise monitoring locations. The results of the on-site measurements are summarized in Table 4.

FIGURE 1 Long-term Noise Monitoring Locations

FIGURE 2 Ameresco LFGTE Plant On-Site Equipment Noise Measurements

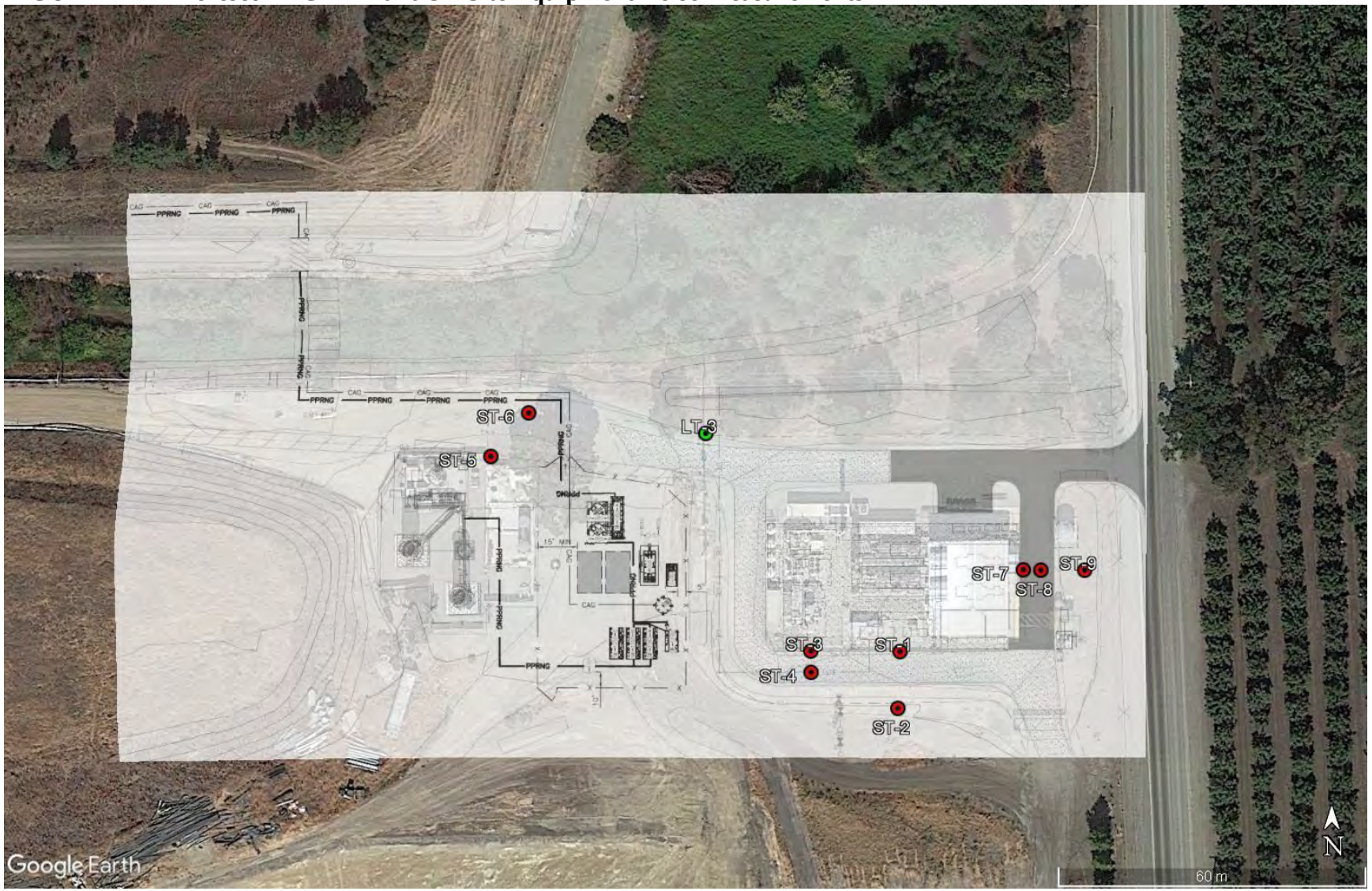


TABLE 4 Noise levels Generated by Existing On-Site LFGTE Plant Equipment

Existing LFGTE Equipment	Noise Level at Distance from Source, L_{eq}		
	at Distance 1	at Distance 2	at Distance 3
Engines (ST-1, ST-2)	80 dBA (43 feet)	73 dBA (85 feet)	-
Compressor (ST-3, ST-4)	81 dBA (8 feet)	76 dBA (16 feet)	-
Turbines (Blowers) (ST-5, ST-6)	70 dBA (36 feet)	68 dBA (72 feet)	-
Outside Plant (Doors Closed) (ST-7, ST-8, ST-9)	87 dBA (8 feet)	87 dBA (16 feet	81 dBA (43 feet)

IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA and provides a discussion of each project impact. Significant impacts are not expected as a result of the project; therefore, mitigation measures are not proposed.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise and vibration resulting from the project:

1. **Temporary or Permanent Noise Increases in Excess of Established Standards.** A significant impact would be identified if project construction or operations would result in a substantial temporary or permanent increase in ambient noise levels at sensitive receivers in excess of the local noise standards contained in the San Joaquin County General Plan or Municipal Code, as follows:

    - Operational Noise in Excess of Standards. A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards. The San Joaquin County General Plan and Municipal Code limit non-transportation noise generated at noise sensitive outdoor use areas to 50 dBA L_{eq} during daytime hours (7:00 am to 10:00 pm) and 45 dBA L_{eq} during nighttime hours (10:00 pm to 7:00 am).

    - Permanent Noise Increase. A significant impact would be identified if traffic or stationary noise generated by the project would substantially increase noise levels at sensitive receivers in the vicinity. A substantial increase would occur if: a) the noise level increase is 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL, or b) the noise level increase is 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater.

    - Temporary Noise Increase. The San Joaquin County Municipal Code exempts noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m.

2. **Generation of Excessive Groundborne Vibration.** A significant impact would be identified if the construction of the project would generate groundborne vibration levels exceeding 0.3 in/sec PPV at older residential structures and 0.5 in/sec PPV at modern

structures, as such levels would have the potential to result in cosmetic damage to buildings (see Table 3).

Impact 1: **Permanent or Temporary Noise Increases in Excess of Established Standards.** Permanent project operations and temporary construction activities would not result in a substantial noise level increase or expose existing noise-sensitive land uses to noise levels in excess of the applicable noise thresholds. **This is a less-than-significant impact.**

Permanent Noise Increases from On-Site Operational Noise

The San Joaquin County General Plan and Municipal Code limit non-transportation noise received at noise sensitive outdoor use areas to 50 dBA L_{eq} during daytime hours (7:00 am to 10:00 pm) and 45 dBA L_{eq} during nighttime hours (10:00 pm to 7:00 am). A substantial noise increase would occur if: a) the noise level increase is 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL, or b) the noise level increase is 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater.

The new RNG conditioning plant and proposed equipment to be added at the existing compression facility will operate 24 hours per day, 7 days a week in conjunction with the existing plant, except during maintenance periods. Both facilities are designed to operate automatically with only minor adjustments by operations personnel. Proposed noise generating equipment include compressors, coolers, vacuum pumps, a thermal oxidizer, and feed blowers. The following is a list of noise control measures incorporated into the project:

- Construct one 25-foot high wall within the new RNG conditioning plant site. AIL Silent Protector® brand soundwalls placed at the locations shown below in Figure 4 would adequately shield nearby noise-sensitive uses from excessive noise generated by the new RNG conditioning plant.

- Install acoustic insulation on new feed blowers to be located at the existing site. As designated by manufacturer Shannon's specifications, the blanket insulation shall provide a minimum noise reduction of 8 dBA to each unit.

Table 5 lists the provided noise levels and number of units of all noise generating equipment proposed for the sites.

TABLE 5 Noise Levels for Proposed Equipment at 3 feet (dBA L_{eq})

Site	Equipment (with Acoustical Shrouding)	Number of Units	Noise Level per Unit
Removal/ Compression Facility	Feed Blowers	3	98
	Raw Gas Ambient Cooler	1	91
New RNG Conditioning Facility	Enclosed Flare	1	85[1]
	Feed Compressor Aftercooler	1	79[1]
	Siloxane Removal System	1	85[1]
	Deoxo Air Cooler	1	85[1]
	Transformers	1	85[1]
	Nitrogen Supply System	1	90[1]
	Recycle Compressor	2	99[1]
	Chiller	1	100[1]
	Control Room	2	77[2]
	Power Distribution Center	2	77[2]
	Glycol Coolers	3	83[1]
	Vacuum Compressor	3	99[1]
	Booster Compressor	1	93[1]
	EQ PSA Vac Comp A/C	1	85[1]
	Booster Comp A/C	1	85[1]
	EQ PSA Skid	1	90[1]
	Adsorb Vessel	5	99[1,3]
	Recycle Comp A/C	1	85[1]
	Feed Compressor	3	93[1]
	Deoxo/Dehydration System	1	75[1]
	Flare Gas Conditioning Skid	1	90[1]
	Thermal Oxidizer Unit	1	86[1]

[1] Noise levels at 3 feet from source
[2] Noise levels at 10 feet from source
[3] Noise levels are generated from one vessel at a time under cyclic operating conditions.

The closest noise sensitive land uses are rural residences located 2,000 feet south and 3,000 feet north of the existing compression facility, represented by R9 and R10 (see Figure 3) and the N. A. Chaderjian Youth Correctional Facility, represented by R1 through R8 (see Figure 3), located about 650 feet from the northern edge of the new RNG Conditioning Facility. SoundPLAN Version 8.2 was used to calculate noise levels at the nearest noise sensitive locations, considering the geometry and acoustic characteristics of the proposed noise generating equipment and the topography of the area. Calculations assume the simultaneous operation of all proposed equipment. These results also include the effect of atmospheric attenuation and ground reflection/absorption. Neutral environmental conditions are assessed for CEQA purposes (i.e., no wind or temperature gradients). Noise levels resulting from project operations at the nearest receptors are shown in tabular form in Table 6 for Existing + Proposed Operations, Existing + Proposed Operations with acoustical insulation and a 20-foot-tall noise barrier, and Existing + Proposed Operations with acoustical insulation and a 25-foot tall noise barrier. The results for Existing + Proposed Operations with acoustical insulation and a 25-foot-tall Barrier is shown graphically in Figure 3. The specific location of the barrier is shown in Figure 4.

TABLE 6 Noise levels Generated by Project Equipment (dBA L_{eq})[1]

Receiver	Existing + Proposed Operations	Existing + Proposed Operations with acoustical insulation and a 20 foot Barrier	Existing + Proposed Operations with acoustical insulation and a 25 foot Barrier
R1	**48.2**	**45.6**	43.9
R2	**50.3**	**48.7**	**46.6**
R3	**52.9**	44.2	42.1
R4	**51.3**	42.0	39.7
R5	**47.6**	39.8	38.5
R6	**47.3**	41.0	39.0
R7	44.3	42.3	40.9
R8	41.8	40.9	39.9
R9	37.7	39.1	38.8
R10	41.3	43.7	43.7

[1] Highlighting indicates noise levels exceeding nighttime threshold of 45 dBA L_{eq}.

As shown in Table 6 operational L_{eq} due to daily activities of both the existing and the proposed equipment at the RNG conditioning plant would not exceed the daytime or nighttime thresholds with the inclusion of acoustical insulation and a 25-foot-high noise barrier (see Figure 4) at receptors R1 and R3-R10. At Receptor R2, the County's nighttime noise threshold is exceeded, however the outdoor use it represents would not be utilized during nighttime hours.

Receptors R1 through R8 represent the outdoor uses at N. A. Chaderjian Youth Correctional Facility and would only be used during daytime hours (7:00 a.m. – 10:00 p.m.). Noise levels at building facades with the inclusion of acoustical insulation and a 25-foot-high noise barrier would range from 35 – 47 dBA L_{eq}. Standard construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation. Standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. Assuming windows to be partially open for ventilation, daily operations at the RNG conditioning plant would expose occupants in the buildings facing the data center to interior noise levels up to 32 dBA L_{eq} and should not disturb sleep.

FIGURE 3 Noise Contours Generated by Existing and Proposed Gas Processing Plant Equipment with acoustical insulation and a 25-foot Tall Noise Barrier

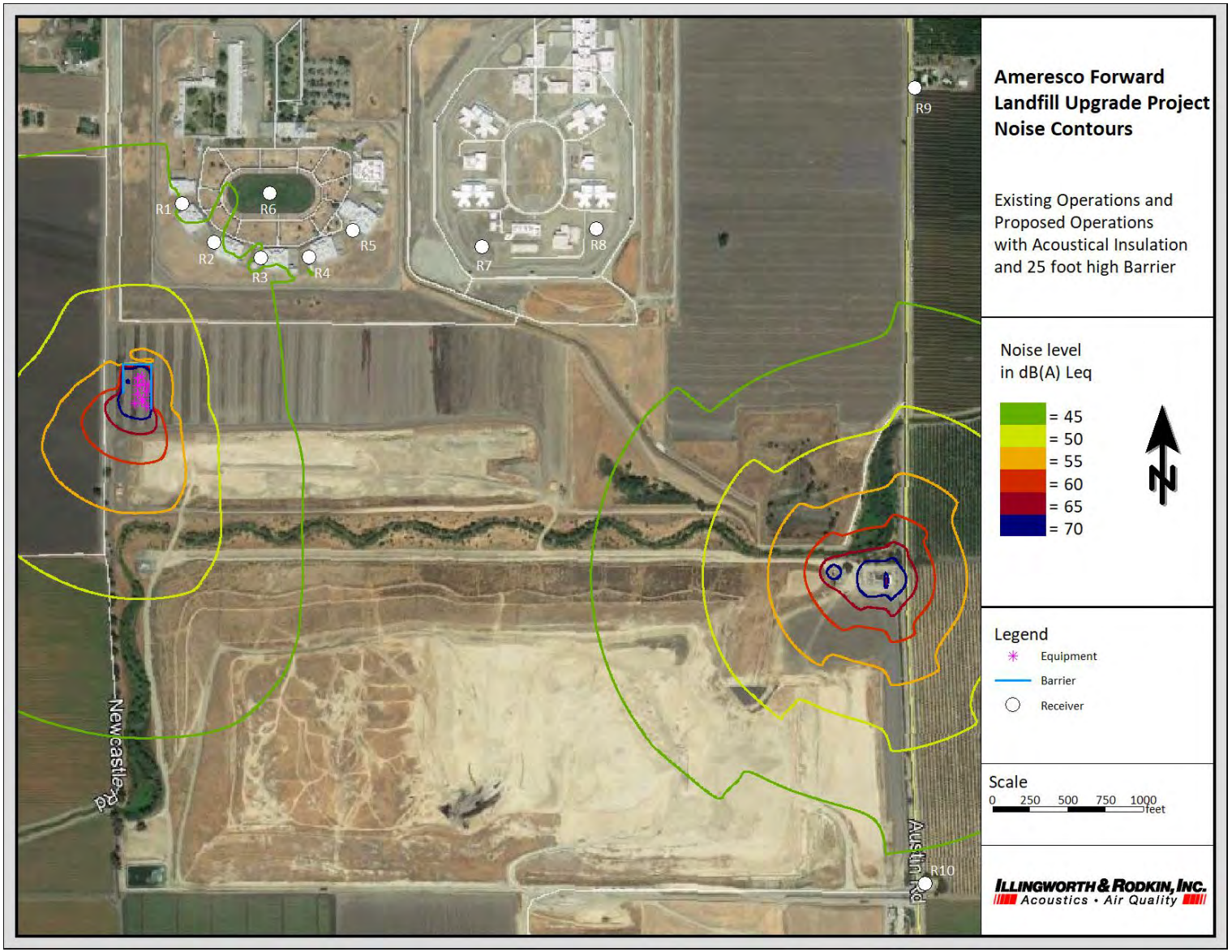


FIGURE 4 Location on Site Plan of 25-foot Noise Barrier

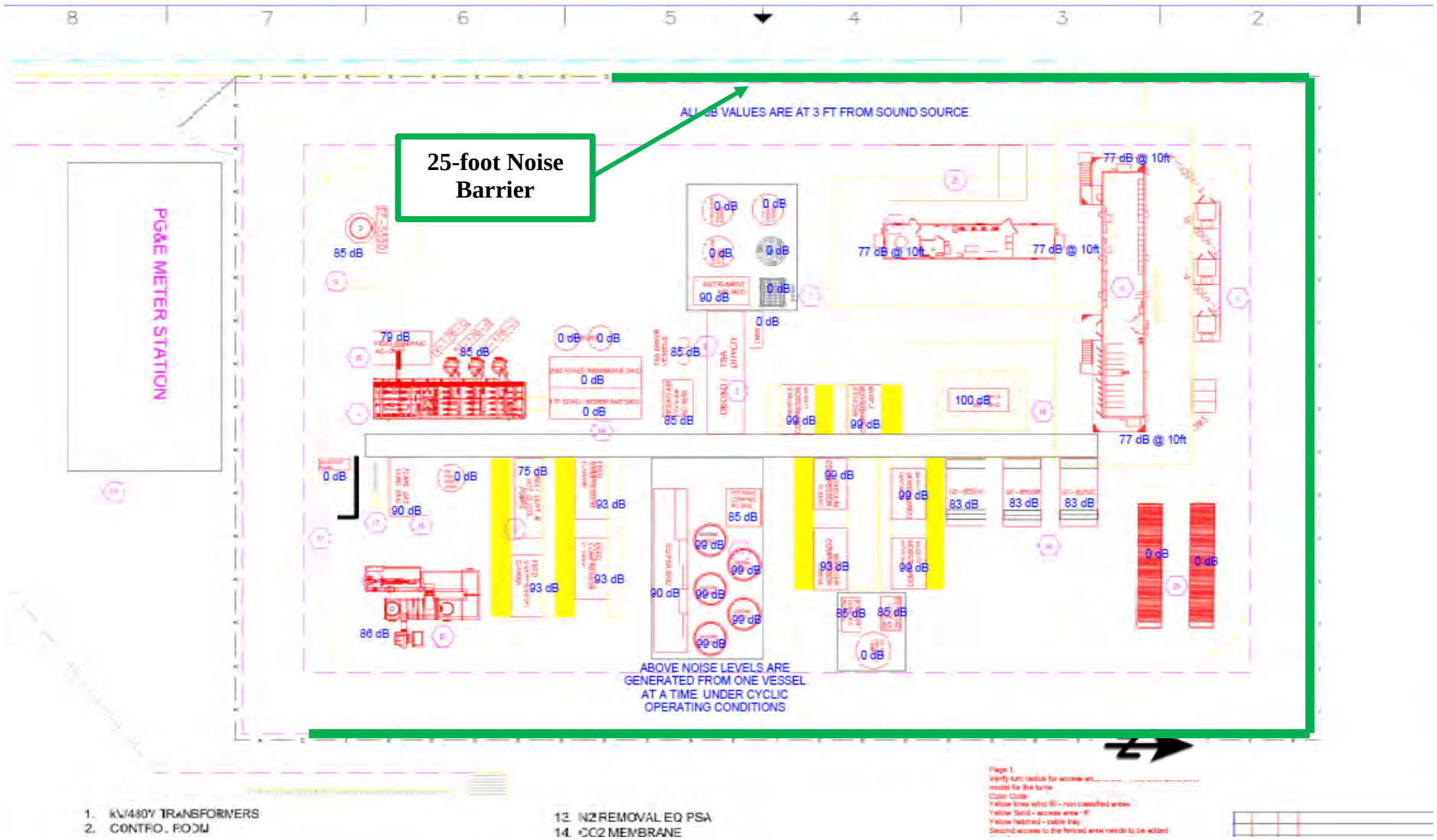


Table 7 shows existing ambient and calculated DNL noise levels resulting from proposed gas processing plant equipment, with all equipment operating simultaneously 24-hr/day, construction of the 25-foot noise barrier as described above. Ambient DNL levels are based on noise measurements and observations made during the noise monitoring survey.

TABLE 7 Calculated Increase in DNL Resulting from Project Operations[1]

Receiver	Ambient DNL, dBA	Project Generated DNL, dBA[1]	Ambient + Project DNL, dBA	DNL Increase, dBA
R1	50.0	50.2	53.2	3.2
R2	50.0	53.0	54.8	4.8
R3	50.0	48.5	52.3	2.3
R4	50.0	46.1	51.5	1.5
R5	50.0	44.9	51.2	1.2
R6	50.0	45.4	51.3	1.3
R7	50.0	47.3	51.9	1.9
R8	50.0	46.3	51.5	1.5
R9	69.0	45.2	69.0	0.0
R10	69.0	50.1	69.0	0.0

1 Assumes continuous simultaneous operation of all equipment, 24-hr/day, with acoustical insulation and a 25-foot high noise barrier.

As indicated in Table 7, project operations would result in DNL noise levels increases of 0.0 dBA in areas where existing future noise levels would exceed 60 dBA DNL (R9 and R10) and from 1.2 to 4.8 dBA where future noise levels would remain below 60 dBA DNL (R1 through R8).

Project generated noise levels would comply with the General Plan and Municipal Code noise limits and noise increases at all receptors would be below the appropriate noise threshold used to assess the potential for significant permanent noise impacts. **This is a less-than-significant impact** with inclusion of acoustical insulation and a 25-foot tall barrier, as described above**.**

Permanent Noise Increases from Project Traffic

The facility will be staffed by 2 operators who will be at the facility from approximately 8 am to 5 pm. One or two additional persons may assist with maintenance work, which typically occurs once per week. An addition of up to 8 vehicle trips per day (4 arriving and 4 departing) would not measurably change traffic noise levels generated along the surrounding roadway network. Therefore, traffic noise increases are not anticipated. **This is a less-than-significant impact.**

Temporary Noise Increases from Project Construction

San Joaquin County exempts noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m.

The proposed project would include the construction of the new RNG conditioning plant site and installation of a new pipeline from the existing site, north along Austin Road to Arch Airport Road and then west along Arch Airport Road. Minimal construction would occur to install additional

equipment at the existing facility. Activities needed to construct the new facility include site grading (10 days) and plant construction (76 days). Installation of the pipeline is anticipated to take 90 days to complete; however, pipeline installation would be anticipated to occur for relatively short periods of time in any specific location as construction proceeds along the project's alignment. Pile driving, blasting, and helicopter use, which generate high noise levels, are not anticipated as methods of construction.

Construction noise varies greatly depending on the construction activity performed, type and specific model of equipment, and the condition of equipment used. Typical noise levels for different construction equipment at a distance of 50 feet are shown in Table 8. Most demolition and construction noise ranges from 80 to 90 dBA at 50 feet from the source. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, the distance between construction noise sources and noise-sensitive receptors, any shielding provided by intervening structures or terrain, and ambient noise levels. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), when construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction durations last over extended periods of time.

The closest noise sensitive area to the new facility is the N. A. Chaderjian Youth Correctional Facility, with the fence line located about 780 feet from the center of the site. Construction noise levels were calculated at a distance of 780 feet, based on a list of construction equipment anticipated at the site. Construction noise levels at the fence line of the correctional facility are anticipated to be 69 dBA L_{eq} during site grading (10 days), 62 dBA L_{eq} during underground work (25 days), 64 dBA L_{eq} during equipment setting (1 day), and 61 dBA L_{eq} during aboveground work (50 days). Construction noise levels would be about 3 dBA quieter at the nearest hardscape area. Noise levels would be lower at more distant and/or shielded receptor locations. Construction would not be anticipated to cause sleep or speech interference if conducted within allowable hours.

A few rural residences are located along the pipeline alignment. Construction of the new pipelines would move along the alignment, with pipeline construction at any given location occurring over a period of approximately 5 to 10 days. Therefore, although noise levels could exceed ambient levels by as much as 20 dBA during periods of construction located nearest residences, construction would not be anticipated to cause sleep or speech interference if conducted within allowable hours and would occur over a short duration.

This is a less-than-significant impact.

Mitigation Measure 1: None required.

TABLE 8 Construction Equipment 50-foot Noise Emission Levels (dBA)

Equipment Category	$L_{eq}^{1,2}$	L_{max}^{1}	Equipment Category	$L_{eq}^{1,2}$	L_{max}^{1}
Air Hose	93	100	Horizontal Bore Drill	87	88
Air-Operated Post Driver	83	85	Impact Pile Driver	99	105
Asphalt Distributor Truck (Asphalt Sprayer)	-	70	Impact Wrench	68	72
Auger Drill	88	101	Jackhammer	91	95
Backhoe	76	84	Jig Saw	92	95
Bar Bender	66	75	Joint Sealer	-	74
Blasting (Abrasive)	100	103	Man Lift	72	73
Blasting (Explosive)	83	93	Movement Alarm	79	80
Chainsaw	79	83	Mud Recycler	73	74
Chip Spreader	-	77	Nail Gun	70	74
Chipping Gun	95	100	Pavement Scarifier (Milling Machine)	-	84
Circular Saw	73	76	Paving – Asphalt (Paver, Dump Truck)	-	82
Compactor (Plate)	-	75	Paving – Asphalt (Paver, MTV, Dump Truck)	-	83
Compactor (Roller)	82	83	Paving – Concrete (Placer, Slipform Paver)	87	91
Compressor	66	67	Paving – Concrete (Texturing/Curing Machine)	73	74
Concrete Batch Plant	87	90	Paving – Concrete (Triple Roller Tube Paver)	85	88
Concrete Grinder	-	97	Power Unit (Power Pack)	81	82
Concrete Mixer Truck	81	82	Pump	73	74
Concrete Pump Truck	84	88	Reciprocating Saw	64	66
Concrete Saw	85	88	Rivet Buster	100	107
Crane	74	76	Rock Drill	92	95
Directional Drill Rig	68	80	Rumble Strip Grinding	-	87
Dozer	90	96	Sander	65	68
Drum Mixer	66	71	Scraper	-	92
Dump Truck (Cyclical)	82	92	Shot Crete Pump/Spray	78	87
Dump Truck (Passby)	-	73	Street Sweeper	-	81
Excavator	76	87	Telescopic Handler (Forklift)	-	88
Flatbed Truck	-	74	Vacuum Excavator (Vac-Truck)	86	87
Front End Loader (Cyclical)	72	81	Ventilation Fan	62	63
Front End Loader (Passby)	-	71	Vibratory Concrete Consolidator	78	80
Generator	67	68	Vibratory Pile Driver	99	105
Grader (Passby)	-	79	Warning Horn (Air Horn)	94	99
Grinder	68	71	Water Spray Truck	-	72
Hammer Drill	72	75	Welding Machine	71	72
Hoe Ram	92	99			

Notes: 1 Noise levels apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.
2 Noise levels of mobile equipment vary as the proximity of the equipment changes. Therefore, only maximum instantaneous noise levels (L_{max}) are provided.
Source: Project 25-49 Data, National Cooperative Highway Research Program, October 2018.

Impact 2: **Generation of Excessive Groundborne Vibration due to Construction.** Construction-related vibration levels would not exceed the appropriate vibration thresholds at the nearest structures. **This is a less-than-significant impact.**

For structural damage, the California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV at which there is a risk of damage to new residential and modern commercial/industrial structures, 0.3 in/sec PPV at which there is a risk of damage to older residential structures, and a conservative limit of 0.25 in/sec PPV at which there is a risk of damage to historic and some old buildings (see Table 3).

Construction activities would include site clearing, earthwork, construction of the compressor plant and new RNG conditioning plant and installation of a pipeline along Austin Road and Arch Road. Construction activities at the existing facility site would be minimal. The nearest structures to the new RNG conditioning plant site are N. A. Chaderjian Youth Correctional Facility structures, located as close as 860 feet north of the new RNG conditioning plant site. The nearest structures to the pipeline installation along Austin Road and Arch Road are rural residential structures, located 55 to 160 feet from pipeline installation activities. The 0.5 in/sec PPV vibration limit would be applicable to the correctional facility structures and the 0.3 in/sec PPV threshold would be applicable to the rural residential structures.

Pile driving and blasting, which can cause excessive vibration, are not anticipated as methods of construction. Table 9 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet (excluding pile driving) and at distances representative of the nearest structures to the project site. Project construction activities may generate substantial vibration in the immediate vicinity of work areas, but vibration levels would vary at off-site receptor locations depending on distance from the source of the vibration, soil conditions, construction methods, and equipment used.

TABLE 9 Vibration Source Levels for Construction Equipment

Equipment	PPV (in/sec) at Distance			
	25 ft. (Reference)	55 ft	160 ft	860 ft
Vibratory Roller	0.210	0.088	0.027	0.004
Hoe Ram	0.089	0.037	0.012	0.002
Large bulldozer	0.089	0.037	0.012	0.002
Loaded trucks	0.076	0.032	0.010	0.002
Jackhammer	0.035	0.015	0.005	0.001
Small bulldozer	0.003	0.001	<0.001	<0.001

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018.

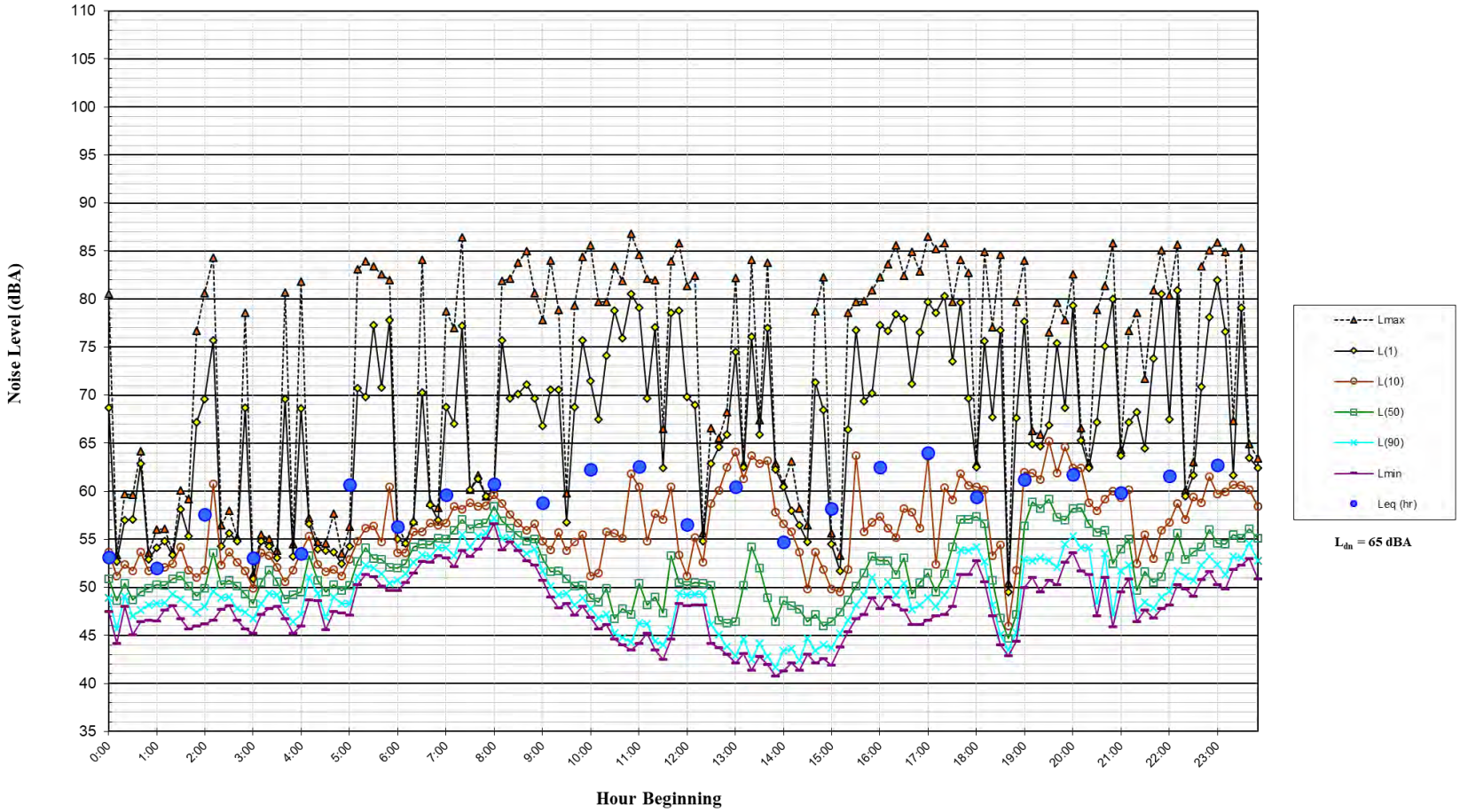
As shown in Table 9, vibration levels from project construction would be well below the vibration limits at the nearest structures. **This is a less-than-significant impact.**

Mitigation Measure 2: **None required.**

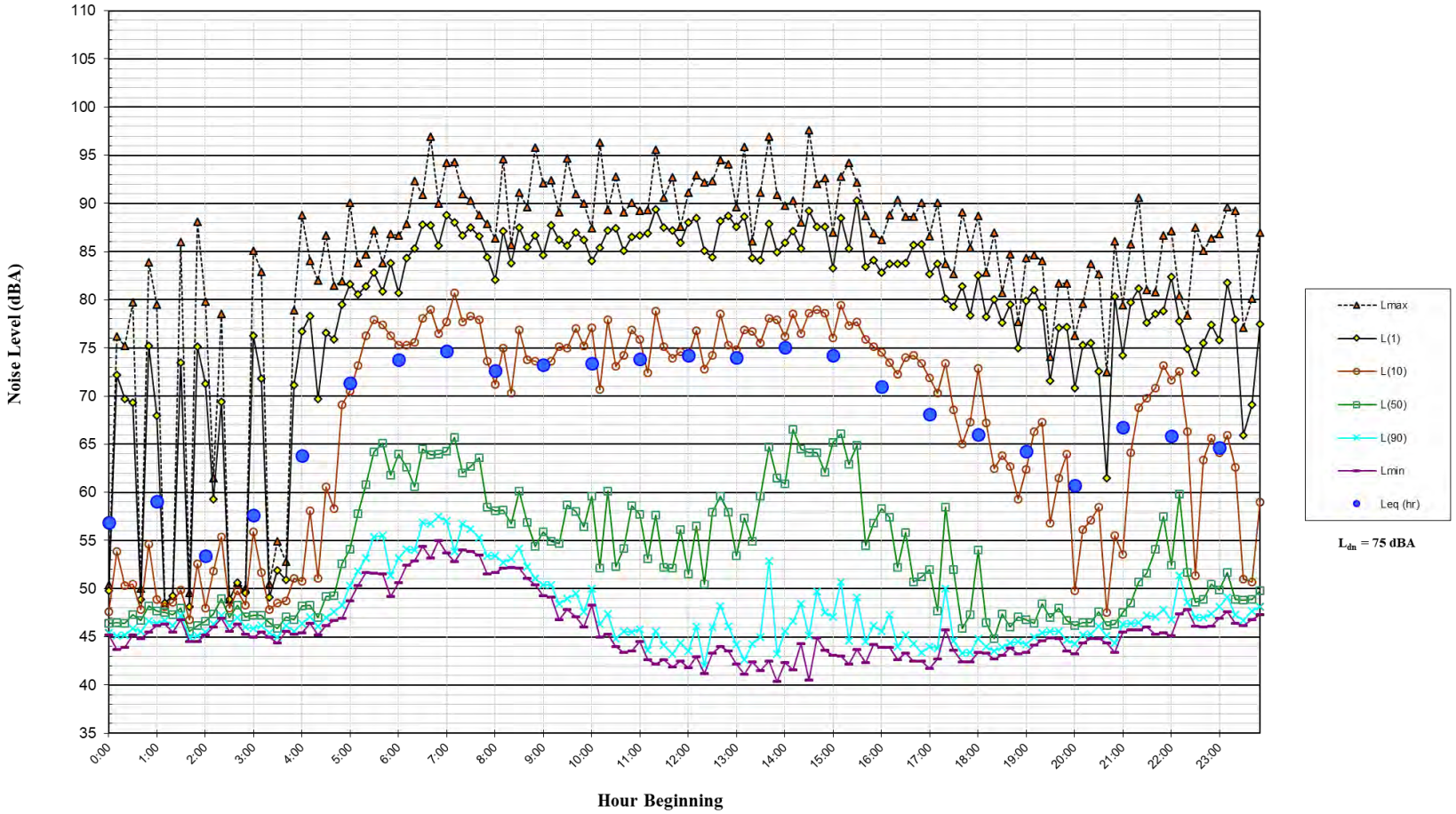
APPENDIX A

Long-term Noise Measurement Results

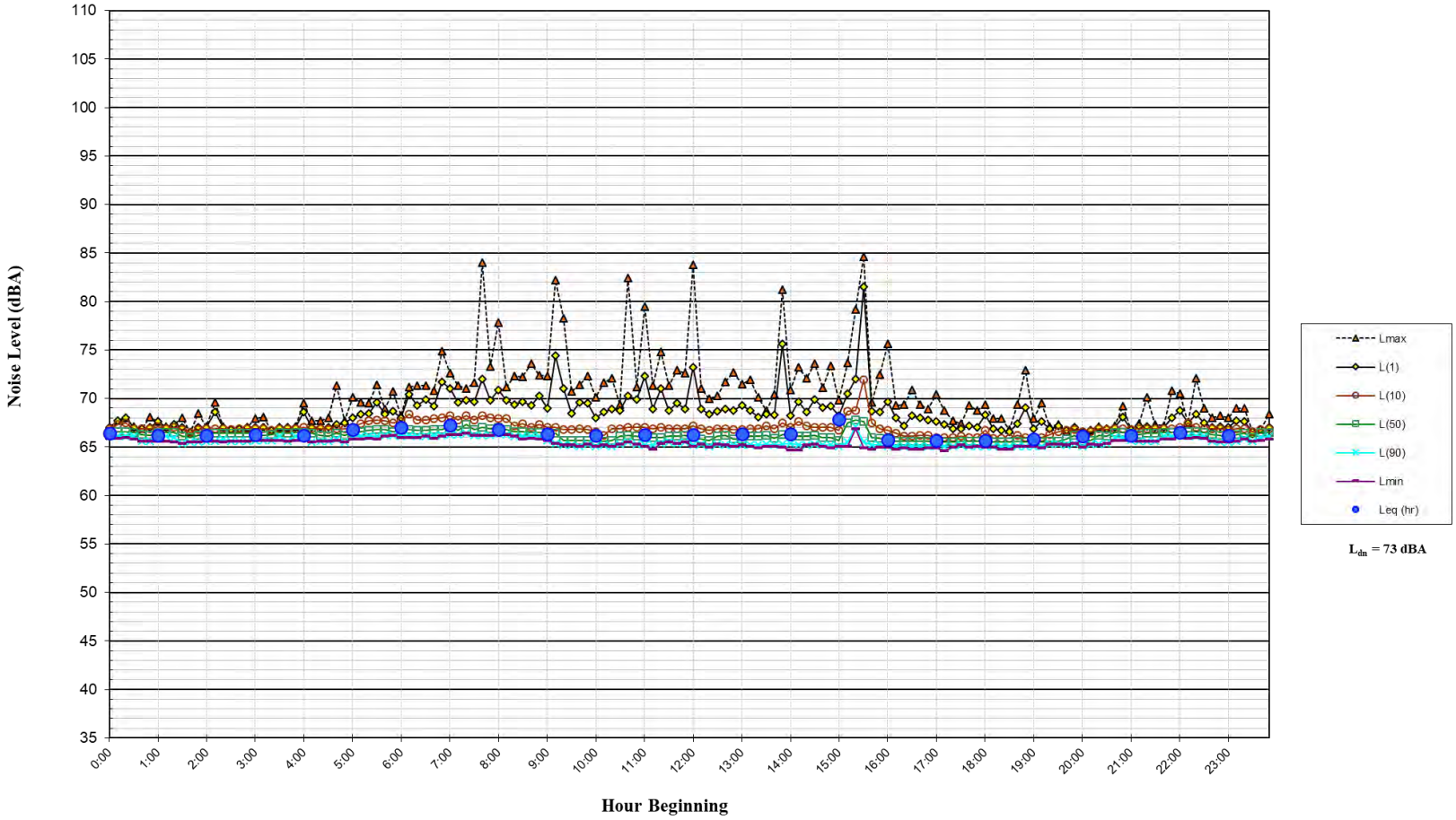
Noise Levels at Noise Measurement Site LT-1
~25 feet from the Centerline of Newcastle Road
Wednesday, October 7, 2020



Noise Levels at Noise Measurement Site LT-2
~25 feet from the Centerline of Austin Road
Wednesday, October 7, 2020



Noise Levels at Noise Measurement Site LT-3
Northeast of existing Ameresco LFGTE plant
Wednesday, October 7, 2020



Appendix NOISE2

Ameresco Forward RNG Project PG&E Compressor Station
Noise Technical Report

Prepared by:
RCH Group

October 2021

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Ameresco Forward RNG Project PG&E Compressor Station Noise Technical Report

Executive Summary

This report analyzes the existing noise levels and potential operational noise impacts from the proposed Ameresco Forward Rewnewable Natural Gas (RNG) Project PG&E compressor station ("compressor station"). The compressor station would be located on Stockton Airport property at the corner of Pock Lane and Arch-Airport Road. The compressor station would be located on an 40'x10' skid. The RNG compressor station would be owned, maintained, and operated by PG&E.

Land north of Arch Airport Road is in the City of Stockton (City) and land south of Arch Airport Road is in San Joaquin County (County). The compressor station would be located in the County. The pipeline connections for the compressor station would be in City and County roadways. Construction in the City that is north of Arch Airport Lane would involve the proposed tie in to the existing gas distribution lines. Construction activities occurring in the City (pipeline tie ins) should be limited to the hours of 7:00 a.m. and 10:00 p.m. to comply with City construction noise restrictions outlined in Section 16.60.030. The tie-ins would be located underground and would not generate any audible noise effects. Operational noise would not conflict with the City's noise ordinance (Chapter 16.60).

The major sources of existing noise in the Project area are traffic noise from Arch Airport Road and airport noise. To quantify exsiting ambient noise levels in the project vicinity, RCH conducted one long-term (72-hour) noise measurement and several short-term (10-minute) noise measurements at the Project site.

In order to be consistent with the County's noise level standard for stationary equipment of 45 dB, Leq, the compressor equipment would need to be surrounded by a sound reducing noise enclosure and/or enclosed in a building with a solid roof (not just sound walls). A fully enclosed building with limited openings could provide a 40 dB or greater reduction in noise. With the noise reduction from an enclosed building, noise levels from compressor station operations should be reducted to approximately 37 dB. These resulting noise levels would meet the strictest County regulations (45 dB, Leq at night) and would generally be more quieter than the existing ambient noise sources that currently reach AmericanAg Credit Bank (i.e., traffic noise and airport noise), which is directly south of the Project site.

Introduction

This report analyzes the existing noise levels and potential operational noise impacts from the proposed Forward Rewnewable Natural Gas (RNG) PG&E compressor station ("Project"). This report provides an overview of existing noise levels measured at the Project site, local noise regulatory framework, and a review construction noise regulations for the City and the County.

Setting

Noise Descriptors

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; average day–night 24-hour average sound level (Ldn)[2] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[3], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Regulatory Framework

Federal and State

There are no federal or state noise standards that regulate noise issues related to the Project.

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[1] The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[2] Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

[3] [3]CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

Local

San Joaquin County Municipal Code

Title 9, Chapter 9-1025.9 of the San Joaquin County Municipal Code has noise performance standards that apply to commercial and industrial land use types. Chapter 9-1205.9(b) states that "Proposed projects that will create new stationary noise sources or expand existing stationary noise sources shall be required to mitigate the noise levels from these stationary noise sources so as not to exceed the noise levels specified in Table 9-1025.9, Part II."

The noise level standards for stationary noise sources in San Joaquin County are shown in **Table 1.**

Table 1: Maximum Allowable Noise Exposure for Stationary Noise Sources

Sound Level	Outdoor Activity Areas Daytime (7 a.m. to 10 p.m.)	Outdoor Activity Areas Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level (Leq), dB	50	45
Maximum Sound Level (Lmax), dB	70	65

Source: San Joaquin County Municipal Code, Title 9, Chapter 9-1025.9 Tbable 9-1025.9, Part II
Outdoor activity areas" mean the outdoor recreation areas of noise-sensitive land uses. With respect to single-family dwellings, outdoor activity areas mean the rear yard, and/or side yard when the side yard is of a sufficient size to provide outdoor recreational opportunities, of said dwellings. With respect to multiple-family dwellings, outdoor activity areas mean the patios, balconies, common outdoor recreation areas, and swimming pool areas of said dwellings.

The County Municipal Code also specifies exemptions to the various standards, including noise from construction activities, provided that construction activities do not take place before 6 a.m. or after 9 p.m. on any day.

City of Stockton Municipal Code

The City of Stockton Municipal Code Section 16.60.030 states that noise from construction is prohibited when "operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work between the hours of 10:00 p.m. and 7:00 a.m., so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities." Construction activities within the daytime hours of 7:00 a.m. and 10:00 p.m. are considered to be exempt from the noise control provisions of the Municipal Code.

Sensitive Receptors

San Joaquin County identifies sensitive receptors as residential areas, hospitals, schools, daycare facilities, elderly hoursing and convalescent facilities. There are no noise-sensitive receptors within 1,000 feet of the Project site. The Project site is surrounded by commercial and industrial uses to the north, San Joaquin County offices to the west, Amazon Gateway Stockton Airport to the southwest, and open land to the east. The nearest structure to the Project site is the American AgCredit Bank building approximately 175 feet south of the location of the proposed compressor station. The American AgCredit Bank currently has operating hours of 8 a.m. to 5 p.m. on weekdays and is closed on weekends.

Methodology

Ambient Noise Measurements

To quantify existing ambient noise levels, RCH conducted one long-term (72-hour) and several short-term (10-minute) noise measurements at the Project site. Long-term noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements. Short-term measurements were made using a Larson Davis SoundTrack LxT Sound Level Meter calibrated before and after the measurements. **Table 2** summarizes the locations and results of the noise measurements. **Figure 1** shows the locations on a map. **Figure 1** also shows the City of Stockton city limits to the north or Arch Airport Road and County of San Joaquin jurisdiction (south or Arch Airport Road).

The **Noise Appendix** includes 24-hour noise plots for Site 1 and Site 2 and hourly measurement results. Based on observations from the short-term measurements, the main source of noise in the Project vicinity is traffic noise from Arch Airport Road, aircraft noise, and car alarms.

RNG Compressor Staions Noise Calculations

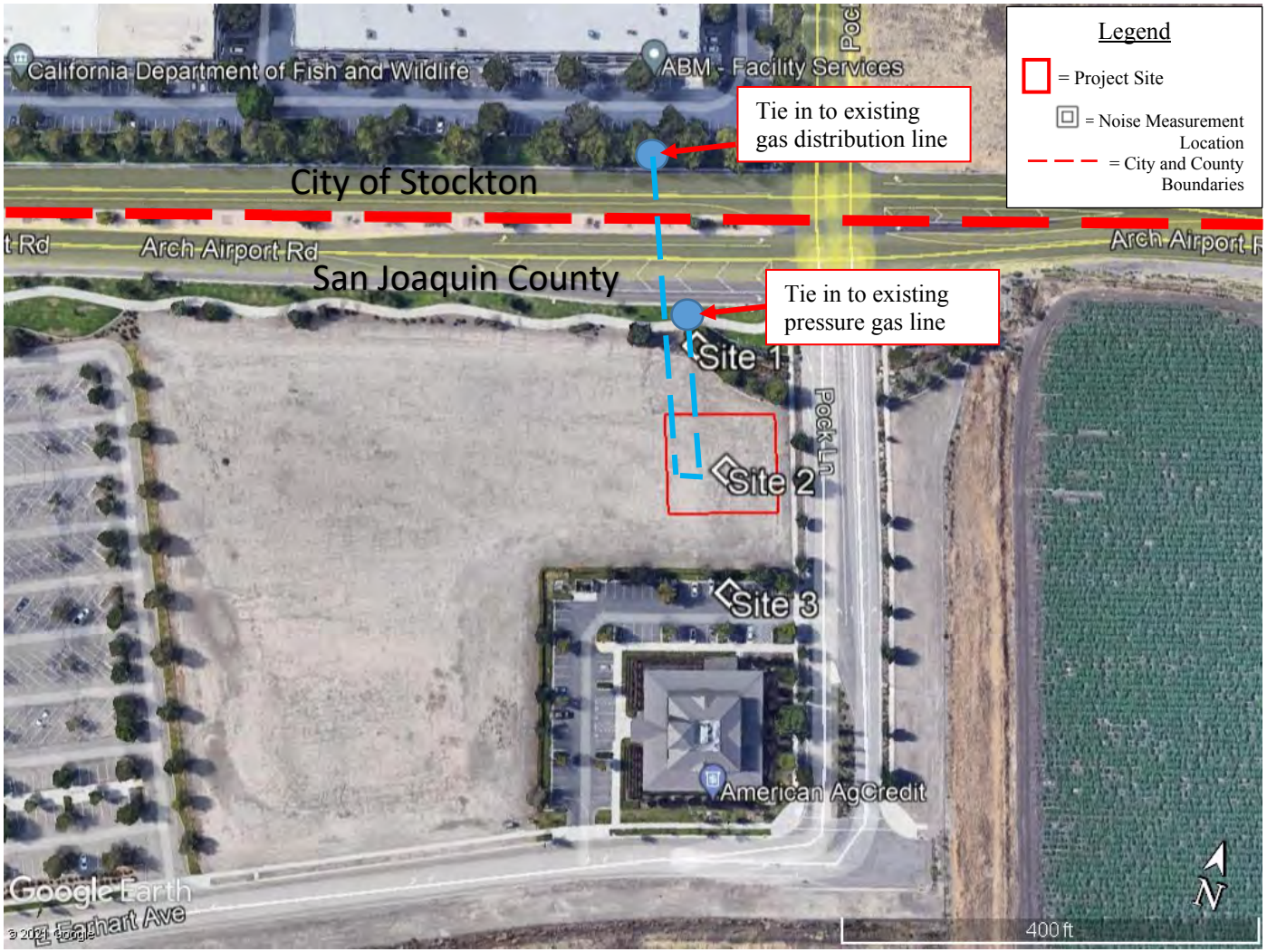
RCH did not measure noise from any similar compressor stations. To quantify noise generated from the proposed RNG compressor station, RCH used an aerial figure with noise contours of a similar compressor station (see **Figure 2**) provided by the applicant. RCH understands that the compressor generating the noise contours shown in **Figure 2** is of a similar size and type to what is planned for the Project, and that there was no noise insulation within the station at the time that noise measurements were taken. In order to estimate what noise levels would be at AmericanAg Credit Bank to the south, RCH used noise attenuation software to estimate noise levels leaving the compressor station.

Table 2: Existing Noise Levels

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1: 100 feet south of the centerline of Arch Airport Road.	September 30, 12:00 a.m. through October 2, 11:59 p.m., 2021 Thursday – Saturday 72-hour measurement.	Hourly Leq's ranged from: 60-71 CNEL's: 75, 75, 73	Unattended noise measurements do not specifically identify noise sources.
Site 1: 100 feet south of the centerline of Arch Airport Road.	Wednesday September 29, 2021 9:40 a.m. to 9:50 a.m.	5-minute Leq's: 69, 68	Large truck on Arch Airport, 76 dB. Airplane overhead, 74 dB. Traffic on Arch Airport, 65-72 dB.
Site 2: Approximate location of proposed compressor station.	Wednesday September 29, 2021 9:51 a.m. to 10:01 a.m.	5-minute Leq's: 60, 60	Traffic on Arch Airport, 60-68 dB. Airplane overhead, 76 dB.
Site 3: Approximately 70 feet north of AmericanAg Credit Bank.	Wednesday September 29, 2021 10:02 a.m. to 10:12 a.m.	5-minute Leq's: 58, 56	Car alarm in the parking lot, 70 dB. Workers walking nearby 55 dB.

Source: RCH Group 2021. RCHGROUP

FIGURE 1: NOISE MEASUREMENT LOCATIONS



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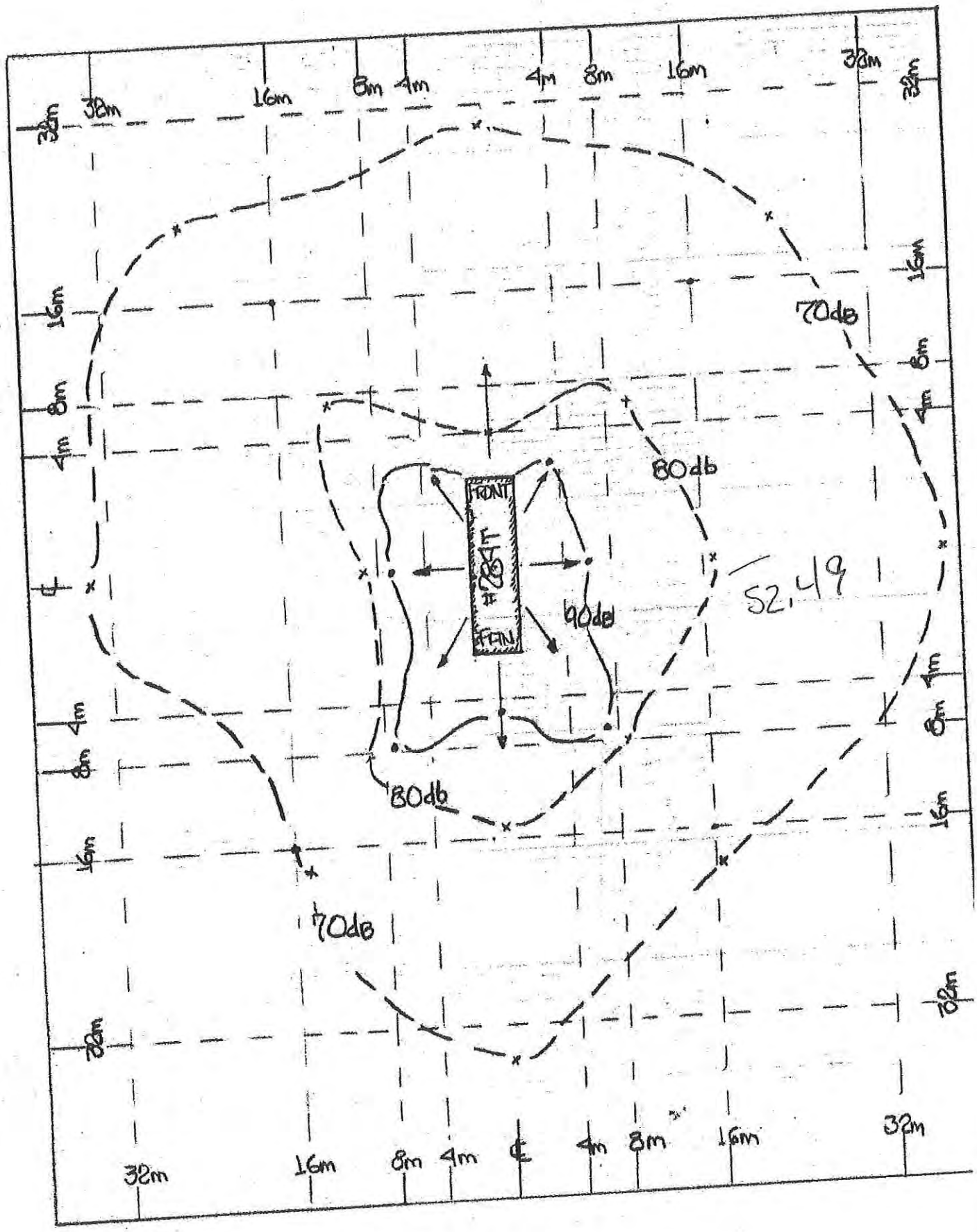
Source: RCH Group and Google Earth, 2021.

FIGURE 2: NOISE CONTOUR MAP



Discussion

Compliance with Construction Noise Regulations

Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, excavators, front loaders, etc.) and other construction equipment (e.g., compactors, pavers, concrete mixers, trucks, etc.).

Construction occurring in the County (development of the compressor station) should only occur between 7:00 a.m. and 8:00 p.m. to comply with the County construction noise restrictions outlined in Title 9, Chapter 9-1025-9 of the Municipal Code. There are no residences within 1,000 feet of the compressor station. All construction should be scheduled to occur within the established construction hours for the County.

The compressor station would be located in the County. Some construction would occur in the City. Land north of Arch Airport Road is in the City of Stockton (City) and land south of Arch Airport Road is in San Joaquin County (County). Most of the construction would occur on County land and the compressor station would be located in the County. The pipeline connections for the compressor station would be in City and County roadways. Construction in the City that is north of Arch Airport Lane would involve the proposed tie in to the existing gas distribution lines. Construction activities occurring in the City (pipeline tie ins) should be limited to the hours of 7:00 a.m. and 10:00 p.m. to comply with City construction noise restrictions outlined in Section 16.60.030. The tie-ins would be located underground and would not generate any audible noise effects and operational noise would not conflict with the City's noise ordinance (Chapter 16.60).

Operational Noise from the Proposed RNG Compressor Station

As shown in **Table 1**, the noise level standards for stationary noise sources in San Joaquin County are 50 dB, Leq daytime (7 a.m. to 10 p.m.) and 45 dB, Leq nighttime (10 p.m. to 7 a.m.) at outside activity areas. In order to be consistent with the San Joaquin County stationary noise standards, noise generated from the proposed RNG compressor station would have to be attenuated to 45 dB during the night and 50 dB during the day, or less at the bank property to the south of the compressor station. The nighttime standard 45 dB should conserevatively be used since it is the most restrictive. If the facility meets the nighttime standard it would also meet the County daytime standards. The noise limit would apply at the American AgCredit Bank property.

As discussed above, RCH used noise contours of a similar compressor station (see **Figure 2**) provided by the applicant. Based on **Figure 2**, noise generated by the compressor station could reach noise levels of up to 90 dB at approximately 26 feet. Using this estimate, noise at the American AgCredit Bank property line (approximately 90 feet south of the compressor station) would be approximately 76.5 dB. The preliminary site plan indicates that the compressor station would be enclosed by a 120'x120' sound wall. We understand that the current plan is to install walls that are 8 to 10 feet in height. RCH used noise modeling algorithms to estimate exterior noise levels with the use of a sound wall, as shown in the preliminary site plan. Using sound walls around the gas compressor would reduce the noise to approximately 63 dB as shown in **Table 3.** This level would greatly exceed the required 45 dB, Leq nighttime noise levels. As such, it would not comply with the County Noise Ordinance. Based on the information provided by Ameresco and reductions from sound walls, the proposed sound walls would not meet the required noise reduction levels.

Table 3: Exterior Noise Level Estimates at Property Line

Sound Wall Height	Noise Level (dB)
No Wall	76.5
8 Feet	65
10 Feet	63

Notes: 1. The modeled sound walls assume flat site conditions where elevations, base of wall elevations and building pad elevations are approximately equivalent.
2. Outdoor activity area noise levels were modeled in to the north area of the AmericanAg Credit Building where there is an outdoor patio for employees use.
3. Noise levels rounded to the nearest dB.

Recommendations

To meet the County noise standards the gas compressor equipment would need to be surrounded by a sound reducing noise enclosure and/or enclosed in a building with a solid roof (not just sound walls). Either the noise enclosure or the building could meet the 45 dB, Leq standard at the nearest property line. Adding sound walls at the property line, if necessary, could further reduce noise leaving the property.

RCH staff have previous measured loud pump station noise (88 dB) that was reduced by 40 dB by a cinder block building with some internal noise deadening treatments. With a noise reduction from an enclosed building that reduces noise by at least 40 dB, noise levels from compressor station operations would be approximately 37 dB (based on **Figure 2** noise contours from a similar gas compressor).

Long-term noise measurements found the Project site is in a relatively high-noise environment with hourly noise level rarely below 69 dB, Leq. In this environment, noise from the gas compressor station may not generally be noticeable even if it is above 45 dB, Leq. However, the characteristics of the gas compressor noise may be constant and objectionable even if the noise is generally less than the ambient noise in the environment, and therefore needs to be within the County noise ordinance requirements or potentially be subject to future actions by the County, or nuisance noise complaints from the bank or other nearby neighbors. In order to be consistent with the County's noise level standard of 45 dB, Leq for stationary equipment, the compressor equipment would need to be surrounded by a sound reducing noise enclosure and/or enclosed in a building with a solid roof (not just sound walls).

References

California Department of Transportation (Caltrans), 1998. *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects*, October 1998.

Caltrans, 2002. *Transportation Related Earthborne Vibrations,* Technical Advisory, Vibration TAV-02-01-R9601.

Caltrans. 2013. *Technical Noise Supplement*.

San Joaquin County Code, *Title 9, Chapter 9-1025.9*.

City of Stockton Municipal Code, *Title 16, Chapter 16.60 Noise Standards.*

Sacramento County General Plan, 2017. *Noise Element.*

Forward RNG PG&E

Compressor Station

Noise Appendix

Long Term Noise Measurement Graphs

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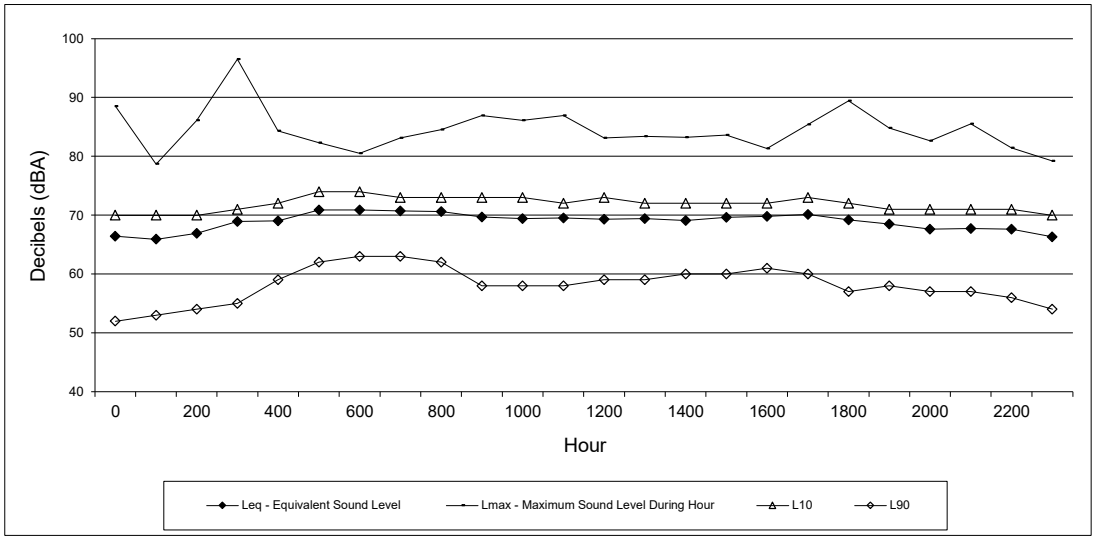
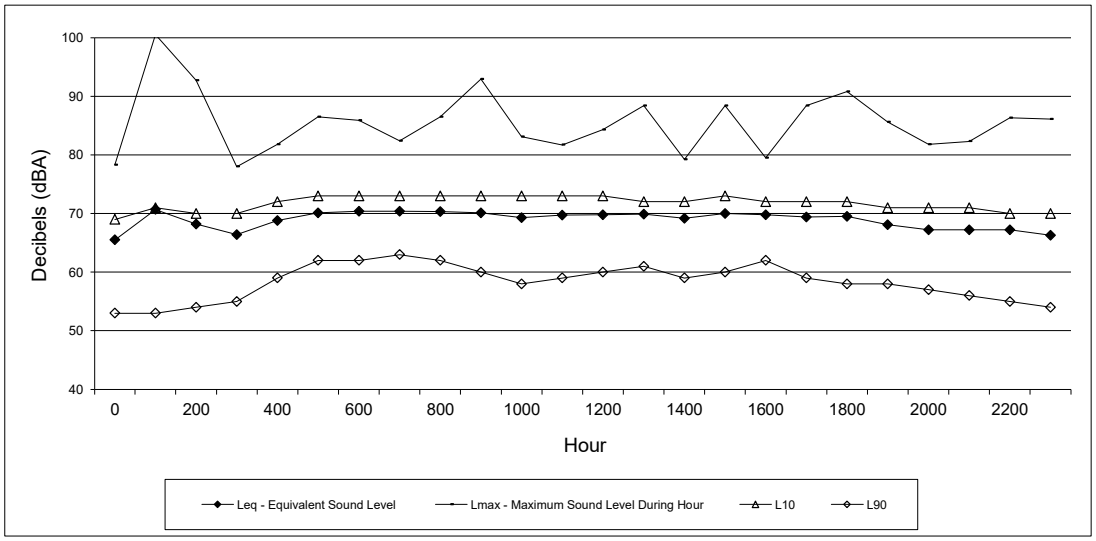


Site 1: 100 feet south of the centerline of Arch Airport Road
Thursday September 30, 2021

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	66	89	70	52
100	66	79	70	53
200	67	86	70	54
300	69	97	71	55
400	69	84	72	59
500	71	82	74	62
600	71	81	74	63
700	71	83	73	63
800	71	85	73	62
900	70	87	73	58
1000	69	86	73	58
1100	70	87	72	58
1200	69	83	73	59
1300	69	83	72	59
1400	69	83	72	60
1500	70	84	72	60
1600	70	81	72	61
1700	70	85	73	60
1800	69	89	72	57
1900	69	85	71	58
2000	68	83	71	57
2100	68	86	71	57
2200	68	81	71	56
2300	66	79	70	54

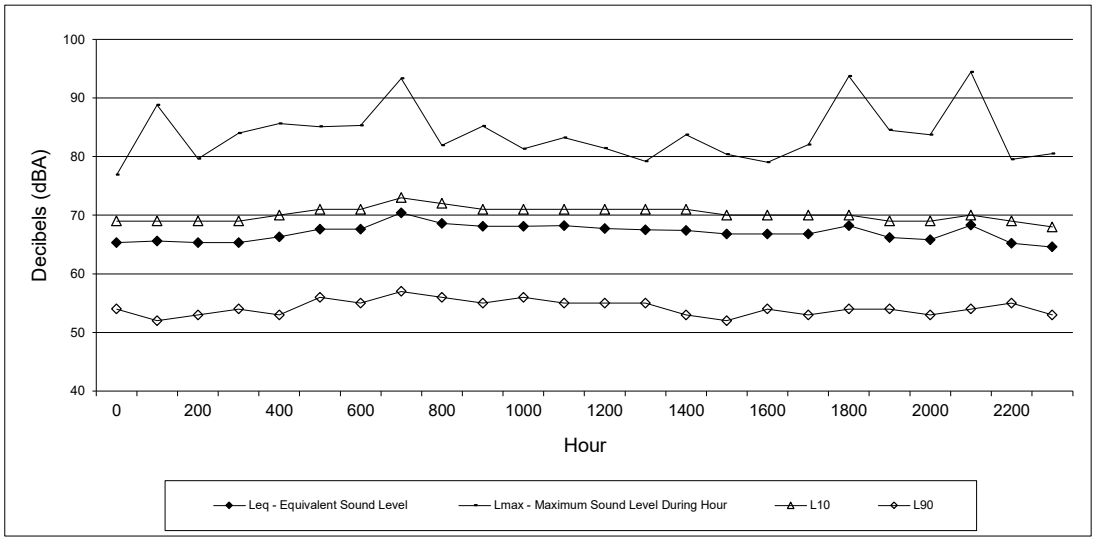
CNEL 75



Site 1: 100 feet south of the centerline of Arch Airport Road
Friday October 1, 2021

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	66	78	69	53
100	71	101	71	53
200	68	93	70	54
300	66	78	70	55
400	69	82	72	59
500	70	87	73	62
600	70	86	73	62
700	70	82	73	63
800	70	87	73	62
900	70	93	73	60
1000	69	83	73	58
1100	70	82	73	59
1200	70	84	73	60
1300	70	88	72	61
1400	69	79	72	59
1500	70	88	73	60
1600	70	80	72	62
1700	69	88	72	59
1800	70	91	72	58
1900	68	86	71	58
2000	67	82	71	57
2100	67	82	71	56
2200	67	86	70	55
2300	66	86	70	54

CNEL: 75



Site 1: 100 feet south of the centerline of Arch Airport Road
Saturday October 2, 2021

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	65	77	69	54
100	66	89	69	52
200	65	80	69	53
300	65	84	69	54
400	66	86	70	53
500	68	85	71	56
600	68	85	71	55
700	70	93	73	57
800	69	82	72	56
900	68	85	71	55
1000	68	81	71	56
1100	68	83	71	55
1200	68	81	71	55
1300	68	79	71	55
1400	67	84	71	53
1500	67	80	70	52
1600	67	79	70	54
1700	67	82	70	53
1800	68	94	70	54
1900	66	85	69	54
2000	66	84	69	53
2100	68	94	70	54
2200	65	80	69	55
2300	65	81	68	53

CNEL: 73