Notice of Construction Application
Supporting Information Report
Sunnyside RNG LLC
Proposed Renewable Natural Gas Facility
Yakima County, Washington

April 27, 2022

Prepared for

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LIST OF ABBREVIATIONS AND ACRONYMS

$\mu g/m^3$	microgram per cubic meter
AERMAP	AMS/EPA regulatory model terrain pre-processor
AERMET	AERMOD meteorological pre-processor
AERMOD	AMS/EPA regulatory model
AMS	American Meteorological Society
ASIL	acceptable source impact level
BACT	best available control technology
bhp	brake horsepower
BPIP PRIME	Building Profile Input Program-Plume Rise Model Enhancements
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CHP	combined heat and power
CO	carbon monoxide
CO_2	carbon dioxide
CrVI	hexavalent chromium
DEEP	diesel engine exhaust particulate matter
Ecology	Washington State Department of Ecology
EPA	US Environmental Protection Agency
g/bhp-hr	grams per brake horsepower-hour
GEP	good engineering practice
GHG	greenhouse gas
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HC	hydrocarbon
hp	horsepower
hr	hour
IDEQ	Idaho Department of Environmental Quality
km	kilometer
m	meter
m/s	meters per second
MACT	maximum achievable control technology
MMBtu	million British thermal units
MWe	megawatts electrical
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Data
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NSR	New Source Review

LIST OF ABBREVIATIONS AND ACRONYMS (CONTINUED)

NO_X .... nitrogen oxides
NSPS .... New Source Performance Standards
NWS .... National Weather Service
O_2 .... oxygen
PM .... particulate matter
$PM_{2.5}$ .... PM with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10} .... PM with an aerodynamic diameter less than or equal to 10 microns
ppm .... parts per million
ppmvd .... parts per million by volume dry
PVMRM .... Plume Volume Molar Reaction Model
RCW .... Revised Code of Washington
RICE .... reciprocating internal combustion engine
RNG .... renewable natural gas
SCR .... selective catalytic reduction
SIL .... significant impact level
SO_2 .... sulfur dioxide
SQER .... small-quantity emission rate
TAP .... toxic air pollutant
tBACT .... BACT for toxic air pollutants
tpy .... tons per year
VOC .... volatile organic compound
WAAQS .... Washington Ambient Air Quality Standards
WAC .... Washington Administrative Code
YRCAA .... Yakima Regional Clean Air Agency

1.0 SUMMARY

Sunnyside RNG LLC is proposing to build a new renewable natural gas (RNG) facility near Sunnyside, Washington (Figure 1). This document has been prepared to support the submittal of a New Source Review (NSR) application for the new emission units, under air quality regulations promulgated by the Yakima Regional Clean Air Agency (YRCAA) and the Washington State Department of Ecology (Ecology). The Sunnyside RNG facility will be developed on approximately 110 acres located approximately 3 miles west of Sunnyside, Washington along Yakima Valley Highway and Northbank Road.

The RNG facility will produce between 700,000 and 800,000 million British thermal units (MMBtu) of RNG per year through anaerobic digestion of feedstocks delivered from several dairies located near the facility. The facility will provide a highly effective nutrient management system for nearby dairies and the RNG produced will offset more than 155,000 metric tons of carbon dioxide equivalent per year. Five anaerobic digester trains will convert feedstock into biogas, the biogas will be upgraded into RNG, and the RNG will be compressed and injected into the nearby Williams natural gas pipeline.

The emission units evaluated for this NSR application consists of the following:

- Two (2) natural gas-fired combined heat and power (CHP) engine sets. The two CHPs will have a combined electrical generating capacity of 2.86 megawatt (electrical; MWe).
- Five (5) natural gas-fired boilers, each with an individual heat input capacity of 6 MMBtu per hour (MMBtu/hr).
- One (1) biogas upgrade system with an iron chelate emission control system.
- One (1) Tier 2-certified diesel-fired emergency generator set.
- Five (5) enclosed ground flares, one for each digester train to safely combust biogas when the upgrade system is not operational.
- One (1) cellulose grinder with a dust collection system.

A site plan of the proposed facility is provided on Figure 2.

This application provides information about the proposed RNG facility necessary for YRCAA to review and determine whether the proposed project satisfies NSR requirements.

The proposed RNG facility will comply with all applicable federal and state emission standards and each emission unit will employ best available control technology (BACT) for criteria pollutants and toxic air pollutants (tBACT). Potential emissions from each proposed emission unit were calculated using the findings from the BACT/tBACT analysis, vendor-provided emissions data, manufacturer guarantees, and emission factors developed by the US Environmental Protection Agency (EPA) and California's air toxics program (VCAPCD 2001).

Air dispersion modeling was conducted for criteria air pollutants and toxic air pollutants (TAPs.) The results of modeling demonstrate that ambient criteria pollutant concentrations attributable to operations at the RNG facility will not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS). Additionally, the modeling results demonstrate that ambient TAP concentration increases attributable to operations at the RNG facility will be less than applicable Washington acceptable source impact levels (ASILs).

2.0 INTRODUCTION

Landau Associates, Inc. prepared this NSR application on behalf of Sunnyside RNG to request that YRCAA issue an Order of Approval that will allow construction and operation of an RNG facility under air quality regulations promulgated by YRCAA and Ecology. The RNG facility will be located off of Yakima Valley Highway near Sunnyside, Washington, on Yakima County Parcel Nos. 22102814001 and 22102813006. The RNG facility will be located in an area designated as in attainment or unclassifiable for all NAAQS.

This NSR application provides YRCAA with a project description, a summary of potential emissions from each emission unit, a regulatory analysis, and an air quality impact analysis. A completed YRCAA NSR application form is provided in Appendix A.

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3.0 PROJECT DESCRIPTION

3.1 Facility Description

The RNG facility location is shown on Figure 1, and a site plan showing the locations of the facility emission units is provided on Figure 2. A simplified process flow diagram of facility equipment and operations is provided on Figure 3.

3.1.1 Feedstock Delivery and Handling

Facility feedstocks will include dairy manure slurry and cellulosic material. Slurry delivery trucks will enter the facility and transfer feedstock through offload funnels into two buffer tank silos. Bales of cellulosic material will be delivered by truck and stored in the southwestern portion of the site. The size of the cellulosic material will be reduced using an electric grinder. Fugitive dust generated by the cellulose grinding process will be captured using an enclosure, dust pick-ups, and a dust collection system.

Sunnyside RNG plans to pave all onsite areas and roadways with expected truck traffic. An unpaved area located in the southern portion of the property is not expected to have any truck traffic as a result of normal operations.

3.1.2 Anaerobic Digesters

Five anaerobic digester trains, each of which will consist of a primary digester tank and two secondary digester tanks, will be located at the RNG facility. Each digester tank will include biogas storage membranes that capture, store, and desulfurize the generated biogas. The final digestate will be pumped to buffer tanks before it is separated into fiber and thin fractions. The fiber fraction will be loaded into trucks and shipped off site, while the thin fraction will be stored in two onsite covered lagoons.

Each of the five anaerobic digester trains will be equipped with an enclosed ground flare to safely combust any excess biogas generated while the biogas upgrading plant and/or pipeline injection system is not operational. Sunnyside RNG has conservatively estimated that these flares will be used no more than 176 hours per year of flaring, which is based on the assumption that the biogas upgrading and/or injection equipment will be unavailable no more than 2 percent of the time on an annual basis.

3.1.3 Biogas Upgrading

Biogas leaving the anaerobic digester storage tank membranes will be chilled and transferred to the biogas upgrading plant, where amine treatment equipment will separate carbon dioxide (CO_2) and hydrogen sulfide (H_2S) from the biomethane. Following dehydration using a liquid desiccant to remove water vapor, the biomethane will be compressed and injected into the natural gas pipeline.

An iron chelate system will be used to remove H_2S from the tail gas produced by the biogas upgrading process before it is vented to the atmosphere.

3.1.4 Heat and Power

Two natural gas-fired CHP engine sets will provide electricity for facility operations and heat for the anaerobic digesters and biogas upgrading plant. The power output rating for each CHP engine will be 1,966 brake horsepower (bhp). Sunnyside RNG plans to install selective catalytic reduction (SCR) systems and oxidation catalysts to reduce oxides of nitrogen (NO_X), carbon monoxide (CO), and volatile organic compound (VOC) emissions generated by the two CHP engines.

Sunnyside RNG plans to install three natural gas-fired steam boilers and two natural gas-fired hot water boilers to provide steam and hot water for the anaerobic digesters and biogas upgrading plant. The maximum heat input capacity of each boiler will be 6 MMBtu/hr.

Back-up emergency power for the facility will be provided by a generator set powered by a 2,923 bhp diesel-fired, EPA Tier 2-certified engine. Planned operation of the emergency generator will be limited to 100 hours per year for readiness and maintenance checks.

4.0 AIR POLLUTANT EMISSION ESTIMATES

Criteria pollutant and TAP emissions were calculated for each emission unit proposed by Sunnyside RNG for the facility per the requirements of Washington Administrative Code (WAC) 173-400-103 and WAC 173-460-050. Worst-case short-term and annual maximum emission rates were calculated for criteria pollutants and TAPs based on peak hourly and annual operating scenarios.

The facility-wide criteria pollutant potentials-to-emit are summarized in Table 1. Facility-wide potential TAP emissions are summarized in Table 2 and compared with applicable small-quantity emission rates (SQERs) from WAC 173-460-150. Detailed emission calculations are provided in Appendix B.

Table 1: Potential Annual Emissions Summary

Pollutant	CHPs (tpy)	Boilers (tpy)	Amine System (tpy)	Emergency Generator (tpy)	Backup Flares (tpy)	Straw Grinding (tpy)	Roadway Fugitives (tpy)	Project Total (tpy)
NO_X	7.6	1.5	--	2.2	0.54	--	--	**12**
CO	8.4	2.9	--	0.50	2.5	--	--	**14**
PM_{10}	0.76	1.0	--	0.070	0.059	0.44	0.64	**3.0**
$PM_{2.5}$	0.76	1.0	--	0.070	0.059	0.44	0.16	**2.5**
SO_2	0.061	0.079	--	0.0018	3.3	--	--	**3.5**
VOCs	1.8	0.72	--	0.038	0.010	--	--	**2.6**
Total HAPs	0.59	0.015	--	0.025	6.4E-04	--	--	**0.63**

Abbreviations and Acronyms:

CHP = combined heat and power
CO = carbon monoxide
HAP = hazardous air pollutant
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns
SO_2 = sulfur dioxide
tpy = tons per year
VOC = volatile organic compound

Table 2: Project Emissions Compared to Small-Quantity Emission Rates

Pollutant	CAS No.	Averaging Period	Emission Rate	SQER (a)	Review Required?
			(pounds per averaging period)		
Nitrogen Dioxide	10102-44-0	1-hr	30	0.87	Yes
Carbon Monoxide	630-08-0	1-hr	35	43	--
Sulfur Dioxide	7446-09-05	1-hr	38	1.2	Yes
Diesel Engine Exhaust Particulate Matter	DPM	year	64	0.54	Yes

Pollutant	CAS No.	Averaging Period	Emission Rate	SQER (a)	Review Required?
			(pounds per averaging period)		
1,1,2,2-Tetrachloroethane	79-34-5	year	1.2	2.8	--
1,1,2-Trichloroethane	79-00-5	year	0.98	10	--
1,1-Dichloroethane	75-34-3	year	0.73	100	--
1,2-Dichloroethane	107-06-2	year	0.73	6.2	--
1,2-Dichloropropane	78-87-5	year	0.83	16	--
1,3-Butadiene	106-99-0	year	11	5.4	Yes
1,3-Dichloropropene	542-75-6	year	0.82	41	--
Acetaldehyde	75-07-0	year	271	60	Yes
Acrolein	107-02-8	24-hr	0.44	0.026	Yes
Ammonia	7664-41-7	24-hr	7.7	37	--
Arsenic	7440-38-2	year	0.024	0.049	--
Benzene	71-43-2	year	19	21	--
Benzo(b)fluoranthene	205-99-2	year	0.005	0.89	--
Cadmium	7440-43-9	year	0.022	0.039	--
Carbon Tetrachloride	56-23-5	year	1.1	27	--
Chlorobenzene	108-90-7	24-hr	2.6E-03	74	--
Chloroethane	75-00-3	24-hr	1.6E-04	2200	--
Chloroform	67-66-3	year	0.88	7.1	--
Chromium VI	18540-29-9	year	1.5E-03	0.00065	Yes
Chrysene	218-01-9	year	0.14	8.9	--
Copper	7440-50-8	1-hr	3.1E-04	0.19	--
Ethylbenzene	100-41-4	year	4.0	65	--
Ethylene Dibromide	106-93-4	year	1.4	0.27	Yes
Formaldehyde	50-00-0	year	632	27	Yes
Hexane	110-54-3	24-hr	0.11	52	--
Hydrogen Chloride	7647-01-0	24-hr	0.014	0.67	--
Hydrogen Sulfide	7783-06-4	24-hr	9.7	0.15	Yes
Lead	7439-92-1	year	0.12	14	--
Manganese	7439-96-5	24-hr	2.3E-04	0.022	--
Mercury	7439-97-6	24-hr	1.5E-04	0.0022	--
Methanol	67-56-1	24-hr	0.21	1500	--

Pollutant	CAS No.	Averaging Period	Emission Rate	SQER (a)	Review Required?
			(pounds per averaging period)		
Methylene Chloride	75-09-2	year	4.1	9800	--
Naphthalene	91-20-3	year	2.7	4.8	--
Nickel	7440-02-0	year	0.058	0.62	--
Phenol	108-95-2	24-hr	2.0E-03	15	--
Propylene	115-07-1	24-hr	1.7	220	--
Selenium	7782-49-2	24-hr	1.6E-04	1.5	--
Styrene	100-42-5	24-hr	2.0E-03	65	--
Toluene	108-88-3	24-hr	0.12	370	--
Vinyl Chloride	75-01-4	year	0.46	18	--
Xylene	1330-20-7	24-hr	0.080	16	--

(a) Small-Quantity Emission Rates from WAC 173-460-150.

4.1 Combined Heat and Power Emissions

The CHP units will be Jenbacher model J420 or equivalent. Manufacturer-provided emission factors were used to calculate NO_X, CO, and VOC emissions; these factors reflect use of an SCR system to reduce NO_X emissions and oxidation catalysts to reduce CO and VOC emissions. The manufacturer specified that ammonia slip from the proposed SCR system would be limited to 10 parts per million by volume on a dry basis (ppmvd) at 15 percent oxygen (O_2); this maximum exhaust concentration was used to calculate ammonia emissions. Emissions of all other pollutants were calculated using emission factors from Table 3.2-2 (Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines) in the EPA's AP-42, Volume I, Chapter 3.2-2 (Natural Gas-Fired Reciprocating Engines; EPA 1995). Greenhouse gas emissions were calculated using natural gas combustion emission factors from the EPA's Mandatory GHG Reporting Rule (promulgated in Title 40, Part 98, Subpart C of the Code of Federal Regulations [40 CFR 98, Subpart C]).

Maximum hourly emissions were calculated using the manufacturer-provided fuel consumption rate at 100 percent load. Maximum daily emissions were calculated using maximum hourly emission rates (i.e., 100 percent load) and an assumption of continuous operation throughout the day (i.e., 24 hours/day), and annual emissions were based on continuous annual operation (i.e., 8,760 hours/year).

4.2 Boiler Emissions

The five boilers will be three Cleaver Brooks CBEX-2W Low-NO_X steam boilers and two Cleaver Brooks CFC-E Low-NO_X hot water boilers, or equivalent. Manufacturer-provided exhaust concentrations that reflect the proposed BACT levels summarized in Section 5.2 were used to calculate NO_X and CO emissions. All remaining criteria pollutant emissions were calculated using emission factors from the EPA's AP-42, Volume I, Chapter 1.4 (External Natural Gas Combustion). Greenhouse gas emissions were calculated using natural gas combustion emission factors from the EPA's Mandatory GHG Reporting Rule (40 CFR 98, Subpart C). TAP emissions were calculated using emission factors from California's air toxics program (AB 2588) for natural gas combustion units with a maximum heat input capacity less than 10 MMBtu/hr.

Hourly emissions were based on maximum-rated firing rates, daily emissions were based on continuous operation (i.e., 24 hours/day) at the maximum hourly rate, and annual emissions were based on continuous annual operation (i.e., 8,760 hours/year), also at the maximum hourly rate.

4.3 Biogas Upgrading Emissions

There are no combustion emissions associated with the biogas upgrading system. Heat for the amine treatment and regeneration systems will be provided by the CHPs and boilers. Tail gas from the biogas upgrading plant will be treated by an iron chelate system. A minimal amount of H_2S is expected in the treated tail gas.

Hourly emissions were based on vendor design specifications, daily emissions were based on continuous operation (i.e., 24 hours/day), and annual emissions were based on continuous annual operation (i.e., 8,760 hours/year.)

4.4 Emergency Generator Emissions

The EPA Tier 2-certified emergency generator will be a Kohler KD2000 powered by an EPA Tier 2-certified, diesel-fired engine, or equivalent. Manufacturer-reported not-to-exceed generator emission factors for CO, NO_X, and particulate matter (PM) were used to calculate emission rates. Additionally, the manufacturer-provided hydrocarbon (HC) emission factor was assumed to be equivalent to a total VOC emission factor.

Emissions of diesel engine exhaust particulate matter (DEEP) were conservatively assumed to be equal to the not-to-exceed PM emission factors provided by the manufacturer. The emission factors for PM_{10} and $PM_{2.5}$ include both "front-half" (i.e., filterable PM) and "back-half" (i.e., condensable PM) emissions. The filterable PM estimate is equal to the manufacturers' not-to-exceed emission factor for PM. An estimate of condensable PM is assumed to be equal to the not-to-exceed HC emission factor provided by the manufacturer. The SO_2 emission rate was calculated using an emission factor formula from the EPA's AP-42, Volume I, Chapter 3.4 (Large Stationary Diesel and All Stationary Dual-Fuel Engines), and the maximum sulfur content of the fuel, ultra-low sulfur diesel, which has a maximum sulfur content of 15 parts per million (ppm) by weight.

Greenhouse gas emissions were calculated using diesel fuel combustion emission factors from the EPA's Mandatory GHG Reporting Rule (40 CFR 98, Subpart C), and TAP emissions were calculated using emission factors from California's air toxics program (AB 2588) for diesel-fired internal combustion engines.

Hourly emissions were based on the maximum engine power rating and maximum fuel usage rate with testing limited to no more than 30 minutes, daily emissions were based on one 30-minute test per day, and annual emissions were based on a maximum of 100 hours per year of non-emergency usage.

4.5 Flare Emissions

Enclosed ground flares will be used to safely combust excess biogas generated by the anaerobic digester lines when the biogas upgrading plant and/or the injection system is not operating. The peak hourly biogas production rate from all five lines combined is 2,500 cubic feet per minute (cfm). The generated biogas is expected to contain H_2S at a maximum concentration of 1,500 ppm, CO_2 at an average concentration of 45 percent, and have an average heat content of 600 Btu per cubic foot.

Flare SO_2 emissions were based on the assumption that all H_2S in the biogas would be oxidized to SO_2. NO_X and CO emissions from biogas flaring were calculated using emission factors from the EPA's AP-42, Volume I, Chapter 13.5 (Industrial Flares). All remaining criteria pollutant emissions from biogas flaring were calculated using emission factors from the EPA's AP-42, Volume I, Chapter 1.4 (External Natural Gas Combustion). Greenhouse gas emissions were calculated using natural gas combustion emission factors from the EPA's Mandatory GHG Reporting Rule (40 CFR 98, Subpart C) and the assumed average CO_2 concentration in the biogas. TAP emissions were calculated using emission factors from California's air toxics program (AB 2588) for natural gas combustion sources with a maximum heat input capacity of between 10 and 100 MMBtu/hr. Flaring emission factors for petroleum refining were not used because they are not representative of biogas flaring.

Hourly emissions were based on flaring a maximum of 2,500 cfm of biogas in an hour, daily emissions were based on continuous flaring (i.e., 24 hours/day) at the maximum hourly rate, and annual emissions were based on flaring for 176 hours/year at the maximum hourly rate.

4.6 Cellulose Grinding Emissions

The size of cellulose material delivered to the facility will be reduced using an electric grinder within an enclosed structure. A fan will be used to keep the structure under negative pressure, and the exhaust from the structure will be filtered through a dust collection system located outside of the structure. Dust collector exhaust emissions were calculated using the maximum daily cellulose processing rate (200 tons/day) and a representative PM emission factor from the EPA's AP-42, Volume I, Chapter 9.9.1 (Hammermill Operations) that reflects control by a baghouse. PM_{10} and $PM_{2.5}$ emissions were conservatively assumed to be equivalent to PM emissions. Annual emissions were based on continuous operation (i.e., 365 day/year.) The baghouse was assumed to achieve 99.9 percent control efficiency at a minimum.

4.7 Roadway Emissions

Fugitive dust from paved roadways was calculated using site-specific truck traffic information (i.e., vehicle weight and vehicle miles traveled), assumed road surface silt content, and emission factors from the EPA's AP-42, Volume I, Chapters 13.2.1 (Paved Roads). Sunnyside RNG will implement dust minimization techniques (e.g., trackout minimization and onsite vehicle speed limits) to reduce fugitive dust emissions from onsite roadways. An overall control efficiency of 70 percent was applied to account for the combined dust minimization techniques.

5.0 EMISSION STANDARD COMPLIANCE

5.1 Compliance with State and Federal Regulations

The RNG facility will comply with the following applicable air regulations, in accordance with the federal and state Clean Air Acts. These requirements are adopted by reference in YRCAA Regulation 1 and specified in:

- Chapter 70.94 Revised Code of Washington (RCW) (Washington Clean Air Act)
- Chapter 173-400 WAC (General Regulations for Air Pollution Sources)
- Chapter 173-460 WAC (Controls for New Sources of Toxic Air Pollutants; updated December 30, 2019)
- 40 CFR Part 60 New Source Performance Standards
- 40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants.

Specifically, the project includes sources of air contaminants and will follow applicable air contaminant regulations as listed in:

- RCW 70.94.152
- WAC 173-400-113
- WAC 173-460-040.

The area in which the project is located is in attainment, or unclassifiable, of all federal Clean Air Act criteria pollutants. Facilities that produce more than 100 tons per year of any criteria pollutant, 10 tons per year of individual hazardous air pollutant (HAP), or 25 tons per year of combined HAPs are considered major sources under the federal regulation 40 CFR Part 70 and the state regulation WAC 173-410 et seq. Potential-to-emit estimates provided in Section 4.0 demonstrate that the facility will emit:

- Less than 100 tons per year of any criteria pollutant (PM, CO, SO_2, VOCs, and nitrogen dioxide [NO_2])
- Less than 10 tons per year of any individual HAP
- Less than 25 tons per year of combined HAPs.

As a result, a Title V operating permit is not required. Likewise, a Prevention of Significant Deterioration NSR pre-construction permit is not required because emissions of all federally regulated NSR pollutants will be less than the major source threshold of 250 tons per year.

5.2 Best Available Control Technology

BACT/tBACT is required as part of NSR and is intended to minimize criteria and toxic air pollutant emissions. BACT is an emission limitation based on the maximum degree of reduction that can be feasibly achieved for each air pollutant emitted from any new or modified stationary source.

Washington guidance for BACT determinations indicates using either presumptive BACT or a "top-down" approach (Ecology 2021). As part of the pre-application meeting with YRCAA on March 9, 2022, Sunnyside RNG discussed presumptive BACT for the new emission units associated with the RNG facility. A summary of presumptive BACT for each emission unit is summarized in Table 3.

Table 3: Proposed BACT/tBACT for Project

Pollutant	Proposed BACT/tBACT
CHPs	
NO_x	0.2 grams per brake horsepower-hour (g/bhp-hr; Selective Catalytic Reduction)
CO	0.22 g/bhp-hr (Oxidation Catalyst)
Ammonia	10 ppmvd @ 15% O_2
VOC/TAPs	Good Combustion Practices and Oxidation Catalyst
Boilers	
NO_x	9 ppmvd @ 3% O_2
CO	30 ppmvd @ 3% O_2
VOC/TAPs	Good Combustion Practices
Emergency Generator	
Criteria/TAPs	EPA Tier 2 Emission Certification, Good Combustion Practices, and Ultra-Low Sulfur Diesel
Backup Flares	
Criteria/TAPs	Enclosed ground flares and Good Combustion Practices
Straw Grinding	
$PM_{10}/PM_{2.5}$	Baghouse 99.9% control efficiency

5.3 New Source Performance Standards

New Source Performance Standards (NSPS) are nationally uniform standards that apply to specific categories of stationary sources constructed, modified, or reconstructed after the standard was proposed. NSPS are found in Title 40, Part 60 of the Code of Federal Regulations (CFR). NSPS usually represent a minimum level of control that is required for a new source.

The following NSPS were evaluated to assess applicability to the RNG facility emission units:

- **40 CFR Part 60 Subpart Dc (Small Industrial-Commercial-Institutional Steam-Generating Units)**

  NSPS Subpart Db applies to each steam-generating unit that is constructed after June 9, 1989 and has a maximum design heat input capacity of between 10 and 100 MMBtu/hr. This subpart does not apply because the proposed steam-generating boilers have maximum heat input capacity less than 10 MMBtu/hr.

- **40 CFR Part 60 Subpart Kb (Volatile Organic Liquid Storage Vessels)**

  NSPS Subpart Kb applies to each storage vessel with a capacity greater than 75 cubic meters that is used to store volatile organic liquids that is constructed after July 23, 1984. This subpart does not apply because the anaerobic digester tanks are not used to store volatile organic liquids.

- **40 CFR Part 60 Subpart IIII (Stationary Compression Ignition Internal Combustion Engines)**

  NSPS Subpart IIII applies to owners and operators of stationary compression ignition engines that commence construction after July 11, 2005, and the engine is manufactured after April 1, 2006. The diesel generator will be subject to this subpart, and the RNG facility will operate the engine in a manner that satisfies the definition of "emergency engine" in NSPS Subpart IIII. Therefore, under NSPS Subpart IIII, the generator must be manufactured and certified to meet federal Tier 2 emission limits in 40 CFR Part 89. The RNG facility will install and operate a Tier 2-certified generator.

  The RNG facility will conduct all notifications, generator maintenance, recordkeeping, and reporting required by NSPS Subpart IIII.

- **40 CFR Part 60 Subpart JJJJ (Stationary Spark Ignition Internal Combustion Engines)**

  NSPS Subpart JJJJ applies to owners and operators of stationary spark ignition engines that commence construction after June 12, 2006, and the engine is manufactured after July 1, 2007 for engines with a maximum engine power greater than or equal to 500 horsepower (hp). The two CHP engines are subject to this subpart because they have a power rating of 1,966 hp.

  Owners and operators of stationary engines greater than 100 hp are required to meet the applicable emission standards. For the proposed CHP engines, the applicable emission standard is for non-emergency spark ignition natural gas, with a maximum engine power greater than or equal to 500 hp, and manufactured after July 1, 2010:

  - NO_x = 1.0 g/hp-hr or 82 ppmvd at 15% O_2;
  - CO = 2.0 g/hp-hr or 270 ppmvd at 15% O_2; and
  - VOCs = 0.7 g/hp-hr or 60 ppmvd at 15% O_2.

  The proposed CHP engines are not certified; therefore, the RNG facility will need to conduct initial performance testing within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first. The RNG facility will conduct all notifications, generator maintenance, recordkeeping, and reporting as required by NSPS Subpart JJJJ.

5.4 National Emission Standards for Hazardous Air Pollutants

Prior to the 1990 Clean Air Act Amendments, National Emission Standards for Hazardous Air Pollutants (NESHAPs) were risk-based emission standards for eight HAPs. Under the provisions of Section 112 of the 1990 Clean Air Act Amendments, Congress required the EPA to regulate the emissions of a total of 189 HAPs from all stationary and mobile sources. The EPA has promulgated regulations for specific industry categories that require controls tailored to the major sources of emissions and the HAPs of concern associated with that industry. The rules promulgated under Section 112 generally specify the maximum achievable control technology (MACT) that must be applied by a given industry category. Consequently, these rules are often called MACT standards.

There are two types of NESHAPs, one for "major" sources of HAP emissions and one for "area" sources of HAP emissions. Major sources are facilities that have the potential to emit more than 10 tons of a single HAP per year, or 25 tons per year of all HAPs combined. Area sources are facilities that are not major sources. The RNG facility will be an area source of HAP emissions.

The following NESHAPs were evaluated to determine applicability to the RNG facility emission units:

- **40 CFR Part 63 Subpart ZZZZ (NESHAP for Reciprocating Internal Combustion Engines [RICEs])**

  NESHAP Subpart ZZZZ establishes emission limits for stationary RICEs located at major and area sources of HAP emissions. The proposed diesel emergency generator engine satisfies NESHAP Subpart ZZZZ requirements by meeting the requirements of NSPS Subpart IIII.[1] Similarly, the proposed natural gas CHP engines satisfy NESHAP Subpart ZZZZ requirements by meeting the requirements of NSPS Subpart JJJJ. There are no additional requirements for the engines under this subpart.

- **40 CFR Part 63 Subpart JJJJJJ (NESHAP for Industrial, Commercial, and Institutional Boiler Area Sources)**

  NESHAP Subpart JJJJJJ establishes emission limits for boilers located at an area source of HAP emissions. This subpart is not applicable to the proposed boilers because gas-fired boilers are not regulated under this subpart.[2]

[1] 40 CFR 63.6590(c).

[2] 40 CFR 63.11195(e).

6.0 AMBIENT AIR QUALITY IMPACT ANALYSIS

This section presents the air dispersion modeling methodology and results, and provides an assessment of compliance with the NAAQS and Washington Ambient Air Quality Standards (WAAQS) for criteria pollutants, as well as comparisons to the Washington State screening thresholds for TAPs. Copies of the electronic modeling files prepared in support of the project will be provided to YRCAA via a file transfer site.

As discussed in the following subsections, the modeled ambient impacts expected from project emissions are either less than the significant impact levels (SILs) or less than the NAAQS and WAAQS, after summing with background concentrations. All model-predicted ambient TAP impacts are less than the ASILs.

6.1 Model Methodology and Assumptions

Air dispersion modeling was conducted in general alignment with the EPA's Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions; Final Rule (EPA 2005). The AERMOD[3] modeling system was used in accordance with the EPA's Revision to the Guideline on Air Quality Models (EPA 2005) to estimate ambient pollutant concentrations beyond the site property boundary.

Ambient air impacts were modeled for all criteria pollutants and TAPs for which compliance was not demonstrated via emissions threshold screening. The Industrial Source Complex-AERMOD View Version 10.2 interface provided by Lakes Environmental was used to support the air dispersion modeling. This version of the Lakes Environmental software incorporates the most recent version of AERMOD (Version v21112) at the time the modeling was completed. AERMOD requires input from several pre-processors, described below, for meteorological parameters, downwash parameters, and terrain heights. AERMOD uses data from pre-processor programs (i.e., meteorology and terrain) as well as emission estimates and physical exhaust release point characteristics to predict ambient concentrations attributable to the proposed project. The model calculates concentrations based on various averaging times (e.g., 1 hour, 24 hours, annual, etc.) for a defined network of receptors; these concentrations are used to assess compliance with regulations that use ambient concentrations as criteria.

The AERMOD model was used to estimate the short-term impacts (i.e., 24-hour average or less) of $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO, acrolein, and H_2S emissions, and long-term impacts (i.e., annual average) of $PM_{2.5}$, PM_{10}, NO_2, SO_2, DEEP, 1,3-butadiene, acetaldehyde, hexavalent chromium (CrVI), ethylene dibromide, and formaldehyde.

[3] American Meteorological Society (AMS)/US Environmental Protection Agency (EPA) Regulatory Model.

6.1.1 Stack Parameters

A variety of emission units are proposed by RNG Sunnyside for the facility. The locations of emission units are shown on Figure 2. Table 4 summarizes the stack parameters associated with each emission unit including stack heights above grade in meters (m), exhaust temperatures in degrees Kelvin (K), exit velocities in meters per second (m/s), stack diameters in meters, and the orientation of the exhaust when it exits the stack.

Table 4: Point Source Stack Parameters

Stack ID	Description	UTM Coordinates (a)		Stack Height (m)	Exhaust Temp. (K) (c)	Exhaust Velocity (m/s) (d)	Stack Diameter (m)	Release Orient. (e)
		Easting-X (m) (b)	Northing-Y (m)					
CHP1	CHP No. 1	725389.4	5134476.4	10.7	698	17.2	0.4	V
CHP2	CHP No. 2	725400.1	5134476.4	10.7	698	17.2	0.4	V
BLR1	Steam Boiler No. 1	725386.6	5134482.9	6.1	504	9.6	0.4	V
BLR2	Steam Boiler No. 2	725391.0	5134482.9	6.1	504	9.6	0.4	V
BLR3	Steam Boiler No. 3	725395.0	5134482.9	6.1	504	9.6	0.4	V
BLR4	HW Boiler No. 1	725400.5	5134482.9	6.1	344	8.4	0.4	V
BLR5	HW Boiler No. 2	725406.7	5134482.9	6.1	344	8.4	0.4	V
SRBR	Amine Vent	725386.8	5134411.2	9.1	422	0.4	0.1	V
EGEN	Emergency Generator	725406.7	5134479.4	10.7	773	37.1	0.5	V
FLARE1	Flare No. 1	725721.5	5134515.5	12.6	1,073	5.4	2.0	V
FLARE2	Flare No. 2	725721.9	5134480.6	12.6	1,073	5.4	2.0	V
FLARE3	Flare No. 3	725721.9	5134444.4	12.6	1,073	5.4	2.0	V
FLARE4	Flare No. 4	725721.9	5134399.2	12.6	1,073	5.4	2.0	V
FLARE5	Flare No. 5	725721.9	5134363.9	12.6	1,073	5.4	2.0	V
BAGH1	Grinder Baghouse	725536.2	5134287.5	6.1	Ambient	21.2	0.6	V

Notes:

(a) Universal Transverse Mercator, Zone 10, North American Datum of 1983 (NAD83)
(b) meters
(c) Kelvin
(d) meters per second
(e) vertical uninterrupted (V).

Entrained dust emissions from trucks operated on paved surfaces at the facility were represented in the modeling as volume sources using a methodology from the EPA's Haul Road Workgroup final report (EPA 2012). Sixty volume sources with initial release heights of 3.5 m, initial sigma-z values of 3.25 m, and initial sigma-y values ranging from 11.30 to 28.45 m, depending on the width of the paved area, were included in the modeling to represent the fugitive particulate matter emissions associated with onsite paved areas.

6.1.2 Building Downwash

Building downwash occurs when the aerodynamic turbulence in the wake of buildings or structures causes exhaust from an elevated source (i.e., a stack) to mix with winds and be rapidly conveyed toward the ground, resulting in elevated ground-level pollutant concentrations. The software program Building Profile Input Program-Plume Rise Model Enhancements (BPIP PRIME) was used to determine whether exhaust from emission units would be affected by nearby building structures. In general, a stack is considered to be affected by a given structure if the height of the stack is less than the height defined by the EPA's Good Engineering Practice (GEP) stack height methodology.

GEP stack height is defined as the height of the nearby structure(s) measured from the ground-level elevation at the base of the stack plus 1.5 times the lesser dimension, height, or projected width of the nearby structure(s). All RNG Sunnyside exhaust stacks will be less than the calculated GEP heights, and, therefore, influenced by building downwash. To account for this potential building downwash, parameters calculated by BPIP PRIME were provided as inputs to AERMOD. A summary of buildings and structures is provided in Table 5.

Table 5: Building and Structure Information

Building/Structure Description	Length (feet)	Width (feet)	Height (feet)
Administration	131	101	20
CHP Boiler Building	90	64	17
Biogas Pretreat	90	43	40
Biogas Upgrade	90	68	52
Grid Entry Unit	100	100	13
Digester Tanks (a)	--	107	59
Pre-Digester Tanks (b)		76	45
Grinder Building	129	80	20
Solids Collection	152	361	20

(a) Digester tank diameter equal to 107 feet.
(b) Pre-Digester tank diameter equal to 76 feet.

6.1.3 Receptor Grid

To include the effects of terrain on calculated ambient concentrations, AERMOD requires information about the surrounding terrain. The AMS/EPA Regulatory Model Terrain pre-processor (AERMAP, version 18081), as implemented by the Lakes software, was used to obtain the hill height scale and the base elevation for each receptor.

The receptor grid spacing increases with distance from the facility, as listed below:

- 12.5-m spacing along the ambient air boundary and from the property boundary to 150 m

- 25-m spacing from 150 m to 400 m
- 50-m spacing from 400 m to 900 m
- 100-m spacing from 900 m to 2,000 m
- 300-m spacing from 2,000 m to 4,500 m
- 600-m spacing from 4,500 m to 9,600 m.

AERMAP requires the use of topographic data to estimate surface elevations above mean sea level. Digital topographic data, in the form of National Elevation Data (NED) files, for the analysis region were obtained from the Lakes Web GIS website (Lakes Environmental; accessed March 30, 2022) and processed for use in AERMOD. The NED used for this project have a resolution of approximately 10 m (⅓ arc-second).

The Lakes software implementation of AERMAP produces a Receptor Output File (*.rou) that contains the calculated terrain elevations and hill height scales for each receptor. A separate *.rou file produced for each receptor spacing group was used as an input file provided to AERMOD. AERMAP also produced a Source Output File (*.sou), which contained the calculated base elevation of each emission unit.

6.1.4 Meteorology

The AERMOD Meteorological pre-processor (AERMET; Version 21112) is the meteorological pre-processor model that calculates boundary-layer parameters for use in AERMOD. AERMET is used to process formatted meteorological data from observation stations and to generate two input files for the AERMOD model: the Surface File with hourly boundary-layer parameter estimates; and the Profile File with multi-level observations of wind speed, wind direction, temperature, and standard deviations of fluctuating wind components. The meteorological observation data processed by AERMET in support of this project are described below.

- National Weather Service (NWS) hourly surface observations from Yakima Air Terminal in Yakima, Washington located near the RNG Sunnyside site. Five years (i.e., January 1, 2017 through December 31, 2021) of hourly surface data were processed using AERMET. AERMINUTE was run to reduce the instance of "calms." A potential concern related to the use of meteorological data for dispersion modeling is the high incidence of "calms," or periods of time with wind speeds that are less than the wind speed sensor's level of detection. NWS and Federal Aviation Administration data coding defines a wind speed of less than 3 knots as "calm" and assigns a value of 0 knots. This results in an overestimation of the occurrence of calm conditions. Similarly, if the wind direction varies by more than 60 degrees during a 2-minute period and the wind speed is 6 knots or less, the wind direction is reported as "missing." AERMINUTE reprocesses Automated Surface Observing System 1-minute wind data at a lower threshold and calculates hourly average wind speed and directions to supplement the standard hourly data processed using AERMET.
- NWS twice-daily upper air soundings from Spokane, Washington. Five years (i.e., January 1, 2017 through December 31, 2021) of upper air data were processed using AERMET.

- Surface characteristics, specifically albedo, Bowen ratio, and surface roughness, are used by AERMET to calculate the parameters required by AERMOD. Albedo is a measure of the solar radiation reflected by earth into space. The Bowen ratio is an evaporation-related measurement defined as the ratio of sensible heat to latent heat. The surface roughness length is the theoretical height above ground where the wind speed becomes zero.

  AERSURFACE version 20060 and land-use data from the 2016 National Land Cover Database (USGS 1992) were used to calculate the albedo, Bowen ratio, and surface roughness in the area surrounding the surface observation site. AERSURFACE calculates the fraction of each land-use type within each of 12 equal sectors (i.e., 30 degrees each) centered on the surface observation station. Default study radii of 1 kilometer (km) for surface roughness and 10 km for the Bowen ratio and albedo were used. Default month assignments were used for the four seasonal categories used by AERSURFACE, which are as follows: 1) mid-summer with lush vegetation; 2) autumn with unharvested cropland; 3) winter with continuous snow; and 4) transitional spring with partial green coverage or short annuals. The surface data were from an airport location.

  Monthly precipitation data for Yakima were obtained from the Western Regional Climate Center database for each year of meteorological data used (i.e., January 1, 2017 through December 31, 2021). The monthly precipitation values from the 5 years of data used were compared with 30^{th} percentile and 70^{th} percentile precipitation values for the past 30 years to determine the conditions for each month based on "dry" (i.e., less than the 30^{th} percentile), "average" (i.e., between the 30^{th} and 70^{th} percentiles), or "wet" (i.e., greater than the 70^{th} percentile).

6.1.5 NO_X to NO_2 Conversion

Ambient NO_2 concentrations were calculated by AERMOD using the Plume Volume Molar Ratio Method (PVMRM) option. The PVMRM algorithm calculates the quantity of NO_X converted to NO_2 after leaving the stack (i.e., in the ambient air) using user-specified NO_2/NO_X equilibrium ratios, NO_2/NO_X in-stack ratios, and ambient ozone concentrations. The PVMRM parameters used for all proposed combustion sources were as follows:

- Default NO_2/NO_X equilibrium ratio of 0.90
- NO_2/NO_X in-stack ratio of 0.1
- Ambient ozone concentration of 52.0 micrograms per cubic meter ($\mu g/m^3$), which was provided by NW AIRQUEST through the Idaho Department of Environmental Quality (IDEQ) 2014-2017 design value of criteria pollutants website, for the project area (IDEQ; accessed April 6, 2022).

6.1.6 Background Concentration

This evaluation includes background concentrations contributed by existing regional and local background sources. Regional background concentrations were obtained from NW AIRQUEST through the IDEQ website (IDEQ; accessed April 6, 2022). Regional and local background concentrations were added to the modeled project concentrations to estimate the projected cumulative concentrations for those pollutants and averaging periods with results above the SIL.

6.1.7 First-Tier Screening of Toxic Air Pollutant Impacts

A first-tier TAP assessment includes a comparison of expected maximum emission rates with the SQERs and, for TAPs with emission rates that exceed the SQERs, a comparison of predicted maximum ambient concentrations with the ASILs. Table 2 shows the maximum facility-wide emission rates for each TAP expected to be released by the RNG Sunnyside facility and compares each emission rate with the corresponding SQER. A SQER is an emission rate threshold, below which YRCAA does not require an air quality impact assessment for the corresponding TAP. As shown in Table 2, maximum facility-wide emissions of NO_2, SO_2, DEEP, 1,3-butadiene, acetaldehyde, acrolein, CrVI, ethylene dibromide, formaldehyde, and hydrogen sulfide are expected to be greater than their corresponding SQERs, so an ambient impact analysis was completed for those TAPs.

6.2 Predicted Criteria Pollutant Ambient Concentrations

The results of the criteria pollutant SIL analysis are provided in Table 6. As shown in Table 6, the model-predicted annual SO_2 and short-term CO concentrations are less than the applicable SILs, and are therefore assumed to not have the potential to cause or contribute to an exceedance of an ambient standard. For all other criteria pollutants, averaged over the periods indicated in Table 6, a cumulative NAAQS analysis is required to assess compliance with the corresponding ambient standards.

Table 6: Results for SIL Analysis

Pollutant	Averaging Period (a)	Maximum Modeled Concentration (µg/m³)	Significant Impact Level (µg/m³)	Cumulative NAAQS Analysis Required
$PM_{2.5}$ (b)	24-hour (g)	7.9	1.2	Yes
	Annual (g)	0.9	0.2	Yes
PM_{10} (c)	24-hour	13	5	Yes
NO_2 (d)	1-hour (g)	242	7.5	Yes
	Annual	2	1	Yes
SO_2 (e)	1-hour (g)	192	7.8	Yes
	3-hour	148	25	Yes
	24-hour	73	5	Yes
	Annual	0.1	1	No
CO (f)	1-hour	158	2,000	No
	8-hour	137	500	No

(a) Unless otherwise stated, the modeled concentration is the maximum overall result predicted by the model.

(b) Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

(c) Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

(d) Nitrogen dioxide.

(e) Sulfur dioxide.

(f) Carbon monoxide.

(g) Maximum 5-year mean of the modeled concentrations at each receptor.

The results of the criteria pollutant cumulative impact analysis are provided in Table 7. The model-predicted ambient impacts plus background for all criteria pollutants and averaging periods are less than the NAAQS, which indicates that the proposed project does not have the potential to cause or contribute to an exceedance of an ambient standard.

Table 7: Results for Cumulative Analysis

Pollutant	Averaging Period	Modeled Design Concentration (μg/m³) (a)	Background Concentration (μg/m³)	Total Impact (μg/m³)	NAAQS (μg/m³)
$PM_{2.5}$ (b)	24-hour (f)	3.6	31	34.6	35
	Annual (g)	0.9	7.5	8.4	12
PM_{10} (c)	24-hour (h)	8	78	86	150
NO_2 (d)	1-hour (f)	105	59	164	188
	Annual	2.0	11.7	13	100
SO_2 (e)	1-hour (i)	169.8	12.3	182.1	196
	3-hour (j)	148	17	165	1,300
	24-hour (j)	73	5.5	78	365

(a) Micrograms per cubic meter

(b) Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

(c) Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

(d) Nitrogen dioxide.

(e) Sulfur dioxide.

(f) Maximum of 5-year means of 8th-highest modeled concentrations for each year modeled.

(g) Maximum of 5-year means of maximum modeled concentrations for each year modeled.

(h) Maximum of 6th highest modeled concentrations for a 5-year period.

(i) Maximum of 5-year means of 4th-highest modeled concentrations for each year modeled.

(j) Maximum modeled concentrations.

6.3 Predicted Toxic Air Pollutant Ambient Concentrations

The first-tier ambient concentration screening analyses are summarized in Table 8. These screening analyses were conducted for TAPs with expected maximum emission rates that exceed the applicable SQERs (see Table 2). As shown in Table 8, all maximum modeled ambient concentrations are less than the applicable ASILs.

Table 8: Results for TAP Analysis

TAP	CAS No.	Averaging Period	Maximum Modeled Impact (µg/m³) (a)	ASIL (b) (µg/m³)
NO_2	10102-44-0	1-hr	242	470
SO_2	7446-09-05	1-hr	201	660
DEEP	DPM	year	0.00068	0.0033
1,3-Butadiene	106-99-0	year	0.00062	0.033
Acetaldehyde	75-07-0	year	0.019	0.37
Acrolein	107-02-8	24-hr	0.29	0.35
CrVI	18540-29-9	year	1.6E-08	0.000004
Ethylene dibromide	106-93-4	year	0.00010	0.0017
Formaldehyde	50-00-0	year	0.045	0.17
H_2S	7783-06-4	24-hr	0.78	2

(a) Micrograms/cubic meter.

(b) ASIL values from WAC 173-460-150

7.0 REFERENCES

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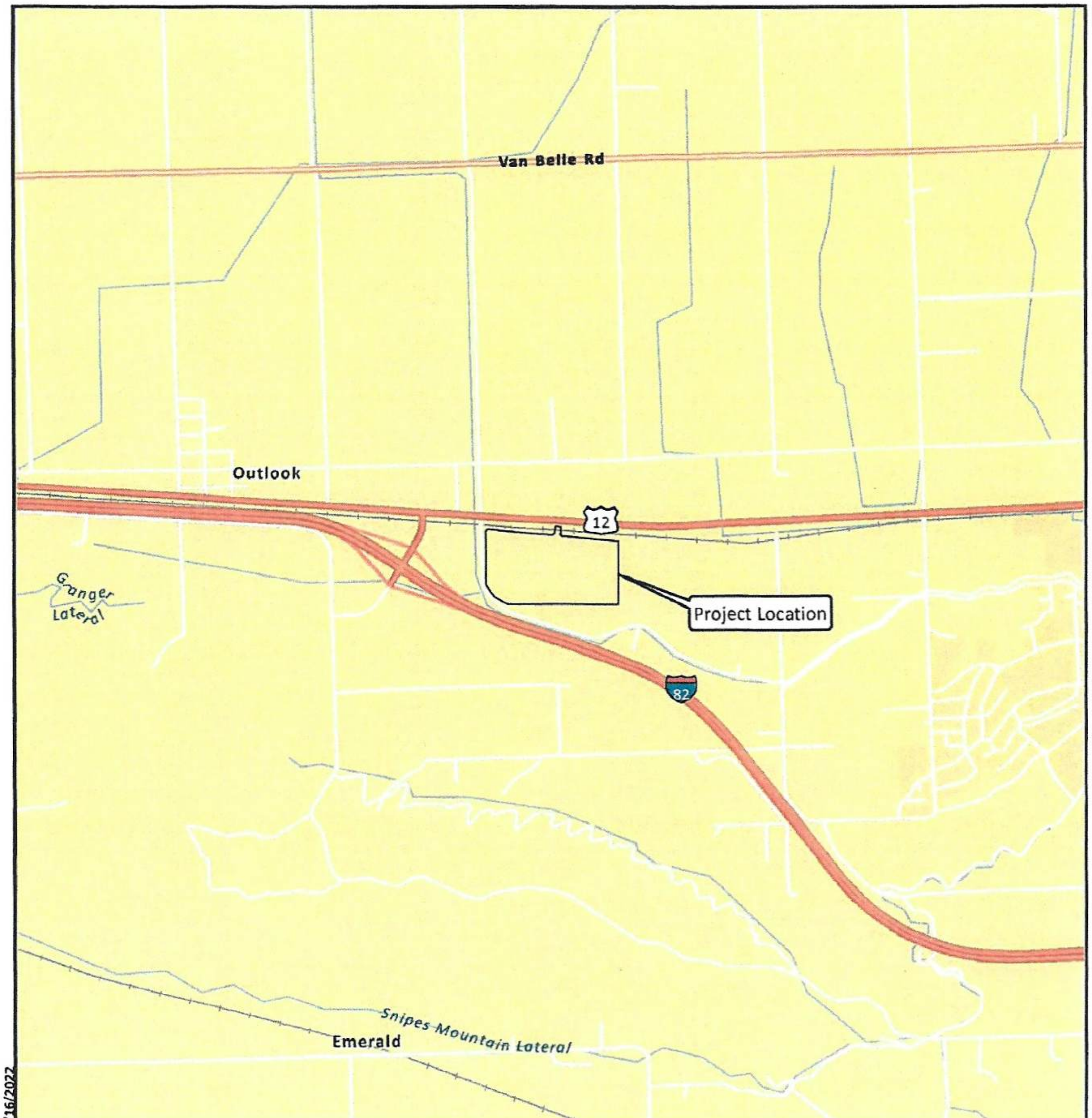

Data Source: Esri 2012

G:\Projects\2052\001\010\011\F01VicMap.mxd 4/16/2022

LANDAU ASSOCIATES	Sunnyside RNG Facility Yakima County, Washington	**Vicinity Map**	Figure 1

TOTAL LOT COVERAGE (STRUCTURES):

TOTAL SITE AREA:	111.82 ACRES
TOTAL OF SITE BUILDINGS, TANKS, AND CONTAINERIZED EQUIPMENT:	464,213 SQ.FT. = 10.68 ACRES
10.58 / 111.82 = 9.8% COVERAGE	

NOTES:

1. EXISTING, PREVIOUSLY-ABANDONED SEPTIC SYSTEM DRAINFIELD PURPORTED TO BE ON-SITE, IN GENERAL VICINITY OF EXISTING WELL (KEYED NOTE 9) FROM PREVIOUSLY DEMOLISHED HOUSE ON THE PROPERTY.
2. NO OTHER EXISTING WELLS OR SEPTIC SYSTEMS ARE KNOWN ON OR NEAR THE PROPERTY.
3. FEMA FIRM MAP #53077C1900D INDICATES SITE IS IN ZONE 'X' – AREA OF MINIMAL FLOOD HAZARD. NO FLOODPLAIN TO MAP.

KEYED NOTES:

1. PROPOSED DRIVEWAY AND BURLINGTON NORTHERN/CENTRAL WASHINGTON RAILROAD CROSSING, PENDING RAILROAD APPROVAL
2. PERIMETER FENCE (8' CHAIN LINK) AND SECURE ENTRY GATES, TYP.
3. CONTAINMENT BERM / WALLS, TYP.
4. DIGESTER TANKS (±59'H STAINLESS STEEL TANKS ON CONCRETE FOUNDATIONS), TYP.
5. SITE VEHICLE CIRCULATION ROUTES & ACCESS ROADS, TYP. (MIX OF PAVED & GRAVEL)
6. ON-SITE WASTEWATER (SEPTIC) SYSTEM DRAINFIELD & REPLACEMENT AREA, PENDING YAKIMA HEALTH DISTRICT SITE & SOIL EVALUATION AND APPROVALS
7. HIGH DRY MATTER SLURRY OFFLOADING TIP TANKS
8. ADMINISTRATION, CONTROLS & WORKSHOP BUILDING (±131'x101', ±20'H)
9. EXISTING WELL TO BE CAPPED/DECOMMISSIONED BY LICENSED WELL DRILLER PER WA DEPT. OF ECOLOGY REQUIREMENTS
10. PROPOSED PERIMETER LANDSCAPING & TREES FOR SCREENING ALONG YAKIMA VALLEY HIGHWAY AND I-82 VIEW CORRIDOR AREAS (LAYOUT TBD)
11. DIGESTER EQUIPMENT ROOMS (±68'x12', ±13'H), TYP.
12. STRAW PROCESSING BUILDING (±107'x157', ±20'H)
13. DIGESTATE TREATMENT BUILDING (±177'x403', ±20'H)

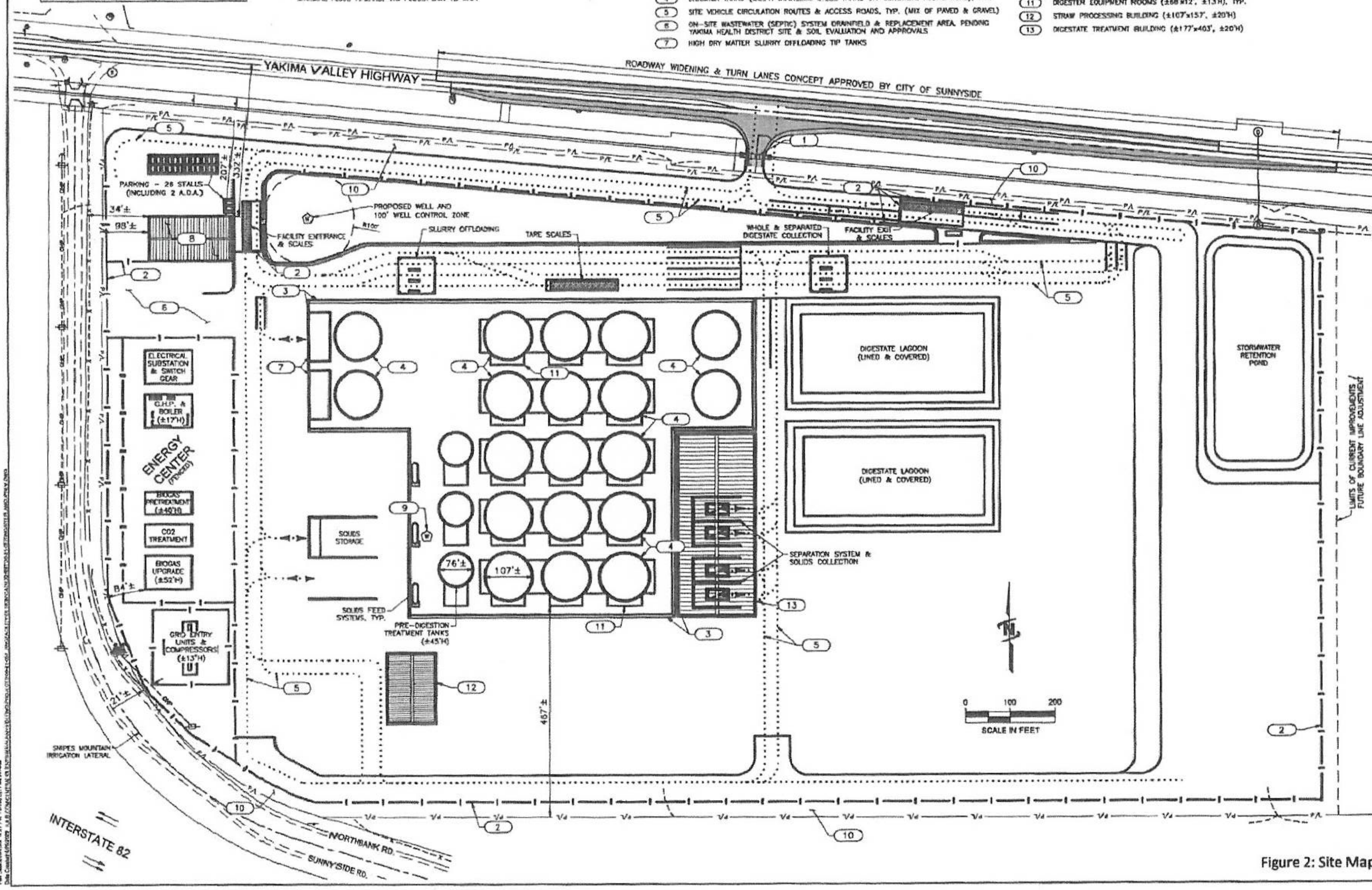

Figure 2: Site Map

J-U-B ENGINEERS, INC.
3611 S. Zintel Way
Kennewick, WA 99337
Phone: 509.783.2144
www.jub.com

PRELIMINARY PLANS

NOT FOR CONSTRUCTION

SUNNYSIDE RNG FACILITY
SUNNYSIDE, WA

CONDITIONAL USE PERMIT
CONCEPT SITE PLAN
DEVELOPMENT AREA

SHEET NUMBER:
SP-2