



December 10, 2020

Curtis Hauptman
Lakeside Pipeline LLC
3711 Meadow View Dr, Ste 100
Redding, CA 96002

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: C-9441
Project Number: C-1202485

Dear Mr. Hauptman:

Enclosed for your review and comment is the District's analysis of Lakeside Pipeline LLC's application for an Authority to Construct for the modification of a biogas cleanup plant under permit unit C-9441-1 to install a new 107 MMBtu/hr Parnel Biogas Inc backup open flare, at 15662 7th Ave, Hanford.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Ms. Gurpreet Brar of Permit Services at (559) 230-5926.

Sincerely,



Arnaud Marjollet
Director of Permit Services

AM:gb

Enclosures

cc: Courtney Graham, CARB (w/ enclosure) via email

Samir Sheikh
Executive Director/Air Pollution Control Officer

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San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Modification of a Biogas Cleanup Plant to add a Flare

Facility Name:	Lakeside Pipeline LLC	Date:	December 10, 2020
Mailing Address:	3711 Meadow View Dr, Ste 100 Redding, CA 96002	Engineer:	Gurpreet Brar
Contact Person:	Curtis Hauptman	Lead Engineer:	Jerry Sandhu
Telephone:	(530) 209-1269		
E-Mail:	curtis@maasenergy.com		
Application #:	C-9441-1-1		
Project #:	C-1202485		
Deemed Complete:	October 2, 2020		

I. Proposal

Lakeside Pipeline LLC has requested an Authority to Construct (ATC) permit for the modification of a biogas cleanup plant under permit unit C-9441-1 to install a new 107 MMBtu/hr Parnel Biogas Inc backup open flare. The flare will be used when the biogas cleanup plant is not operating properly and the raw biogas cannot be processed to Southern California Gas' (SoCal Gas) natural gas transmissions system specifications. The maximum flare gas flow rate will be limited to 332.8 MMBtu/day and 31,921.5 MMBtu/year. Also, the flare will be used to depressurize the cleanup plant during shutdown for maintenance. When doing so, the incoming biogas to the plant will be stored offsite to stay below the permitted flared gas throughput limit. Also, the facility has proposed to increase the amount of raw biogas (consisting CH₄, N₂ and sulfur) vented from the existing CO₂ membrane system to the atmosphere from 3% to 3.5% of the total biogas processed in the biogas cleanup plant.

The facility was issued ATC C-9441-1-0 to install a biogas cleanup plant to process raw biogas from waste lagoons. There is no change proposed to the main process devices or throughput of raw biogas handled by the biogas cleanup plant with this project. The District has verified that the ATC has been implemented; therefore, it will serve as the base document for this project. However, because the ATC has not yet been converted to a Permit to Operate, the following condition will be placed on ATC C-9441-1-1 to ensure compliance:

- Authority to Construct (ATC) C-9441-1-0 shall be implemented prior to or concurrently with this ATC. [District Rule 2201]

II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410 Prevention of Significant Deterioration (6/16/11)
Rule 2520 Federally Mandated Operating Permits (8/15/19)
Rule 4001 New Source Performance Standards (4/14/99)
Rule 4002 National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4201 Particulate Matter Concentration (12/17/92)
Rule 4311 Flares (6/18/09)
Rule 4801 Sulfur Compounds (12/17/92)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The facility is located at 15662 7th Ave in Hanford, CA. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

The biogas cleanup plant will treat raw biogas to remove sulfur compounds, VOCs, and carbon dioxide creating “treated biogas” which will be sold to the SoCal Gas natural gas transmissions system as PUC-quality gas (biomethane). The raw biogas processed in the plant will be received from waste lagoons at several dairies in the vicinity. The facility has proposed to install a backup flare to serve biogas and biomethane from the cleanup plant.

Per applicant, the raw biogas composition is estimated to be:

- Methane (CH₄): 60 to 69 percent;
- Oxygen: 0 to 2 percent;
- Total Nitrogen (as N₂): 0 to 8 percent;
- Carbon dioxide (CO₂): 21 to 40 percent; and
- Sulfur compounds (total sulfur as S): 0 to 0.01 percent (Maximum 65 ppmv) as the raw gas is pretreated at the dairy.

The biogas cleanup plant will consist of the following main process devices:

- A dual bed carbon adsorption system removing VOCs and sulfur compounds from the raw biogas yielding treated biogas.
- A carbon dioxide membrane removal system creating biomethane.
- A condenser removing water from the treated biogas
- Compressors and pumps.
- Open Flare

The fugitive emissions components will process raw biogas containing less than 10% VOCs. Therefore, according to District policy SSP 2015, fugitive emissions are not assessed.

The biogas cleanup plant will be designed to handle approximately 1,062,000,000 standard cubic feet per year (scf/yr) of raw biogas.

The raw biogas is treated sequentially using a dual bed carbon adsorption system and a CO₂ membrane system to remove CO₂.

Sulfur and VOC Removal

The carbon adsorption system, which removes both sulfur and VOCs, will be a dual chamber bed in series with breakthrough monitoring between the first and second bed. Each bed will be sized sufficiently to handle the entire treated biogas flow alone. Thus, when breakthrough from the first bed is detected, the gas flow will be routed to the second bed and the first bed refreshed. A commercial carbon vendor will remove the spent carbon and replace it with fresh activated carbon. The replenished carbon bed then serves as the backup bed. In this manner there is no bypass and there are no emissions from the carbon adsorbers. The carbon adsorber is expected to remove at least 95 percent of the VOCs in the treated biogas and up to 96% of the sulfur compounds (4 ppmv).

CO₂ Removal

CO₂ is removed from the gas with the carbon dioxide membrane removal system. The CO₂ membrane removal system removes and vents 97% of the inlet CO₂ so that the biomethane sent to SoCal Gas contains no more the 3% CO₂. As the raw biogas is composed of maximum 40% CO₂, approximately 40% of the total volume of inlet biogas is vented in the form of CO₂ from the CO₂ membrane. In addition to the removed CO₂, up to approximately 3.5% of the inlet raw biogas may be inadvertently captured along with the removed CO₂ and will be vented from the CO₂ membrane. The total volume of waste gas vented contains up to 3.5% raw biogas consisting of methane, inlet sulfur, and NH₃, and also 40% of biogas consisting of CO₂ only. Although total 43.5% of the inlet biogas is removed from the CO₂ membrane, the VOC, SO_x and NH₃ emissions will only be quantified based on 3.5% of raw biogas vented and the 40% of the biogas released in form of CO₂ does not contribute to total emissions from the operation. The gas will be vented without further processing or treatment as it does not contain a recoverable amount of methane or significant quantities of any pollutants.

Vented Off-Spec Gas

If the treated biomethane (final product) does not meet SoCal Gas specifications, the off-spec gas will be vented to atmosphere for up to 350 hours/year (including start-up and tuning operations). The facility has not proposed any change to the total off-spec venting limit with this project.

Biogas or Biomethane Fired Backup Flare

The applicant has proposed to install a 107 MMBtu/hr open biogas gas-fired backup flare to combust the biogas during emergencies or other rare situations when the upgraded digester gas is not transported offsite. The proposed flare has a tip diameter of 10 inches and will be installed at the flare tip height of 40 feet above grade. The flare will be used if there is a problem with the plant while it is running and biogas cannot be processed to pipeline specification. In that situation, the off-spec gas will be directed to the flare. If the plant is still unable to produce gas to pipeline specification and the flare is nearing the permitted limit for maximum gas flow rate, the incoming flow of biogas to the plant will be stopped and the plant will be shutdown so that repairs can be made immediately. During this time, the flare would be used to depressurize the plant. The incoming biogas would then be stored offsite while repairs to the plant are made.

The size of backup flare is designed to handle the full plant flow in a scenario where the plant processing equipment is malfunctioning or starting up. These scenarios are not expected to last more than several hours at a time.

The applicant indicates that the proposed backup flare will be used during biogas plant maintenance or shutdown to control VOC by combusting off-spec gas or raw biogas. The raw biogas has a sulfur content of up to 100 ppmv as H₂S that will determine worst-case SO_x emissions from the flare.

Per the manufacturer, the flare has a VOC destruction efficiency of 98%. The applicant has indicated that the digester gas-fired backup flare will have the capacity to combust a maximum of 98,220 scf/hour and 512,000 scf/day, and is expected to operate a maximum of 500 hours per year. However, to provide greater operational flexibility, the digester gas-fired backup flare will be limited by permit condition to combusting no more than 49,110,000 scf/year of gas per year, which is equivalent to operation of the flare for 500 hours per year at the full capacity of the flare provided by the applicant.

V. Equipment Listing

Pre-Project Equipment Description:

C-9441-1-0: BIOGAS CLEANUP PLANT CONSISTING OF AN ACTIVATED CARBON ADSORPTION SYSTEM AND CO₂ MEMBRANE REMOVAL SYSTEM, CONDENSER AND ASSOCIATED PUMPS AND COMPRESSORS

Proposed Modification:

Install a new 107 MMBtu/hr Parnel Biogas Inc backup/emergency open flare to serve biogas cleanup plant.

C-9441-1-1: MODIFICATION OF BIOGAS CLEANUP PLANT CONSISTING OF AN ACTIVATED CARBON ADSORPTION SYSTEM AND CO₂ MEMBRANE REMOVAL SYSTEM, CONDENSER AND ASSOCIATED PUMPS AND COMPRESSORS; INSTALL A NEW 107 MMBTU/HR PARNEL BIOGAS INC BACKUP/EMERGENCY BIOGAS-FIRED OPEN FLARE; AND CORRECT THE AMOUNT OF RAW BIOGAS VENTED FROM CO₂ MEMBRANE SYSTEM FROM 3% TO 3.5% OF TOTAL BIOGAS PROCESSED IN THE CLEANUP PLANT

Post-Project Equipment Description:

C-9441-1-1: BIOGAS CLEANUP PLANT CONSISTING OF AN ACTIVATED CARBON ADSORPTION SYSTEM AND CO₂ MEMBRANE REMOVAL SYSTEM, CONDENSER AND ASSOCIATED PUMPS AND COMPRESSORS; AND 107 MMBTU/HR PARNEL BIOGAS INC BACKUP/EMERGENCY BIOGAS-FIRED OPEN FLARE

VI. Emission Control Technology Evaluation

As discussed in Section IV, the raw biogas control equipment consists of a carbon adsorption system and a carbon dioxide membrane removal system.

Processed gas leaving the sulfur removal system is expected to contain no more than 1.0 gr S/100 scf.

The activated carbon is expected to remove 95% (by weight) of the VOCs.

The CO₂ membrane removal system removes and vents 97% of the inlet CO₂ so that the biomethane contains no more the 3% CO₂.

If produced digester gas cannot be upgraded and transported offsite, the excess gas will be vented to the backup/emergency flare for VOC control. The flare is considered an emissions control device and the products of combustion, which includes oxides of nitrogen (NO_x), oxides of sulfur (SO_x), particulate matter less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}), carbon monoxide (CO), and VOC emissions are secondary pollutants.

VII. General Calculations

A. Assumptions

The raw biogas control equipment consists of a carbon adsorption system, carbon dioxide membrane removal system, and backup flare. The biogas upgrading plant has negligible fugitive emissions; therefore, the potential to emit from the biogas upgrading plant will only be calculated for the CO₂ membrane removal system and the proposed backup flare, as there are no emissions from the carbon adsorbers.

CO₂ membrane under Normal Operation:

- Operation 24 hr/day and 365 days/year
- Pre-project and post-project daily flow rate of raw biogas: **2.91 MMscf/day** (per project C-1183449)
- Sulfur content of gas after sulfur removal: 1.0 gr S/100scf
- Pre-project maximum % of raw biogas vented from CO₂ membrane system to the atmosphere along with approximately 40% of inlet biogas vented as CO₂: 3.0%
 - Daily flow rate of waste biogas vented: **0.0873 MMscf/day** (3.0% of 2.91 MMscf/day)
 - Annual flow rate of waste biogas vented: **31.9 MMscf/year** (based on 365 day/year)
- Post-project maximum % of raw biogas vented from CO₂ membrane system to the atmosphere along with approximately 40% of inlet biogas vented as CO₂: 3.5%
 - Daily flow rate of waste biogas vented: **0.102 MMscf/day** (3.5% of 2.91 MMscf/day)
 - Annual flow rate of waste biogas vented: **37.2 MMscf/year** (based on 365 day/year)
- Activated carbon VOC control device shall be at least 95% efficient in controlling the VOCs from the raw biogas.
- The maximum sulfur content of the raw biogas processed by biogas cleanup plant is 65 ppmv as H₂S (per applicant)

CO₂ membrane under Off Spec Venting:

- Operation 24 hr/day and 365 days/year.
- Pre-project and post-project maximum Off-spec venting of gas vented to atmosphere: 0.071 MMscf/hr and **1.70 MMscf/day** (proposed by applicant in project C-1183449).
- Pre-project and post-project Maximum off-spec venting (including start-up and tuning operations): **24.85 MMscf/year** based on 350 hours/year of operation calculated per current permit).

Backup Flare:

- The gas flared will be a combination of raw and processed biogas (per applicant)
- HHV of the biogas flared: 650 Btu/scf (per applicant)
- Per applicant, the maximum flare gas flow rate proposed in scf and btu is shown in the following table:

$$\text{MMBtu/day or MMBtu/year} = (\text{scf/day or scf/year}) \times \text{HHV (btu/scf)} \div 10^6 \text{ btu/MMBtu}$$

Throughput (scf)	HHV	Throughput (MMBtu)
512,000 scf/day	650 Btu/scf	332.8 MMBtu/day
49,110,000 scf/year	650 Btu/scf	31,921.5 MMBtu/year

- The maximum hourly flare gas flow rate is 98,220 scf/hr (per applicant).
- Maximum sulfur content of processed gas flared is 40 ppmv (per applicant). However, the maximum sulfur content of the raw biogas combusted in the flare is 65 ppmv as H₂S (per applicant)
- Flare VOC destruction efficiency = 98% (per manufacturer)
- PM_{2.5} emissions from the biogas-fired are assumed to be equal to PM₁₀ emissions.

To streamline emission calculations, PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions. Only if needed to determine if a project is a Federal major modification for PM_{2.5} will specific PM_{2.5} emission calculations be performed.

B. Emission Factors

Pre-project Emission Factor (EF1):

EF1 for Waste Gas Vented from the CO₂ Membrane Serving Biogas Cleanup Plant:

VOC content of raw biogas: 0.296 lb/MMscf (per permit C-9441-1-0)

Sulfur content of vented or off-spec gas: 0.357 lb/MMscf (per permit C-9441-1-0)

NH₃ content of raw biogas: 1.74 lb/MMscf (per permit C-9441-1-0)

Post-project Emission Factor (EF2):

The biogas cleanup plant is served by a CO₂ membrane and a flare, and the post-project emission factors are discussed below.

EF2 for Waste Gas Vented from the CO₂ Membrane Serving Biogas Cleanup Plant:

There is no change in emission factor for CO₂ Membrane with this project; EF2 = EF1.

VOC content of raw biogas: 0.296 lb/MMscf

Sulfur content of vented or off-spec gas: 0.357 lb/MMscf

NH₃ content of raw biogas: 1.74 lb/MMscf

EF2 for Back-up Flare serving Biogas Cleanup Plant:

The EF2 for the proposed flare are discussed in the following table.

Flare (EF2)		
Pollutant	lb/MMBtu	Source
NO _x	0.06	Per Manufacturer Specifications
SO _x	0.017	65 ppmvd (per applicant)
PM ₁₀	0.015	AP-42 Draft Table 2.4.4 (10/08) (Value for Landfill Gas Flares – 15 lb/dscf of CH ₄)
CO	0.31	Per Manufacturer Specifications
VOC	0.006	Based on ARB LCFS Pathway Biogas Flare VOC EF/Also Conservatively Assumed to be similar to Digester Gas-Fired Turbines

SO_x – 65 ppmvd H₂S in flared gas

$$65 \frac{\text{ft}^3 \text{ H}_2\text{S}}{10^6 \text{ ft}^3} \times \frac{32.06 \text{ lb} - \text{S}}{\text{lb} - \text{mol H}_2\text{S}} \times \frac{\text{lb} - \text{mol}}{379.5 \text{ ft}^3} \times \frac{64.06 \text{ lb} - \text{SO}_2}{32.06 \text{ lb} - \text{S}} \times \frac{1 \text{ ft}^3}{650 \text{ Btu}} \times \frac{10^6 \text{ Btu}}{\text{MMBtu}} = 0.017 \frac{\text{lb} - \text{SO}_x}{\text{MMBtu}}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

The PE1 for biogas cleanup plant from the CO₂ membrane can be calculated based on the emission factors, and throughput of normal membrane venting and off-spec venting using the following equation:

$$\text{PE1}_{\text{daily}} = \text{EF1 (lb/MMscf)} \times \text{Throughput (MMscf/day)}$$

$$\text{PE1}_{\text{annual}} = \text{EF1 (lb/MMscf)} \times \text{Throughput (MMscf/year)}$$

PE1 for Waste Gas Vented from the CO₂ Membrane:

Daily PE1						
Pollutant	EF1 (lb/MMscf)	Throughput (MMscf/day)		PE1 (lb/day)		Total PE1 (lb/day)
		Normal Membrane Venting	Off-Spec Venting	Normal Membrane Venting	Off-Spec Venting	
SO_x	0.357	0.0873	1.70	0.0	0.6	0.6
VOC	0.296	0.0873	1.70	0.0	0.5	0.5
NH₃	1.74	0.0873	1.70	0.2	3.0	3.2

Annual PE1						
Pollutant	EF1 (lb/MMscf)	Throughput (MMscf/year)		PE1 (lb/year)		Total PE1 (lb/year)
		Normal Membrane Venting	Off-Spec Venting	Normal Membrane Venting	Off-Spec Venting	
SOx	0.357	31.9	24.85	11.4	8.9	20
VOC	0.296	31.9	24.85	9.4	7.4	17
NH3	1.74	31.9	24.85	55.5	43.2	99

2. Post-Project Potential to Emit (PE2)

The PE2 for biogas cleanup plant can be calculated based on the total emissions from the CO₂ membrane and the proposed backup flare.

PE2 for Waste Gas Venting from the CO₂ Membrane:

The PE2 for CO₂ membrane can be calculated based on the emission factors, and throughput of normal membrane venting and off-spec venting using the following equations:

$$PE2_{\text{daily}} = EF2 \text{ (lb/MMscf)} \times \text{Throughput (MMscf/day)}$$

$$PE2_{\text{annual}} = EF2 \text{ (lb/MMscf)} \times \text{Throughput (MMscf/year)}$$

Daily PE2						
Pollutant	EF2 (lb/MMscf)	Throughput (MMscf/day)		PE2 (lb/day)		Total PE2 (lb/day)
		Normal Membrane Venting	Off-Spec Venting	Normal Membrane Venting	Off-Spec Venting	
SOx	0.357	0.102	1.70	0.0	0.6	0.6
VOC	0.296	0.102	1.70	0.0	0.5	0.5
NH3	1.74	0.102	1.70	0.2	3.0	3.2

Annual PE2						
Pollutant	EF2 (lb/MMscf)	Throughput (MMscf/year)		PE2 (lb/year)		Total PE2 (lb/year)
		Normal Membrane Venting	Off-Spec Venting	Normal Membrane Venting	Off-Spec Venting	
SOx	0.357	37.2	24.85	13.3	8.9	22
VOC	0.296	37.2	24.85	11.0	7.4	18
NH3	1.74	37.2	24.85	64.7	43.2	108

PE2 for Backup Flare:

The PE2 for each pollutant from the flare is calculated using the following equations and is summarized in the tables below:

$$\text{PE2 (lb/day)} = \text{EF2 (lb/MMBtu)} \times \text{Gas Flow Rate (MMBtu/day)}$$

$$\text{PE2 (lb/year)} = \text{EF2 (lb/MMBtu)} \times \text{Gas Flow Rate Annually (MMBtu/year)}$$

Daily PE2 for Flare			
Pollutant	EF2 (lb/MMBtu)	Flow Rate (MMBtu/day)	Daily PE2 (lb/day)
NO _x	0.06	332.8	20.0
SO _x	0.017	332.8	5.7
PM ₁₀	0.015	332.8	5.0
CO	0.31	332.8	103.2
VOC	0.006	332.8	2.0

Annual PE2 for Flare			
Pollutant	EF2 (lb/MMBtu)	Flow Rate (MMBtu/year)	Annual PE2 (lb/year)
NO _x	0.06	31,921.5	1,915
SO _x	0.017	31,921.5	543
PM ₁₀	0.015	31,921.5	479
CO	0.31	31,921.5	9,896
VOC	0.006	31,921.5	192

Total PE2 for Biogas Cleanup Plant:

PE2 for the biogas cleanup plant is based on the total emissions from flare and the CO₂ membrane.

Total Daily PE2			
Pollutant	CO₂ Membrane (lb/day)	Flare (lb/day)	Total PE2 (lb/day)
NO _x	0.0	20.0	20.0
SO _x	0.6	5.7	6.3
PM ₁₀	0.0	5.0	5.0
CO	0.0	103.2	103.2
VOC	0.5	2.0	2.5
NH ₃	3.2	0.0	3.2

Total Annual PE2			
Pollutant	CO₂ Membrane (lb/year)	Flare (lb/year)	Total PE2 (lb/year)
NO _x	0	1,915	1,915
SO _x	22	543	565
PM ₁₀	0	479	479
CO	0	9,896	9,896
VOC	18	192	210
NH ₃	108	0	108

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

The PE for permit unit C-9441-1 is calculated in Section VII.C.1, and PE for permit units C-9441-2 and C-9441-3 is taken from project C-1201752. SSPE1 is summarized in the following table:

SSPE1 (lb/year)						
Permit Unit	NO_x	SO_x	PM₁₀	CO	VOC	NH₃
C-9441-1-0	0	20	0	0	16	99
C-9441-2-0	1,771	298	2,210	5,077	1,988	1,842
C-9441-3-0	1,771	298	2,210	5,077	1,988	1,842
SSPE1	3,542	616	4,420	10,154	3,992	3,783

4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

The PE for modified permit unit C-9441-1 is calculated in Section VII.C.2, and PE for permit units C-9441-2 and C-9441-3 is taken from project C-1201752. SSPE2 is summarized in the following table:

SSPE2 (lb/year)						
Permit Unit	NO _x	SO _x	PM ₁₀	CO	VOC	NH ₃
C-9441-1-1	1,915	565	479	9,896	210	108
C-9441-2-0	1,771	298	2,210	5,077	1,988	1,842
C-9441-3-0	1,771	298	2,210	5,077	1,988	1,842
SSPE2	5,457	1,161	4,899	20,050	4,186	3,792

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

Rule 2201 Major Source Determination (lb/year)						
	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
SSPE1	3,542	616	4,420	4,420	10,154	3,992
SSPE2	5,457	1,161	4,899	4,899	20,050	4,186
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No	No

Note: PM2.5 assumed to be equal to PM10

As seen in the table above, the facility is not an existing Major Source and is not becoming a Major Source as a result of this project.

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO₂	VOC	SO₂	CO	PM	PM₁₀
Estimated Facility PE before Project Increase	1.8	2.0	0.3	5.1	2.2	2.2
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

As shown in Section VII.C.5 above, the facility is not a Major Source for any pollutant.

Therefore BE = PE1.

As calculated in Section VII.C.1 above, PE1 is summarized in the following table:

BE (lb/year)						
	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
C-9441-1-1	0	20	0	0	0	16

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

Since this facility is not a major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification and no further discussion is required.

8. Federal Major Modification / New Major Source

Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutant, this project does not constitute a Federal Major Modification and no further discussion is required.

New Major Source

As demonstrated above, this facility is not becoming a Major Source as a result of this project, therefore, this facility is not a New Major Source pursuant to 40 CFR 51.165 a(1)(iv)(A)(3).

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO₂ (as a primary pollutant)
- SO₂ (as a primary pollutant)
- CO
- PM
- PM₁₀
- Hydrogen sulfide (H₂S)
- Total reduced sulfur (including H₂S)
- Reduced sulfur compounds

I. Project Emissions Increase - New Major Source Determination

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). The PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination: Potential to Emit (tons/year)						
	NO ₂	VOC	SO ₂	CO	PM	PM ₁₀
Total PE from New and Modified Units	1.0	0.1	0.3	4.9	0.2	0.2
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore Rule 2410 is not applicable and no further analysis is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix E.

VIII. Compliance Determination

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As discussed in Section I above, there are no new emissions units associated with this project. Therefore BACT for new units with PE > 2 lb/day purposes is not triggered.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

$$\text{AIPE} = \text{PE2} - \text{HAPE}$$

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)

PE2 = Post-Project Potential to Emit, (lb/day)

HAPE = Historically Adjusted Potential to Emit, (lb/day)

$$\text{HAPE} = \text{PE1} \times (\text{EF2}/\text{EF1})$$

Where,

PE1 = The emissions unit's PE prior to modification or relocation, (lb/day)

EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1

EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

$$\text{AIPE} = \text{PE2} - (\text{PE1} * (\text{EF2} / \text{EF1}))$$

The facility proposes to modify the biogas cleanup operation by correcting the amount of raw biogas vented from CO2 membrane system, and by installing a backup flare to control VOC emissions from the plant.

The flare is an emissions control device used to control the VOC emissions from the biogas cleanup operation. NO_x, SO_x, PM₁₀, and CO emissions from the flare are incidental (i.e. byproducts of combustion in the flare) during the control of VOC emissions. Therefore, only the VOC emissions (the only pollutant from the biogas cleanup operation controlled by the flare) may trigger District BACT requirements.

As such, the AIPE will be calculated for the biogas cleanup plant based on the VOC emissions from the CO2 membrane system and the flare. EF1, EF2, PE1, and PE2 values for the CO2 membrane are taken from Sections VII.B, VII.C.1 and VII.C.2, respectively. The VOC emission factor from the biogas vented from the CO2 membrane will not change in this project, therefore EF2 ÷ EF1 is 1.

Additionally, the VOC emissions from the flare, which is controlling the VOC emissions from biogas cleanup operation will also be included in the AIPE calculation. Since the flare is a new control device in this operation, the PE1 and EF1 are zero. Therefore, just the PE2 emissions from the flare will be used in AIPE calculation.

The total AIPE for VOC emissions from the biogas cleanup plant is calculated as follows:

$$\text{Total AIPE} = \text{AIPE}_{\text{CO2 membrane}} + \text{PE2}_{\text{Flare}}$$

$$\begin{aligned} \text{Total AIPE} &= [0.5 \text{ lb/day} - (0.5 \text{ lb/day} * (1))] + [2.0 \text{ lb/day}] \\ &= 2.0 \text{ lb-VOC/day} \end{aligned}$$

AIPE for VOC emissions from the biogas cleanup operation controlled by the CO2 membrane and flare do not exceed 2.0 lb/day. Therefore, BACT is not triggered for the biogas cleanup operation.

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does not constitute an SB 288 and/or Federal Major Modification for any pollutant. Therefore BACT is not triggered for any pollutant.

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO_x	SO_x	PM₁₀	CO	VOC
SSPE2	5,457	1,161	4,899	20,050	4,186
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	No	No	No	No	No

2. Quantity of Offsets Required

As seen above, the SSPE2 is not greater than the offset thresholds for all the pollutants; therefore offset calculations are not necessary and offsets will not be required for this project.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

- New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
- Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- Any project which results in the offset thresholds being surpassed,
- Any project with an SSPE of greater than 20,000 lb/year for any pollutant, and/or
- Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

As shown in Section VII.C.5 above, this existing minor source facility is not becoming a Major Source as a result of this project. Therefore, this facility is not a New Major Source and this project does not constitute an SB 288 or a Federal Major Modification. Consequently, public noticing for this project for New Major Source, Federal Major Modification, or SB 288 Major Modification purposes is not required.

b. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. The PE2 for the proposed new flare is compared to the daily PE Public Notice thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day)	Public Notice Threshold	Public Notice Triggered?
NO _x	20.0	100 lb/day	No
SO _x	5.7	100 lb/day	No
PM ₁₀	5.0	100 lb/day	No
CO	103.2	100 lb/day	Yes
VOC	2.0	100 lb/day	No

Therefore, public noticing for PE > 100 lb/day purposes is required.

c. Offset Threshold

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	3,542	5,457	20,000 lb/year	No
SO _x	616	1,161	54,750 lb/year	No
PM ₁₀	4,420	4,899	29,200 lb/year	No
CO	10,154	20,050	200,000 lb/year	No
VOC	3,992	4,186	20,000 lb/year	No

As demonstrated above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	5,457	3,542	1,915	20,000 lb/year	No
SO _x	1,161	616	545	20,000 lb/year	No
PM ₁₀	4,899	4,420	479	20,000 lb/year	No
CO	20,050	10,154	9,896	20,000 lb/year	No
VOC	4,186	3,992	194	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

e. Title V Significant Permit Modification

Since this facility does not have a Title V operating permit, this change is not a Title V significant Modification, and therefore public noticing is not required.

2. Public Notice Action

As discussed above, public noticing is required for this project for CO emissions in excess of 100 lb/day. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Proposed Rule 2201 (DEL) Conditions:

- {271} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
- The carbon vessels shall be sealed vapor tight except during servicing of spent carbon in a vessel. [District Rule 2201]
- Two carbon vessels shall be connected in series and both shall be utilized except during servicing of the spent canister. [District Rule 2201]
- Activated carbon VOC control device shall be at least 95% efficient in controlling the VOCs from the raw biogas. [District Rule 2201]
- Total sulfur emissions from the operation shall not exceed 6.3 lb/day. [District Rule 2201]
- VOC emissions from the operation shall not exceed 2.5 lb/day. [District Rule 2201]

CO2 Membrane under Normal Operation and Off-Spec Venting:

- The total amount of raw biogas processed by the biogas cleanup plant shall not exceed 2.91 MMscf/day. [District Rule 2201]
- Total waste gas containing CH₄, N₂, or S vented to the atmosphere from the biogas cleanup plant under normal operations shall not exceed 3.5% of the raw biogas processed by the biogas cleanup plant. [District Rule 2201]
- Venting of off-spec gas shall not exceed 0.071 MMscf/hr or 1.70 MMscf/day. [District Rule 2201]

- Venting off spec gas shall not exceed 350 hours per year (including start up and shut down). [District Rule 2201]
- Sulfur content of vented off-spec gas shall not exceed 0.357 lb/MMscf [District Rule 2201]
- VOC content of raw biogas shall not exceed 0.296 lb/MMscf. [District Rule 2201]
- NH₃ content of raw biogas shall not exceed 1.74 lb/MMscf [District Rule 2201]
- The VOC content of the raw biogas shall not exceed 10% by weight. [District Rule 2201]

Backup Flare:

- Only biogas or biomethane shall be vented through the flare. [District Rule 2201]
- Emissions from the flare shall not exceed any of the following limits: 0.06 lb-NO_x/MMBtu, 0.015 lb-PM₁₀/MMBtu, 0.31 lb-CO/MMBtu, or 0.006 lb-VOC/MMBtu. [District Rule 2201]
- The sulfur content of any biogas combusted in the flare shall not exceed 65 ppmv as H₂S. [District Rules 2201, 4102 and 4801]
- Flaring of biogas for testing and maintenance, required regulatory purposes, and backup purposes shall not exceed either of the following limits: 332.8 MMBtu (equivalent to 512,000 scf/day @ 650 Btu/scf) in any one day, or 31,921.5 MMBtu (equivalent to 49,110,000 scf/year @ 650 Btu/scf) in any consecutive 365-day period. [District Rules 2201 and 4102]
- A flame shall be present at all times whenever combustible gases are vented through the flare. [District Rule 2201]
- The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 2201]
- The flare shall be operated only for testing and maintenance, required regulatory purposes, backup, and emergency purposes. An emergency is a situation or condition arising from a sudden and reasonably unforeseeable and unpreventable event beyond the control of the operator, such as, but not limited to, unpreventable equipment failure, natural disasters, acts of war or terrorism, and external power curtailment (except due to interruptible power service agreements). An emergency situation requires immediate corrective action to restore safe operation. [District Rules 2201 and 4102]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

The following conditions will be placed on the ATC to ensure compliance:

CO2 Membrane under Normal Operation and Off-Spec Venting:

- Ongoing compliance with VOC control efficiency requirements shall be demonstrated at least once per week by sampling both the influent and the effluent gas streams for the H2S removal and gas polishing system with an FID, PID, or other District-approved VOC detection device. If the VOC control efficiency requirements are achieved and there is no single canister breakthrough for 8 consecutive weeks, then the monitoring frequency is extended to at least once every three (3) months. If during the three (3) month monitoring schedule the VOC control efficiency is shown to be less than 95%, weekly monitoring shall resume. [District Rule 2201]
- Sulfur concentration (H2S) of the H2S removal and gas polishing system outlet gas shall be measured monthly. [District Rule 2201]

Backup Flare:

- Biogas sulfur content analysis shall be performed within 60 days of initial startup operation of flare, and at least once every 12 months thereafter, using EPA Method 11 or EPA Method 15, as appropriate. Records of the biogas sulfur content analysis shall be maintained and provided to the District upon request. [District Rule 2201]
- The sulfur content of the biogas to be flared shall be monitored and recorded at least once every calendar quarter in which a biogas sulfur content analysis is not performed. If quarterly monitoring shows a violation of the sulfur content limit of this permit, monthly monitoring will be required until six consecutive months of monitoring show compliance with the sulfur content limit. Once compliance with the sulfur content limit is shown for six consecutive months, then the monitoring frequency may return to quarterly. Monitoring shall not be required during periods in which the flare does not operate. [District Rule 2201]

- Monitoring of the raw biogas sulfur content shall be performed using gas detection tubes calibrated for H₂S; a Testo 350 XL portable emission monitor; a continuous fuel gas monitor that meets the requirements specified in SCAQMD Rule 431.1, Attachment A; District-approved source test methods, including EPA Method 15, ASTM Method D1072, D4084, and D5504; District-approved in-line H₂S monitors; or an alternative method approved by the District. Prior to utilization of in-line monitors to demonstrate compliance with the biogas sulfur content limit of this permit, the permittee shall submit details of the proposed monitoring system, including the make, model, and detection limits, to the District and obtain District approval for the proposed monitor(s). [District Rule 2201]
- The higher heating value (HHV) of the biogas shall be determined using ASTM D1826, ASTM 1945 in conjunction with ASTM D3588, or an alternative method approved by the District. [District Rule 2201]
- The VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 2201]

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following conditions are listed on the ATC:

- All records shall be maintained and retained for a minimum of five (5) years, and shall be made available for District inspection upon request. Records may be maintained and submitted in an electronic format approved by the District. [District Rules 2201 and 4311]

CO₂ Membrane under Normal Operation and Off-Spec Venting:

- Permittee shall maintain accurate records of the daily quantity of raw biogas (MMscf/day) processed in biogas clean plant under normal operations. [District Rule 2201]
- Permittee shall maintain accurate records of the daily quantity of off-spec gas vented in scf, and total number of hours off-spec gas vented per year. [District Rule 2201]
- Records of the cumulative running time for the H₂S removal and gas polishing system and the measured influent and effluent VOC concentrations for the H₂S removal and gas polishing system shall be maintained. [District Rule 2201]

- Permittee shall maintain accurate records of all VOC and H₂S concentration test results and influent and effluent flow rates for the H₂S removal and gas polishing system. [District Rule 2201]

Backup Flare:

- Records of hydrogen sulfide analyzer(s) installed or utilized and the calibration records of such analyzer(s) shall be maintained. Records are only required on such analyzer(s) utilized to demonstrate compliance with this permit. [District Rule 2201]
- The flare shall be equipped with an operational, non-resettable, totalizing mass or volumetric fuel flow meter or other District-approved alternative method to measure the amount of gas combusted in the flare. [District Rule 2201]
- Permittee shall maintain records of the operation of the backup flare, including the date that the flare was operated and the purpose of the operation (e.g. for testing and maintenance). [District Rule 2201]
- Records of the methane content and the higher heating value (HHV) in Btu/scf of the biogas shall be maintained for each calendar quarter in which the flare operated. [District Rules 1070 and 2201]
- Permittee shall maintain daily and annual records of the quantity of gas combusted in the flare in standard cubic feet (scf) and the total heating value in Btu/scf of the gas combusted. [District Rules 1070 and 2201]
- The total heat input of the biogas combusted in the flare on any given day (MMBtu/day) shall be calculated using the measured quantity of gas combusted and the higher heating value (HHV) determined for the gas from the nearest date(s) to the date that the flare operated. [District Rule 2201]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an AAQA be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix D of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, CO, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, or SO_x.

The proposed location is in a non-attainment area for the state's PM₁₀ as well as federal and state PM_{2.5} thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM₁₀ and PM_{2.5}.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

Since this facility's potential emissions do not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to biogas cleanup operation.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to biogas cleanup operation.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity).

Since the flare will only combust digester gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity.

The following condition will be placed on the ATC to ensure compliance:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained.

The following condition will be placed on the ATC to ensure compliance with the requirements of this rule:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

According to the Technical Services Memo for this project, the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The resulting prioritization score, acute hazard index, chronic hazard index, and cancer risk for this project is shown below.

Health Risk Assessment Summary	
	Worst Case Potential
Prioritization Score	7.19
Cancer Risk	3.21E-08
Acute Hazard Index	0.01
Chronic Hazard Index	0.00
T-BACT Required?	No

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

In accordance with District policy APR 1905, no further analysis is required, and compliance with District Rule 4102 requirements is expected.

See Appendix D: Health Risk Assessment Summary

The following permit condition is required to ensure compliance with the assumptions made for the risk management review:

- {modified 1898} The exhaust stack for the flare shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

Biogas Cleanup Plant with Backup Flare:

Using EPA F-factor of 9,100 dscf/MMBtu (dry, adjusted to 60 °F), (Estimated based on previous digester gas fuel analyses for source tests), PM concentration is calculated as follows

$$0.015 \frac{lb - PM}{MMBtu} \times \frac{1 MMBtu}{9,000 dscf} \times \frac{7,000 grain}{1 lb} = 0.012 \frac{grain}{dscf}$$

Since 0.012 grain/dscf is less than 0.1 grain/dscf, compliance with this rule is expected.

The following condition will be placed on the ATC to ensure continued compliance:

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Rule 4311 Flares

The purpose of this rule is to limit the emissions of volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) from the operation of flares.

Pursuant to Section 4.3, except for the record keeping requirement of Section 6.1.4 the requirements of this rule do not apply to any flare located at a stationary source with potential emissions less than 10.0 tons per year of VOC and 10.0 tons per year of NO_x.

Section 6.1 requires that records shall be maintained, retained on-site for a minimum of five years, and made available to the APCO, ARB, and EPA upon request.

Section 6.1.4 requires an operator claiming exemption under Section 4.3 to record annual throughput, material usage, or other information necessary to demonstrate compliance with the terms of the exemption.

The following conditions will be placed on the ATC to ensure compliance with this recordkeeping requirement:

- The permittee shall maintain records of the amount of gas combusted annually, annual throughput, material usage, or other information necessary to demonstrate that this stationary source (C-9441) has the potential to emit, for all processes, less than ten (10.0) tons per year of VOC and less than ten (10.0) tons per year of NO_x. [District Rule 4311]
- All records shall be maintained and retained for a minimum of five (5) years, and shall be made available for District inspection upon request. Records may be maintained and submitted in an electronic format approved by the District. [District Rules 2201 and 4311]

Rule 4311 is proposed to be amended to limit the NO_x emissions to 0.06 lb/MMBtu for flares serving digester operations located at non-major sources with flare annual throughput threshold limit exceeding 100,000 MMBtu/year. The flare under this project is located at non-major source with NO_x emission limit of 0.06 lb/MMBtu that satisfies the proposed requirements of the amended rule.

Compliance with the requirements of this rule is expected.

Rule 4801 Sulfur Compounds

The purpose of this District Rule 4801 is to limit the emissions of sulfur compounds. The limit is that sulfur compound emissions (as SO₂) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

Volume of SO_x as (SO₂) = $(n \times R \times T) \div P$

Where:

n = moles SO_x

T (standard temperature) = 60 °F or 520 °R

R (universal gas constant) = $\frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}}$

To demonstrate compliance with the sulfur compound emission limit of Rule 4801, the maximum sulfur compound emissions from the flare will be calculated using the maximum sulfur content allowed for the raw biogas, which is 65 ppmv, equivalent to 0.017 lb-SO_x/MMBtu.

$$0.017 \frac{lb}{MMBtu} \times \frac{1 MMBtu}{9,100 scf_{exhaust}} \times \frac{1 lb \cdot mol}{64 lb \cdot SO_2} \times \frac{10.73 psi \cdot ft^3}{lb \cdot mol \cdot ^\circ R} \times \frac{520^\circ R}{14.7 psi} \times 1,000,000 ppm = 11 \text{ ppmv}$$

Since 11 ppmv is $\leq$ 2000 ppmv, the equipment is expected to comply with Rule 4801. The following condition will be placed on the ATC to ensure compliance:

- The sulfur content of the biogas combusted in the flare shall not exceed 65 ppmv as H₂S. [District Rules 2201, 4102, and 4801]

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

District is a Responsible Agency

It is determined that another agency has prepared an environmental review document for the project. The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency, the District is limited to mitigating or avoiding impacts for which it has statutory authority. The District does not have statutory authority for regulating greenhouse gas emissions.

The District has determined that the applicant is responsible for implementing greenhouse gas mitigation measures, if any, imposed by the Lead Agency.

District CEQA Findings

The County of Kings (County) is the public agency having principal responsibility for approving the project. As such, the County served as the Lead Agency (CCR §15367). In approving the project, the Lead Agency prepared and adopted a Mitigated Negative Declaration. The Lead agency filed a Notice of Determination, stating that the environmental document was adopted pursuant to the provisions of CEQA and concluding that the project would not have a significant effect on the environment.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CCR §15381). As a Responsible Agency the District complies with CEQA by considering the environmental document prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CCR §15096).

The District has considered the Lead Agency's environmental document. Furthermore, the District has conducted an engineering evaluation of the project, this document, which demonstrates that Stationary Source emissions from the project would be below the District's thresholds of significance for criteria pollutants. Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions will have a less than significant impact on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATC C-9441-1-1 subject to the permit conditions on the attached draft ATC in Appendix A.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
C-9441-1-1	3020-02-H	107 MMBtu/hr Flare	\$1,238

Appendixes

- A: Draft ATC C-9441-1-1
- B: ATC C-9441-1-0
- C: Manufacturer Specifications for Flare
- D: HRA and AAQA Summary
- E: Quarterly Net Emissions Change

APPENDIX A

Draft ATC C-9441-1-1

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: C-9441-1-1

LEGAL OWNER OR OPERATOR: LAKESIDE PIPELINE LLC
MAILING ADDRESS: 3711 MEADOW VIEW DR, STE 100
REDDING, CA 96002

LOCATION: 15662 7TH AVE
HANFORD, CA 93230

EQUIPMENT DESCRIPTION:

MODIFICATION OF BIOGAS CLEANUP PLANT CONSISTING OF AN ACTIVATED CARBON ADSORPTION SYSTEM AND CO2 MEMBRANE REMOVAL SYSTEM, CONDENSER AND ASSOCIATED PUMPS AND COMPRESSORS: INSTALL A NEW 107 MMBTU/HR PARNEL BIOGAS INC BACKUP/EMERGENCY BIOGAS-FIRED OPEN FLARE; AND CORRECT THE AMOUNT OF RAW BIOGAS VENTED FROM CO2 MEMBRANE SYSTEM FROM 3% TO 3.5% OF TOTAL BIOGAS PROCESSED IN THE CLEANUP PLANT

CONDITIONS

1. Authority to Construct (ATC) C-9441-1-0 shall be implemented prior to or concurrently with this ATC. [District Rule 2201]
2. {271} All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
4. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
6. The exhaust stack for the flare shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
7. The carbon vessels shall be sealed vapor tight except during servicing of spent carbon in a vessel. [District Rule 2201]
8. Two carbon vessels shall be connected in series and both shall be utilized except during servicing of the spent canister. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

C-9441-1-1: Dec 10 2020 1:39PM - YOSHIMUJ : Joint Inspection NOT Required

9. Activated carbon VOC control device shall be at least 95% efficient in controlling the VOCs from the raw biogas. [District Rule 2201]
10. {1413} Sampling ports adequate for extraction of grab samples, measurement of gas flow rate, and use of an FID, PID, or other District-approved VOC detection device shall be provided for both the influent and the effluent gas streams. [District Rule 1081]
11. The total amount of raw biogas processed by the biogas cleanup plant shall not exceed 2.91 MMscf/day. [District Rule 2201]
12. Total waste gas containing CH₄, N₂, or S vented to the atmosphere from the biogas cleanup plant under normal operations shall not exceed 3.5% of the raw biogas processed by the biogas cleanup plant. [District Rule 2201]
13. Venting of off-spec gas shall not exceed either of the following limits: 0.071 MMscf/hr or 1.70 MMscf/day. [District Rule 2201]
14. Venting of off-spec gas shall not exceed 350 hours per year (including start-up and shutdown). [District Rule 2201]
15. Total sulfur emissions from the operation shall not exceed 6.3 lb/day. [District Rule 2201]
16. Sulfur content of vented off-spec gas shall not exceed 0.357 lb/MMscf. [District Rule 2201]
17. Sulfur content of the biogas combusted in the flare shall not exceed 65 ppmv as H₂S. [District Rules 2201, 4102, and 4801]
18. VOC emissions from the operation shall not exceed 2.5 lb/day. [District Rule 2201]
19. VOC content of raw biogas shall not exceed 0.296 lb/MMscf. [District Rule 2201]
20. NH₃ content of raw biogas shall not exceed 1.74 lb/MMscf. [District Rule 2201]
21. Only biogas or biomethane shall be vented through the flare. [District Rule 2201]
22. Flaring of biogas for testing and maintenance, required regulatory purposes, and backup purposes shall not exceed either of the following limits: 332.8 MMBtu in any one day (equivalent to 512,000 scf/day @ 650 Btu/scf), or 31,921.5 MMBtu in any consecutive 365-day period (equivalent to 49,110,000 scf/year @ 650 Btu/scf). [District Rules 2201 and 4102]
23. Emissions from the flare shall not exceed any of the following limits: 0.06 lb-NO_x/MMBtu, 0.015 lb-PM₁₀/MMBtu, 0.31 lb-CO/MMBtu, or 0.006 lb-VOC/MMBtu. [District Rule 2201]
24. A flame shall be present at all times whenever combustible gases are vented through the flare. [District Rule 2201]
25. The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 2201]
26. The flare shall be operated only for testing and maintenance, required regulatory purposes, backup, and emergency purposes. An emergency is a situation or condition arising from a sudden and reasonably unforeseeable and unpreventable event beyond the control of the operator, such as, but not limited to, unpreventable equipment failure, natural disasters, acts of war or terrorism, and external power curtailment (except due to interruptible power service agreements). An emergency situation requires immediate corrective action to restore safe operation. [District Rules 2201 and 4102]
27. Ongoing compliance with VOC control efficiency requirements shall be demonstrated at least once per week by sampling both the influent and the effluent gas streams for the H₂S removal and gas polishing system with an FID, PID, or other District-approved VOC detection device. If the VOC control efficiency requirements are achieved and there is no single canister breakthrough for 8 consecutive weeks, then the monitoring frequency is extended to at least once every three (3) months. If during the three (3) month monitoring schedule the VOC control efficiency is shown to be less than 95%, weekly monitoring shall resume. [District Rule 2201]
28. The VOC content of the raw biogas shall not exceed 10% by weight. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

29. The VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 2201]
30. Biogas sulfur content analysis shall be performed within 60 days of initial startup operation of flare, and at least once every 12 months thereafter, using EPA Method 11 or EPA Method 15, as appropriate. Records of the biogas sulfur content analysis shall be maintained and provided to the District upon request. [District Rule 2201]
31. The sulfur content of the biogas to be flared shall be monitored and recorded at least once every calendar quarter in which a biogas sulfur content analysis is not performed. If quarterly monitoring shows a violation of the sulfur content limit of this permit, monthly monitoring will be required until six consecutive months of monitoring show compliance with the sulfur content limit. Once compliance with the sulfur content limit is shown for six consecutive months, then the monitoring frequency may return to quarterly. Monitoring shall not be required during periods in which the flare does not operate. [District Rule 2201]
32. Monitoring of the raw biogas sulfur content shall be performed using gas detection tubes calibrated for H₂S; a Testo 350 XL portable emission monitor; a continuous fuel gas monitor that meets the requirements specified in SCAQMD Rule 431.1, Attachment A; District-approved source test methods, including EPA Method 15, ASTM Method D1072, D4084, and D5504; District-approved in-line H₂S monitors; or an alternative method approved by the District. Prior to utilization of in-line monitors to demonstrate compliance with the biogas sulfur content limit of this permit, the permittee shall submit details of the proposed monitoring system, including the make, model, and detection limits, to the District and obtain District approval for the proposed monitor(s). [District Rule 2201]
33. The higher heating value (HHV) of the digester gas shall be determined using ASTM D1826, ASTM 1945 in conjunction with ASTM D3588, or an alternative method approved by the District. [District Rule 2201]
34. Sulfur concentration (H₂S) of the H₂S removal and gas polishing system outlet gas shall be measured monthly. [District Rule 2201]
35. Records of the cumulative running time for the H₂S removal and gas polishing system and the measured influent and effluent VOC concentrations for the H₂S removal and gas polishing system shall be maintained. [District Rule 2201]
36. Permittee shall maintain accurate records of all VOC and H₂S concentration test results and influent and effluent flow rates for the H₂S removal and gas polishing system. [District Rule 1070]
37. Records of hydrogen sulfide analyzer(s) installed or utilized and the calibration records of such analyzer(s) shall be maintained. Records are only required on such analyzer(s) utilized to demonstrate compliance with this permit. [District Rule 2201]
38. The flare shall be equipped with an operational, non-resettable, totalizing mass or volumetric fuel flow meter or other District-approved alternative method to measure the amount of gas combusted in the flare. [District Rule 2201]
39. Permittee shall maintain records of the operation of the backup flare, including the date that the flare was operated and the purpose of the operation (e.g. for testing and maintenance). [District Rule 2201]
40. Records of the methane content and the higher heating value (HHV) in Btu/scf of the biogas shall be maintained for each calendar quarter in which the flare operated. [District Rules 1070 and 2201]
41. Permittee shall maintain daily and annual records of the quantity of gas combusted in the flare in standard cubic feet (scf) and the total heating value in Btu/scf of the gas combusted. [District Rules 1070 and 2201]
42. The total heat input of the biogas combusted in the flare on any given day (MMBtu/day) shall be calculated using the measured quantity of gas combusted and the higher heating value (HHV) determined for the gas from the nearest date(s) to the date that the flare operated. [District Rule 2201]
43. Permittee shall maintain accurate records of the daily quantity of raw biogas (MMscf/day) processed in biogas clean plant under normal operations. [District Rule 2201]
44. Permittee shall maintain accurate records of the daily quantity of off-spec gas vented in scf, and total number of hours off-spec gas vented per year. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

45. The permittee shall maintain records of the amount of gas combusted annually, annual throughput, material usage, or other information necessary to demonstrate that this stationary source (C-9441) has the potential to emit, for all processes, less than ten (10.0) tons per year of VOC and less than ten (10.0) tons per year of NOx. [District Rule 4311]
46. All records shall be maintained and retained for a minimum of five (5) years, and shall be made available for District inspection upon request. Records may be maintained and submitted in an electronic format approved by the District. [District Rules 2201 and 4311]

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APPENDIX B

ATC C-9441-1-0



AUTHORITY TO CONSTRUCT

PERMIT NO: C-9441-1-0

ISSUANCE DATE: 12/16/2019

LEGAL OWNER OR OPERATOR: LAKESIDE PIPELINE LLC
MAILING ADDRESS: 3711 MEADOW VIEW DR, STE 100
REDDING, CA 96002

LOCATION: NE 1/4 OF SE 1/4 SECTION 28
TOWNSHIP 19 S RANGE 22 E (MDB&M)
HANFORD, CA

EQUIPMENT DESCRIPTION:

BIOGAS CLEANUP PLANT CONSISTING OF AN ACTIVATED CARBON ADSORPTION SYSTEM AND CO2 MEMBRANE REMOVAL SYSTEM, CONDENSER AND ASSOCIATED PUMPS AND COMPRESSORS

CONDITIONS

1. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
2. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. The carbon vessels shall be sealed vapor tight except during servicing of spent carbon in a vessel. [District Rule 2201]
4. Two carbon vessels shall be connected in series and both shall be utilized except during servicing of the spent canister. [District Rule 2201]
5. Activated carbon VOC control device shall be at least 95% efficient in controlling the VOCs from the raw biogas. [District Rule 2201]
6. Sampling ports adequate for extraction of grab samples, measurement of gas flow rate, and use of an FID, PID, or other District-approved VOC detection device shall be provided for both the influent and the effluent gas streams. [District Rule 1081]
7. Venting of off-spec gas shall not exceed 0.071 MMscf/hr and 1.70 MMscf/day. [District Rule 2201]
8. Venting off spec gas shall not exceed 350 hours per year (including start up and shut down). [District Rule 2201]
9. Total sulfur emissions from operation shall not exceed 1.0 lb/day. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

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Samir Sheikh, Executive Director / APCO



Bernard Marjollet, Director of Permit Services

C-9441-1-0 Dec 16 2019 6:21AM - DAVIDSOS : Joint Inspection NOT Required

10. Sulfur content of vented off-spec gas shall not exceed 0.357 lb/MMscf [District Rule 2201]
11. VOC emissions from operation shall not exceed 0.5 lb/day. [District Rule 2201]
12. VOC content of raw biogas shall not exceed 0.296 lb/MMscf. [District Rule 2201]
13. NH₃ content of raw biogas shall not exceed 1.74 lb/MMscf [District Rule 2201]
14. Initial compliance with VOC emission rate and control efficiency requirements shall be demonstrated by the results of the laboratory sample analysis. The results shall be submitted to the District within 60 days of the test. [District Rule 1081]
15. Laboratory samples for VOC shall be taken at the initial inspection, under the supervision of the APCD Inspector. Samples shall be taken from both the influent and the effluent gas stream sampling ports for the H₂S removal and gas polishing system. [District Rule 1081]
16. Measurements to determine the influent and the effluent gas flow rates for the H₂S removal and gas polishing system shall be taken at the initial inspection. Flow rate calculations shall be submitted to the District along with the laboratory sample analysis results. [District Rule 1081]
17. Ongoing compliance with VOC control efficiency requirements shall be demonstrated at least once per week by sampling both the influent and the effluent gas streams for the H₂S removal and gas polishing system with an FID, PID, or other District-approved VOC detection device. If the VOC control efficiency requirements are achieved and there is no single canister breakthrough for 8 consecutive weeks, then the monitoring frequency is extended to at least once every three (3) months. If during the three (3) month monitoring schedule the VOC control efficiency is shown to be less than 95%, weekly monitoring shall resume. [District Rule 2201]
18. The VOC content by weight percent (wt.%) shall be determined using American Society of Testing and Materials (ASTM) D1945 for gases and South Coast Air Quality Management District (SCAQMD) Method 304-91 or the latest revision of ASTM Method E168, E169 or E260 for liquids. [District Rule 4401]
19. Sulfur concentration (H₂S) of for the H₂S removal and gas polishing system system outlet gas shall be measured monthly. [District Rule 2201]
20. Records of the cumulative running time for the H₂S removal and gas polishing system and the measured influent and effluent VOC concentrations for the H₂S removal and gas polishing system shall be maintained. [District Rule 2201]
21. Permittee shall maintain accurate records of all VOC and H₂S concentration test results and influent and effluent flow rates for the H₂S removal and gas polishing system. [District Rule 1070]
22. Records shall be maintained for a period of five years and shall be made available for District inspection upon request. [District Rule 2201]

APPENDIX C

Manufacturer Specifications for Flare



13701 S. HWY 75 Glenpool, OK 74033

PROCESS SPECIFICATIONS: LAKESIDE PIPELINE, LLC

Biogas gas flow rate flare (max 10" tip)	2000 scfm
Biogas gas flow rate flare (min 10" tip)	200 scfm
Flare exit velocity (not to exceed)	60.0 ft/sec
Overall stack Height	40'
Flare tip size	10"
Biogas composition:	
Methane	60-98%
CO ₂ , N ₂ , O ₂ , VOC's, H ₂ O, H ₂ S	40-2%
Heat release @ 2000 scfm (max)	107 MMBtu/hr
Inlet pressure to flare	4 psig
Blower motor horsepower	N/A
Sight elevation	218 ASL
Design wind load per ASCE 7-93	110mph
Noise level at 3ft.	< 85dba
Design ambient air temperature	-30F to 110F
Electrical area classification	Non-hazardous

Expected Flow/Emissions at 2000scfm, 98% methane:

N₂ 73.5 % vol.
O₂ 13.6 % vol.
CO₂ 6.0 % vol.
H₂O 6.9 % vol.
NO₂ 0.06 lbs/MMBTU
CO 0.31 lbs/MMBTU

Destruction efficiency at design flow with landfill gas methane content of 40% to 60%---98% overall destruction of total hydrocarbons.

Guaranteed to meet E.P.A. emission standards for landfill gas utility type flares. Designed in accordance of EPA established criteria for open flares 40 CFR 60.18

APPENDIX D

HRA and AAQA Summary

San Joaquin Valley Air Pollution Control District

Risk Management Review and Ambient Air Quality Analysis

To: Gurpreet Brar – Permit Services

From: Seth Lane – Technical Services

Date: November 23, 2020

Facility Name: LAKESIDE PIPELINE LLC

Location: 15662 7TH AVE , HANFORD

Application #(s): C-9441-1-1

Project #: C-1202485

1. Summary

1.1 RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
1-1	0.00	0.01	0.00	3.21E-08	No	Yes
Project Totals	7.19	0.01	0.00	3.21E-08		
Facility Totals	>1	0.22	0.02	1.46E-10		

1.2 AAQA

Pollutant	Air Quality Standard (State/Federal)				
	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass		Pass		
NO_x	Pass				Pass
SO_x	Pass	Pass		Pass	Pass
H₂S	Pass				
PM10				Pass	Pass
PM2.5				Pass	Pass
Ozone	Pass		Pass		

Notes:

- Results were taken from the attached AAQA Report.
- The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
- Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 µg/m³ for the 24-hour average concentration and 1 µg/m³ for the annual concentration.
- Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 µg/m³ for the 24-hour average concentration and 0.2 µg/m³ for the annual concentration.
- The California Ambient Air Quality Standard for H₂S is 42 µg/m³ for 1-hour.

1.3 Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 1 – 1:

1. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction.

2. Project Description

Technical Services received a request on July 13, 2020 to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the following:

- Unit -1-1: 107 MMBTU BIOGAS FLARE SERVING BIOGAS CLEANUP PLANT

3. RMR Report

3.1 Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the unit(s) or the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices (Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For unit's that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Toxic emissions for this proposed unit were calculated using 2001 Ventura County's Air Pollution Control District's emission factors for Natural Gas Fired external combustion and based on the Dairy Biomethane characterization in Pipeline Quality Biomethane: North American Guidance Document for Introduction of Dairy Waste Derived Biomethane Into Existing Natural Gas Networks (2009).

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2013-2017 from Hanford (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	Process ID	Process Material	Process Units	Hourly Process Rate	Annual Process Rate
1	1	H2S	Lbs	0.00	2.00
1	1	NH3	Lbs	0.00	9
1	1	CO2 Membrane Biogas	MMscf	6.13E-04	0.22
1	1	Flare Biogas	MMscf	0.10	49.11

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/ Horizontal/ Capped
1	Biogas Flare	13.84	533	12.96	1.80	Vertical

Area Source Parameters					
Unit ID	Unit Description	Release Height (m)	X-Length (m)	Y -Length (m)	Area (m ²)
1	CO2 Membrane	2.44	45.72	30.48	1,393.55

4. AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour NO₂ standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

The modeling analyses predicts the maximum air quality impacts using the appropriate emissions for each standard's averaging period. Required model inputs for a refined AAQA include background ambient air quality data, land characteristics, meteorological inputs, a receptor grid, and source parameters including emissions. These inputs are described in the sections that follow.

Ambient air concentrations of criteria pollutants are recorded at monitoring stations throughout the San Joaquin Valley. Monitoring stations may not measure all necessary pollutants, so

background data may need to be collected from multiple sources. The following stations were used for this evaluation:

Monitoring Stations				
Pollutant	Station Name	County	City	Measurement Year
NOx	Hanford	Kings	Hanford	2016
PM10	Hanford	Kings	Hanford	2016
PM2.5	Hanford	Kings	Hanford	2016
SOx	Fresno - Garland	Fresno	Fresno	2016

Technical Services performed modeling for directly emitted criteria pollutants with the emission rates below:

Emission Rates (lbs/hour)						
Unit ID	Process	NOx	SOx	CO	PM10	PM2.5
1	1	3.83	1.13	19.8	1.00	1.00

Emission Rates (lbs/year)						
Unit ID	Process	NOx	SOx	CO	PM10	PM2.5
1	1	1,915	567*	9,896	479	479

*This includes the 2 Lbs increase from the CO2 membrane

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for 2013-2017 from Hanford (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/ Horizontal/ Capped
1	Biogas Flare	13.84	533	12.96	1.80	Vertical

Area Source Parameters					
Unit ID	Unit Description	Release Height (m)	X-Length (m)	Y -Length (m)	Area (m²)
1	CO2 Membrane	2.44	45.72	30.48	1,393.55

5. Conclusion

5.1 RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance**

with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

5.2 AAQA

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

6. Attachments

- A. Modeling request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Prioritization score w/ toxic emissions summary
- D. Facility Summary
- E. AAQA results

APPENDIX E

Quarterly Net Emissions Change (QNEC)

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

$QNEC = PE2 - PE1$, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.

PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr.

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the PE2 and PE1 values in Sections VII.C.2 and VII.C.1 in the evaluation above, QNEC can be calculated as follows:

$$QNEC = (PE2_{\text{annual}} - PE1_{\text{annual}}) \div 4 \text{ quarters/year}$$

Quarterly NEC [QNEC]			
Pollutant	PE2 (lb/yr)	PE1 (lb/yr)	QNEC (lb/qtr)
NO _x	1,915	0	478.75
SO _x	565	20	136.25
PM ₁₀	479	0	119.75
CO	9,896	0	2,474
VOC	210	16	48.5