Encina Wastewater Authority

6200 Avenida Encinas Carlsbad, CA 92011

SDAPCD Emissions ID 5985

June 2024

Prepared by:

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Risk Reduction Audit and Plan for Reporting Year 2021

Risk Reduction Audit and Plan for Facility Reporting Year 2021

Prepared for:

Encina Wastewater Authority
6200 Avenida Encinas
Carlsbad, CA 92011

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List of Acronyms and Abbreviations

AB	Assembly Bill
bhp	Brake Horsepower
CO	Carbon Monoxide
ERA	Energy Resiliency Assessment
EWPCF	Encina Water Pollution Control Facility
HHI	Health Hazard Index
HRA	Health Risk Assessment
kW	Kilowatt
MEIR	Maximally Exposed Individual Resident
MEIW	Maximally Exposed Individual Worker
MGD	Million Gallons per Day
MMBtu/hr	Million British Thermal Units per hour
ppm	Parts Per Million
ORF	Odor Reduction Facilities
PTE	Potential to Emit
RNG	Renewable Natural Gas
RTO	Regenerative Thermal Oxidizer
SDAPCD	San Diego County Air Pollution Control District
TAC	Toxic Air Contaminant
U.S. EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound

Encina Wastewater Authority Risk Reduction Audit and Plan for Reporting Year 2021

1.0 INTRODUCTION

The Encina Wastewater Authority (Encina) operates the Encina Water Pollution Control Facility (EWPCF) located at 6200 Avenida Encinas in Carlsbad, CA. The EWPCF is regulated by the California Air Toxics "Hot Spots" Program under Assembly Bill 2588 (AB 2588), which is administered by the San Diego County Air Pollution Control District (SDAPCD). As part of this program, a health risk assessment (HRA) based on 2021 facility emissions was conducted by Encina with assistance from Yorke Engineering, LLC (Yorke). The HRA predicted the residential cancer risk and the non-cancer acute Health Hazard Index (HHI) exceeded the SDAPCD Rule 1210 risk reduction levels.

In accordance with SDAPCD Rule 1210 (effective November 4, 2021), Yorke has prepared this risk reduction audit and plan on behalf of Encina. The plan outlines the procedures that Encina will use to reduce facility risks below the risk reduction levels applicable to the 2021 HRA.

1.1 Facility Information

The EWPCF is an essential public service treating up to 36 million gallons per day (MGD) (dry weather flow) of sewage wastewater from over 379,000 residents and businesses throughout a 125-square-mile service area. Encina is owned by six public agencies and governed by a Joint Powers Authority that includes the cities of Carlsbad, Vista, and Encinitas, as well as Buena Sanitation, Vallecitos Water, and Leucadia Wastewater Districts. The facility houses complex processes and equipment that protect the local ocean environment, preserve public health, and provide valuable water resources for the region. It also has extensive systems for neighborhood odor control, electricity generation from treatment process gas (cogeneration), and biosolids processing that produces a high-quality fertilizer product.

The SDAPCD permit ID for Encina is APCD1984-SITE-03370, and the emissions inventory facility ID is 5985. The facility address is as follows:

Encina Wastewater Authority
6200 Avenida Encinas
Carlsbad, CA 92011

The facility's equipment includes the following:

- 36 MGD wastewater treatment consisting of headworks, primary sedimentation basins, secondary treatment, and odor control systems;
- Four lean-burn cogeneration engines fired on digester gas or natural gas, rated 1,306 and 1,085 brake horsepower (bhp), respectively, driving a 750-kilowatt (kW) generator each;
- Varec Biogas 244 Series flare equipped with an enclosed burner and autopilot ignition system;

- Biosolids processing operation consisting of a 15 million British thermal units per hour (MMBtu/hr) digester gas/natural gas-fired sludge dryer with the following control systems: a 1.3-MMBtu/hr natural gas regenerative thermal oxidizer (RTO), dual throat wet scrubber, baghouse, and odor control systems; and
- One 1,528-bhp diesel emergency standby engine.

All sources can operate at any time of day.

The team responsible for preparation and implementation of the risk reduction audit and plan are listed in Table 1-1.

Table 1-1: Plan Contacts

Alicia Appel		**Julie Mitchell**
Encina Wastewater Authority		**Yorke Engineering, LLC**
Address:	6200 Avenida Encinas Carlsbad, CA 92011	2356 Moore Street, Suite 206 San Diego, CA, 92110
Phone:	(760) 438-3941	(619) 375-9142
E-mail:	AAppel@EncinaJPA.com	JMitchell@YorkeEngr.com

1.2 Permit Action

The permit application accompanying this plan is only for risk reduction actions as required per Rule 1210. The General Permit or Registration Application Form is provided in Appendix A, along with the application fee estimate from SDAPCD.

2.0 RISK REDUCTION

2.1 Risk Reduction Evaluation

The HRA modeling predicted that the residential excess cancer risk and the non-cancer acute HHI exceeded the Rule 1210 risk reduction thresholds.

The risk evaluation examines the cancer and acute risks separately to determine the sources and pollutants that cause a significant portion of each risk and assesses potential reduction measures.

2.1.1 HRA Results – Acute Health Hazard Index

The acute HHI was calculated for an exposure duration of 1 hour. The SDAPCD acute HHI analysis used maximum simultaneous hourly emission rates from all sources.

The modeling predicted that the acute HHI isopleth extended off-site to the north and west of the facility in locations where people might work. As shown in Figure 2-1, there are 26 businesses within the business park north of the facility, although not all are within the isopleth. Figure 2-1 also shows the acute HHI isopleth of 1.0 near the only affected resident occurred on the property line in the landscaping.

The maximum acute HHI at an actual receptor occurred at the Maximally Exposed Individual Worker (MEIW), receptor 131. The acute HHI at the MEIW, receptor 131 [Universal Transverse Mercator (UTM) coordinates 469,985, 3,664,349], was mainly due to formaldehyde emissions from the cogeneration engines (98%), targeting the eyes, as shown in Tables 2-1 and 2-2 below. The source/pollutant profile is very similar for the other receptors over the risk reduction threshold.

Table 2-1: Acute HHI Results Per Source from All Pollutants Targeting the Eyes at MEIW

Source	Description	MEIW	
		Acute HHI	Contribution (%)
ALL	All Sources	1.17E+00	100%
542	Cogen Engine	2.49E-01	21.23%
543	Cogen Engine	4.32E-01	36.83%
544	Cogen Engine	4.75E-01	40.47%
545	Cogen Engine	0.00E+00	0.00%
1004	Flare	9.68E-03	0.82%
982044	Emergency Diesel ICE	4.19E-03	0.36%
144602	Activated Sludge ORF-3	1.51E-03	0.13%
1016_RTO	Biosolids RTO	1.15E-03	0.10%
144601	Headworks ORF-1	5.78E-04	0.05%

Table 2-2: Acute HHI Results Per Pollutant from All Sources at MEIW

Pollutant	CAS No.	Target Organs											
		Alimentary	Bone	Cardiovascular	Central Nervous	Endocrine	Eye	Hematologic	Immune	Kidney	Reproductive/ Development	Respiratory	Skin
Formaldehyde	50000	0	0	0	0	0	1.1555	0	0	0	0	0	0
Acrolein	107028	0	0	0	0	0	0.0096	0	0	0	0	0.0096	0
Acetaldehyde	75070	0	0	0	0	0	0.0046	0	0	0	0	0.0046	0
1,4-Dioxane	123911	0	0	0	0	0	0.0015	0	0	0	0	0.0015	0
Hydrochloric Acid	7647010	0	0	0	0	0	0.0011	0	0	0	0	0.0011	0
Ammonia	7664417	0	0	0	0	0	0.0008	0	0	0	0	0.0008	0
Toluene	108883	0	0	0	0.0001	0	0.0001	0	0	0	0	0.0001	0
Perchloroethylene	127184	0	0	0	0.0001	0	0.0001	0	0	0	0	0.0001	0
Xylenes	1330207	0	0	0	8E-06	0	8E-06	0	0	0	0	8E-06	0
Phenol	108952	0	0	0	0	0	8E-07	0	0	0	0	8E-07	0
Methyl ethyl ketone	78933	0	0	0	0	0	3E-08	0	0	0	0	3E-08	0
Styrene	100425	0	0	0	0	0	3E-11	0	0	0	3E-11	3E-11	0
Hydrogen Sulfide	7783064	0	0	0	0.0681	0	0	0	0	0	0	0	0
Chloroform	67663	0	0	0	0.0291	0	0	0	0	0	0.0291	0.0291	0
Benzene	71432	0	0	0	0	0	0	0.0234	0.0234	0	0.0234	0	0
Arsenic	7440382	0	0	0.0071	0.0071	0	0	0	0	0	0.0071	0	0
Nickel	7440020	0	0	0	0	0	0	0	0.0043	0	0	0	0
Mercury	7439976	0	0	0	0.0004	0	0	0	0	0	0.0004	0	0
Methylene Chloride	75092	0	0	0.0003	0.0003	0	0	0	0	0	0	0	0
Carbon Disulfide	75150	0	0	0	0.0003	0	0	0	0	0	0.0003	0	0

Pollutant	CAS No.	Target Organs											
		Alimentary	Bone	Cardiovascular	Central Nervous	Endocrine	Eye	Hematologic	Immune	Kidney	Reproductive/ Development	Respiratory	Skin
1,3-Butadiene	106990	0	0	0	0	0	0	0	0	0	0.0001	0	0
Copper	7440508	0	0	0	0	0	0	0	0	0	0	1E-04	0
Methanol	67561	0	0	0	2E-05	0	0	0	0	0	0	0	0
1,1,1-TCA	71556	0	0	0	1E-05	0	0	0	0	0	0	0	0
Total Acute HHI		**0**	**0**	**0.007**	**0.106**	**0**	**1.173**	**0.023**	**0.028**	**0**	**0.061**	**0.047**	**0**

Figure 2-1: 2021 Acute HHI Isopleth

2.1.2 HRA Results – Cancer Risk

Cancer risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to toxic air contaminants (TACs) over an extended period of time. Per SDAPCD HRA guidance, this HRA estimated cancer risk over a 30-year period for residential locations. The analysis assumes that a resident lives in the same location and is exposed to the same level of emissions for 30 years.

The 2021 HRA modeling predicted excess residential cancer risk would exceed the risk reduction threshold of 10 in one million at a number of residential locations. The HRA predicted the Maximally Exposed Individual Resident (MEIR) cancer risk to be 15.96 in a million. Figure 2-2 shows the locations of the 30-year cancer risk isopleth.

The cancer risk at the MEIR was mainly due to formaldehyde emissions from the cogeneration engines (73%). The MEIR was receptor 1443 from the modeling located at UTM coordinates 469,829, 3,664,229. The predicted cancer risk at the MEIR broken down by source is presented in Table 2-3 and by pollutant is presented in Table 2-4.

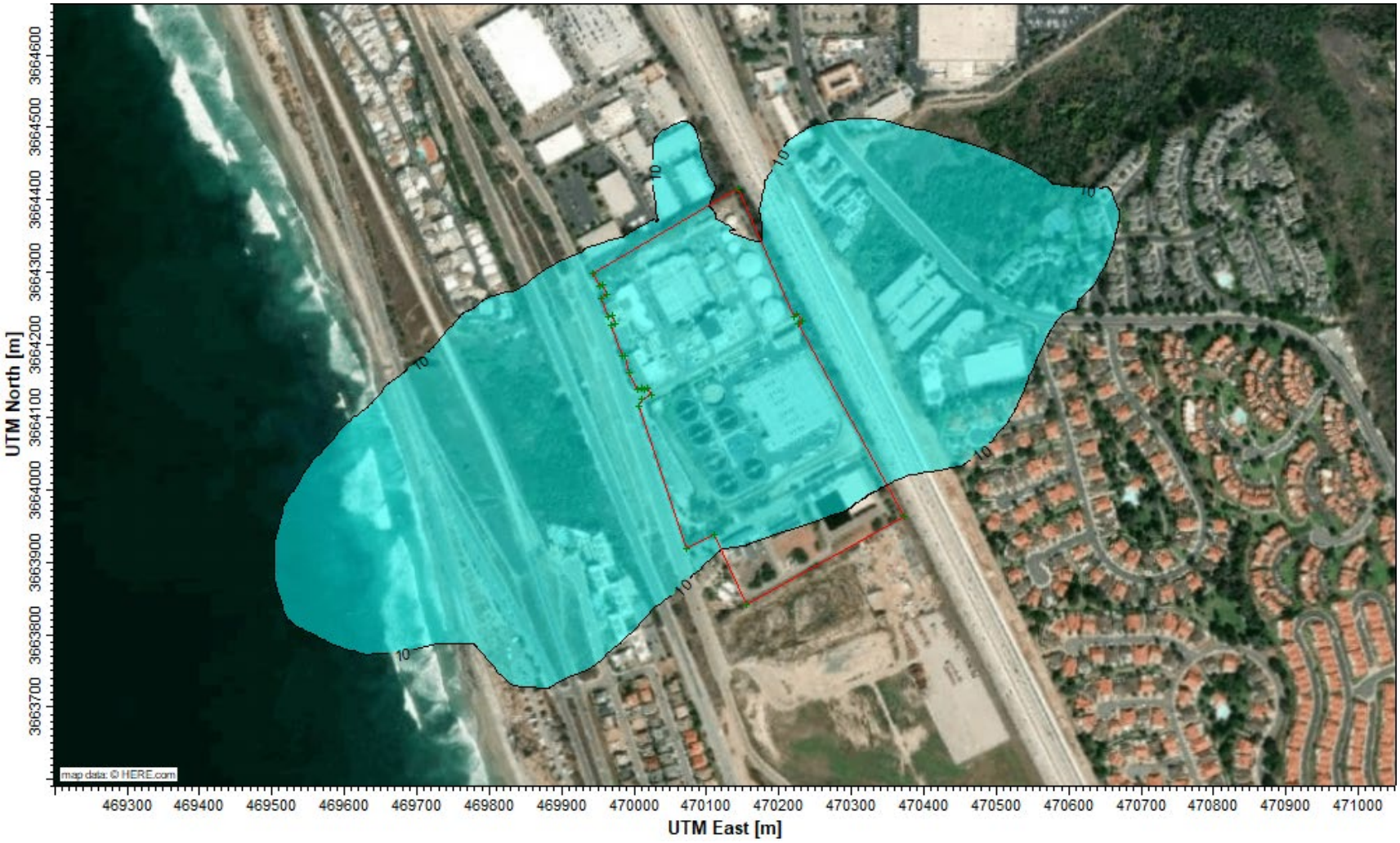
Table 2-3: Cancer Risk Results Per Source from All Pollutants at MEIR

Source	Description	MEIR	
		Cancer Risk (in a million)	Contribution (%)
ALL	All Sources	15.96	100%
542	Cogen Engine	3.23	20.24%
543	Cogen Engine	4.20	26.32%
544	Cogen Engine	2.79	17.48%
545	Cogen Engine	3.01	18.85%
144601	Headworks ORF-1	2.25	14.11%
144602	Activated Sludge ORF-3	0.28	1.72%
1016_RTO	Biosolids RTO	0.11	0.68%
1004	Flare	0.10	0.60%
982044	Emergency Diesel ICE	0.002	0.02%

Table 2-4: Cancer Risk Results Per Pollutant from All Sources at MEIR

Pollutant	CAS No.	MEIR	
		Cancer Risk (in a million)	Contribution (%)
ALL	-	15.96	100%
Formaldehyde	50000	11.58	72.54%
Ethylene dichloride (EDC)	107062	1.61	10.07%
PAHs-w/o	1151	0.98	6.16%
Arsenic	7440382	0.41	2.58%
1,4-Dioxane	123911	0.34	2.15%
Benzene	71432	0.31	1.94%
Chloroform	67663	0.13	0.81%
1,3-Butadiene	106990	0.13	0.80%
Perchloroethylene	127184	0.12	0.76%
p-DiClBenzene	106467	0.12	0.75%
Trichloroethylene (TCE)	79016	0.094	0.59%
Acetaldehyde	75070	0.067	0.42%
Methylene Chloride	75092	0.045	0.28%
Cadmium	7440439	0.009	0.06%
Naphthalene	91203	0.008	0.05%
Hexavalent Chromium	18540299	0.005	0.03%
Diesel Particulate Matter (DPM)	9901	0.002	0.02%
Nickel	7440020	0.002	0.01%
Lead	7439921	6.71E-04	0.00%
Ethyl Benzene	100414	4.02E-04	0.00%
Methyl tert-butyl ether (MTBE)	1634044	8.30E-09	0.00%

Figure 2-2: 2021 30-Year Cancer Risk Isopleth



3.0 RISK REDUCTION MEASURES PROPOSED

3.1 Process Description

Wastewater is treated in a number of steps involving multiple basins and processes to clarify the water for in-plant use, recycled water use, or release to the ocean. Foul air from the wastewater and biosolids processing is treated in one of three Odor Reduction Facilities (ORF). Grit and larger wastes are separated and sent to a landfill; sludge from the wastewater process enters the digesters, and the residual biosolids are dried and turned into pellets for use as fertilizer. A byproduct of anaerobic digestion, methane-rich biogas is either captured to power the cogeneration engines and the dryer or sent to the flare. The cogeneration engines are fired primarily on digester gas and secondarily with natural gas to produce most of the facility's electricity and heat needs and provide heat to the digesters.

3.2 Risk Reduction Measures

The HRA modeling for 2021 predicted that the formaldehyde emissions from the cogeneration engines were the main contributors to the elevated acute HHI and cancer risk. Thus, the risk reduction evaluation focuses on reductions associated with the formaldehyde emissions from the cogeneration engines.

Encina has an ongoing Capital Improvement Program and maintenance programs in which Encina continues to evaluate, upgrade, and replace equipment to protect air quality and treat odors from the facility. Encina's Member Agencies fund such efforts through the collection of wastewater service charges throughout the service area.

Encina has undertaken a rigorous Energy Resiliency Assessment (ERA) to determine the best approach to meet EWPCF's power and heat needs while reducing TAC emissions to meet SDAPCD Rule 1210 and AB 2588 HRA requirements and reduce criteria pollutants to eliminate the need for a Title V permit.

The ERA has examined alternatives to the use of the existing cogeneration engines to meet the facility's power and heat requirements. All of these alternatives would require major facility infrastructural and operational modifications.

Alternatives have included options such as elimination of the cogeneration engines, which would necessitate a different source to meet the power and heat requirements of the facility and would require significant facility redesign and and/or a massive increase in electricity costs.

If the digester gas is not used for on-site power generation, it would need to be flared or processed for off-site use as renewable natural gas (RNG) or sent to a third party for power generation. All of these options would cause EWA to need to purchase electricity from the grid and find an alternative heat source. These options would shift TAC emissions from EWPCF to other sources.

Replacement of the cogeneration engines with different power generation technology would come with a significant cost, which would have to be passed on to the citizens of the cities served by the EWPCF.

Although the ERA is ongoing and other options continue to be explored, this Risk Reduction Plan proposes the following measures:

- Installation of gas conditioning and oxidation catalysts on all four existing cogeneration engines;
- Conducting source testing to determine more representative TACs emission factors for each of the ORFs.; and
- Continued evaluation of alternative power generation technologies.

These reductions will be real, permanent, quantifiable, and enforceable through the modifications to the permits for the cogeneration engines (Permits APCD2010-PTO-000542, APCD2010-PTO-000543, APCD2010-PTO-000544, and APCD2010-PTO-000545).

3.3 Emissions with Selected Risk Reduction Measures

The emissions from all sources were evaluated to include any foreseeable new or increased emissions of TACs from the stationary source per Rule 1210.

Per the SDAPCD's interpretation of foreseeable new or increased emissions, they have requested all sources be modeled at full potential to emit (PTE) levels. This is an unrealistic emission profile for many of the sources, especially the wastewater treatment sources, as these sources are limited by population growth and those projections are well documented.

The emission profile developed for this Risk Reduction Plan is based on PTE, even though this will overestimate reasonably foreseeable emissions. The PTE was based on permit limited fuel usage, wastewater throughput, or hours of operation. Calculation methods were the same as those used for the 2021 HRA emissions with the exception of the cogeneration engines. To account for the emission reductions from the oxidation catalyst, it was conservatively assumed that a control efficiency of 90% for the volatile TACs would occur. This is the control efficiency presented for oxidation catalysts by the United States Environmental Protection Agency (U.S. EPA) in AP-42 Section 3.2.4.1 and the SDAPCD for emission factor A01-E17 - Engines, Natural Gas Fired, 4 Stroke, Lean Burn, with Catalytic Oxidation.

The TAC emissions from combustion of digester gas are based on the default SDAPCD emission factors A01-E09 – Engine, Digester Gas Fired with a 90% control efficiency applied to the volatile TACs. The uncontrolled formaldehyde emission factor is based on the on-site source test results from March 1, 2022. Arsenic emissions are based on the Encina specific emission factor from the SDAPCD.

The TAC emissions from combustion of natural gas are based on the default SDAPCD emission factors A01-E17 - Engines, Natural Gas Fired, 4 Stroke, Lean Burn, with Catalytic Oxidation.

Until source testing of the ORFs is complete Encina; EWA is not proposing any changes to the emission factors for ORF1 and ORF3.

Detailed emission calculations are provided in Appendix B and electronically to the SDAPCD with changes highlighted in green.

3.4 Risk Reduction Measure Assessment

To demonstrate that the installation of gas conditioning and oxidation catalysts on all four cogeneration engines will be sufficient to reduce the acute HHI and cancer risk below the significance thresholds, a prioritization score calculation was conducted.

The risk reduction prioritization score was prepared using the emissions discussed in Section 3.3 and distances to each source provided by SDAPCD with the 2021 emissions inventory. The detailed calculations are provided in Appendix C and electronically to the SDAPCD.

Table 3-1 shows that the facility-wide prioritization score with installation of gas conditioning and oxidation catalysts is in the low to intermediate priority category, which is a level at which an HRA is not required to demonstrate health impacts from the facility's TAC emissions that are not significant. This prioritization score demonstrates that the installation of oxidation catalysts on the cogeneration engines reduces all risks below the risk reduction threshold.

Table 3-1: Risk Reduction Facility-Wide Prioritization Score

Health Risk	Prioritization Score	Category	Priority Level
Residential/Sensitive Cancer	17.22	B	Intermediate Priority
Worker Cancer	45.19	B	Intermediate Priority
Chronic	0.28	C	Low Priority
Acute	6.30	B	Intermediate Priority

3.5 Risk Reduction Schedule

Encina will work with a design engineering firm to develop plans for implementation of the gas conditioning and oxidation catalysts on the cogeneration engines. Encina EWA will work with SDAPCD staff to modify the cogeneration engines permits to include gas conditioning and oxidation catalysts. A complete permit modification package will be submitted to the SDAPCD once the control system's design is complete for the cogeneration engines (Permits APCD2010-PTO-000542, APCD2010-PTO-000543, APCD2010-PTO-000544, and APCD2010-PTO-000545).

As Encina is a Joint Powers Authority that includes the cities of Carlsbad, Vista, and Encinitas, as well as Buena Sanitation, Vallecitos Water, and Leucadia Wastewater Districts, it will take some time to develop and fund this significant facility change. This process is expected to take multiple years.

Prior to conducting source testing of the ORFs, Encina would prepare a source testing protocol for approval by SDAPCD staff. Data from the sources would be used as the basis for updated emission factors for the ORFs and in future HRA modeling. Emission reductions from the source testing will be provided in the progress reports.

Progress reports on the implementation of these reduction measures will be provided annually until all measures are implemented.

APPENDIX A – GENERAL PERMIT APPLICATION

Internal Use Only	
APP ID: APCD	-APP/CER-
SITE ID: APCD	-SITE-

GENERAL PERMIT OR REGISTRATION APPLICATION FORM

San Diego County Air Pollution Control District

Submittal of this application does not grant permission to construct or to operate equipment except as specified in Rule 24(c).

REASON FOR SUBMITTAL OF APPLICATION:

- ☐ New Installation
- ☐ Amendment to Existing Authority to Construct or Application
- ☐ Change of Permit Conditions
- ☐ Registration of Portable Equipment
- ☐ Existing Unpermitted Equipment or Rule 11 Change
- ☐ Change of Equipment Location
- ☐ Change Permit to Operate Status to Inactive
- ☐ Modification of Existing Permitted Equipment
- ☐ Change of Equipment Ownership ***(please provide proof of ownership)***
- ☐ Banking Emissions
- ■ Other (Specify) Risk Reduction Plan for 2021 HRA

List affected APP/PTO Record ID(s): APCD2010-PTO-000542 APCD2010-PTO-000543 APCD2010-PTO-000544 APCD2010-PTO-000545

APPLICANT INFORMATION

Name of Business (DBA) Encina Wastewater Authority

Does this organization own or operate any other APCD permitted equipment at this or any other adjacent locations? ■ Yes ☐ No

If yes, list assigned Site Record IDs listed on your Permits APCD1984-SITE-03370

Name of Legal Owner (if different from DBA)

Equipment Owner

Name: Encina Wastewater Authority	
Mailing Address: 6200 Avenida Encinas Carlsbad, CA 92011	
City: State: Zip:	
Phone: ( )760-438-3941	
E-Mail Address: AAppel@encinajpa.com	

Authority to Construct Mailing Address

Name: Encina Wastewater Authority
Mailing Address: 6200 Avenida Encinas Carlsbad, CA 92011
City: State: Zip:
Phone: ( )760-438-3941
E-Mail Address: AAppel@encinajpa.com

Permit To Operate Mailing Address

Name: Encina Wastewater Authority
Mailing Address: 6200 Avenida Encinas Carlsbad, CA 92011
City: State: Zip:
Phone: ( )760-438-3941
E-Mail Address: AAppel@encinajpa.com

Invoice Mailing Address

Name: Encina Wastewater Authority
Mailing Address: 6200 Avenida Encinas Carlsbad, CA 92011
City: State: Zip:
Phone: ( )760-438-3941
E-Mail Address: AAppel@encinajpa.com

EQUIPMENT/PROCESS INFORMATION: Type of Equipment: ☐ Stationary ☐ Portable, *if portable please enter below the equipment storage address*. If portable, will operation exceed 12 consecutive months at the same location ☐ Yes ☐ No

Equipment Location Address 6200 Avenida Encinas Carlsbad, CA 92011 City State:

Parcel No. Zip Phone ( ) E-mail: AAppel@encinajpa.com

Site Contact Alicia Appel Phone (442) 320-7018

General Description of Equipment/Process wastewater treatment

Application Submitted by ☐ Owner ☐ Operator ☐ Contractor ■ Consultant Affiliation Yorke Engineering, LLC

EXPEDITED APPLICATION PROCESSING: ☐ I hereby request Expedited Application Processing and understand that:

a) Expedited processing will incur additional fees and permits will not be issued until the additional fees are paid in full (see Rule 40(d)(8)(iv) for details) b) Expedited processing is contingent on the availability of qualified staff c) Once engineering review has begun this request cannot be cancelled d) Expedited processing does not guarantee action by any specific date nor does it guarantee permit approval.

☐ **This application contains trade secret or confidential information** *(see reverse for instructions)*

I hereby certify that all information provided on this application is true and correct.

SIGNATURE Alicia Appel Date 5-22-2024

Print Name Alicia Appel Company Encina Wastewater Authority

Phone (442) 320-7018 E-mail Address AAppel@encinajpa.com

Internal Use Only

Date Staff Initials: Amt Rec'd $ Fee Schedule

RNP: EMF: NBF: TA: *GEN_APP_Form_Rev Date: Aug. 2017*

APPENDIX B – RISK REDUCTION HRA EMISSIONS

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Total Facility TAC Emissions

Pollutant	CAS	Federal HAP?	Other Sources		Engines Digester Gas		Engines Natural Gas		All Sources	All Sources + Engines highest fuel per TAC
			ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)
DPM	9901	N	1.89E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.885E+01	0.000E+00
1,1,1-TCA	71556	Y	7.81E+01	8.92E-03	2.80E-03	6.09E-07	0.00E+00	0.00E+00	7.811E+01	8.920E-03
1,3-Butadiene	106990	Y	0.00E+00	1.69E-02	0.00E+00	0.00E+00	8.40E-01	8.45E-04	8.400E-01	1.778E-02
1,4-Dioxane	123911	Y	4.44E+02	5.07E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.441E+02	5.070E-02
Acetaldehyde	75070	Y	0.00E+00	6.11E-02	1.96E-02	4.26E-06	2.38E+01	2.39E-02	2.382E+01	8.506E-02
Acetone	67641	N	2.10E-01	4.58E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.100E-01	4.583E-05
Acrolein	107028	Y	0.00E+00	2.65E-03	0.00E+00	0.00E+00	2.80E-01	2.82E-04	2.800E-01	2.928E-03
Ammonia	7664417	N	2.06E+03	2.35E-01	1.34E+00	2.92E-04	0.00E+00	0.00E+00	2.058E+03	2.352E-01
Arsenic	7440382	Y	3.91E-01	1.79E-04	8.26E-02	1.80E-05	0.00E+00	0.00E+00	4.733E-01	1.967E-04
Benzene	71432	Y	3.91E+01	1.99E-02	4.99E+00	1.09E-03	1.12E+00	1.13E-03	4.526E+01	2.098E-02
Cadmium	7440439	Y	1.73E-01	1.37E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.734E-01	1.369E-04
Chlorobenzene	108907	Y	1.07E-01	3.40E-05	5.60E-03	1.22E-06	0.00E+00	0.00E+00	1.123E-01	3.525E-05
Chloroform	67663	N	3.66E+02	4.17E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.657E+02	4.175E-02
Chromium	7440473	Y	0.00E+00	3.90E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00	3.903E-05
Copper	7440508	N	1.39E+01	1.91E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.394E+01	1.911E-03
Cr(VI)	18540299	Y	2.39E-03	8.08E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.391E-03	8.079E-06
CS2	75150	Y	1.66E+02	1.89E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.658E+02	1.893E-02
DiClBenzenes	25321226	N	7.08E-01	1.37E-04	5.04E-02	1.10E-05	0.00E+00	0.00E+00	7.584E-01	1.480E-04
EDC	107062	Y	7.79E+02	8.89E-02	3.92E-02	8.52E-06	0.00E+00	0.00E+00	7.787E+02	8.894E-02
Ethyl Benzene	100414	Y	5.34E-01	9.43E-04	2.80E-02	6.09E-06	1.12E-01	1.13E-04	6.739E-01	1.056E-03
Formaldehyde	50000	Y	1.19E+02	1.55E-01	1.31E+03	2.84E-01	1.51E+02	1.52E-01	1.579E+03	4.395E-01
H2S	7783064	N	1.07E+03	1.23E-01	6.02E+00	1.31E-03	0.00E+00	0.00E+00	1.080E+03	1.246E-01
HCl	7647010	Y	3.44E+02	7.40E-02	1.81E+01	3.93E-03	0.00E+00	0.00E+00	3.625E+02	7.792E-02
Hexane	110543	Y	2.57E+02	3.18E-02	1.81E+00	3.95E-04	3.08E+00	3.10E-03	2.623E+02	3.489E-02
Lead	7439921	Y	4.49E-01	6.99E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.494E-01	6.992E-04
Manganese	7439965	Y	0.00E+00	2.42E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00	2.420E-04
Me t-ButylEther	1634044	Y	1.29E-03	1.47E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.288E-03	1.470E-07
MEK	78933	N	5.34E-02	9.22E-06	2.80E-03	6.09E-07	0.00E+00	0.00E+00	5.619E-02	9.826E-06
Mercury	7439976	Y	2.62E-02	1.59E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.619E-02	1.591E-04
Methanol	67561	Y	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.28E+00	7.32E-03	7.280E+00	7.324E-03
Methylene Chlor	75092	Y	4.52E+02	5.16E-02	2.80E-03	6.09E-07	5.60E-02	5.63E-05	4.521E+02	5.167E-02
Naphthalene	91203	Y	8.54E-02	1.55E-03	0.00E+00	0.00E+00	1.96E-01	1.97E-04	2.814E-01	1.745E-03
Nickel	7440020	Y	5.44E-01	3.67E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.440E-01	3.665E-04
PAHs-w/o	1151	Y	0.00E+00	2.83E-03	0.00E+00	0.00E+00	8.40E-02	8.45E-05	8.400E-02	2.910E-03

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Total Facility TAC Emissions

Pollutant	CAS	Federal HAP?	Other Sources		Engines Digester Gas		Engines Natural Gas		All Sources	All Sources + Engines highest fuel per TAC
			ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)
p-DiClBenzene	106467	Y	1.05E+02	1.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.048E+02	1.196E-02
Perc	127184	Y	2.01E+02	2.29E-02	1.40E-02	3.04E-06	0.00E+00	0.00E+00	2.008E+02	2.294E-02
Phenol	108952	Y	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-02	5.63E-05	5.600E-02	5.633E-05
Propylene	115071	N	0.00E+00	3.65E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00	3.645E-02
Selenium	7782492	Y	8.85E-04	1.72E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.848E-04	1.718E-04
Styrene	100425	Y	1.10E-03	1.25E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.095E-03	1.250E-07
TCE	79016	Y	4.71E+02	5.37E-02	8.40E-03	1.83E-06	0.00E+00	0.00E+00	4.706E+02	5.373E-02
Toluene	108883	Y	5.95E+01	1.53E-02	1.81E+00	3.95E-04	1.12E+00	1.13E-03	6.241E+01	1.643E-02
Xylenes	1330207	Y	1.40E+01	5.04E-03	1.26E-01	2.74E-05	5.60E-01	5.63E-04	1.465E+01	5.608E-03
Zinc	7440666	N	2.39E+01	4.48E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.391E+01	4.479E-03
Chlorine	7782505	Y	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00	0.000E+00
Sodium Hydroxide	1310732	N	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00	0.000E+00
								Total TACs (lb)	**8,617**	
								Total HAPs (ton/yr)	**2.53**	
								Max HAP (ton/yr)	**0.79**	

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Cogeneration Engines

Fuel Usage & Engine Specs

Device	Digester Gas						Natural Gas					
	Annual (million ft^3/yr)	Daily (million ft^3/day)	Hourly (million ft^3/hr)	Hourly (scfm)	Rating (hp)	Rating (MMBtu/hr)	Annual (million ft^3/yr)	Daily (million ft^3/day)	Hourly (million ft^3/hr)	Hourly (scfm)	Rating (hp)	Rating (MMBtu/hr)
542	70	0.25	0.0152	253.72	1306	9.30	7	0.1375	0.0070	117.36	1085	7.18
543	70	0.25	0.0152	253.72	1306	9.30	7	0.1375	0.0070	117.36	1085	7.18
544	70	0.25	0.0152	253.72	1306	9.30	7	0.1375	0.0070	117.36	1085	7.18
545	70	0.25	0.0152	253.72	1306	9.30	7	0.1375	0.0070	117.36	1085	7.18
Total	**280**	**1**	**0.0609**	**1,015**			**28**	**0.55**	**0.0282**	**469**		

Daily and annual fuel usage based on permit conditions. Hourly fuel usage based on rating.

Criteria Pollutant Emissions
Digester Gas

Pollutant	CAS	Concentration (ppmv) @ 15% O2	EF ($lb/mmft^3$)	Device 542 Emissions			Device 543 Emissions			Device 544 Emissions			Device 545 Emissions			Total Emissions		
				lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr	lb/yr	lb/yr	lb/hr	lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr
Carbon Monoxide (CO)	42101	40	58.18	4,072.56	14.54	0.89	4,072.56	14.54	0.89	4,072.56	14.54	0.89	4,072.56	14.54	0.89	16,290.24	58.18	3.54
Nitrogen Oxides (NOx)	42603	47	112.27	7,858.69	28.07	1.71	7,858.69	28.07	1.71	7,858.69	28.07	1.71	7,858.69	28.07	1.71	31,434.76	112.27	6.84
Sulfur Oxides (SOx)	42401	-	2.00	140.00	0.50	0.03	140.00	0.50	0.03	140.00	0.50	0.03	140.00	0.50	0.03	560.00	2.00	0.12
Total Organic Gases (TOG)	43101	-	16.2	1,134.00	4.05	0.25	1,134.00	4.05	0.25	1,134.00	4.05	0.25	1,134.00	4.05	0.25	4,536.00	16.20	0.99
Volatile Organic Compounds (VOC)	43104	-	7.78	544.32	1.94	0.12	544.32	1.94	0.12	544.32	1.94	0.12	544.32	1.94	0.12	2,177.28	7.78	0.47
Total Particulates (TSP)	11101	-	27.6	1,932.00	6.90	0.42	1,932.00	6.90	0.42	1,932.00	6.90	0.42	1,932.00	6.90	0.42	7,728.00	27.60	1.68
Particulate Matter (PM10)	85101	-	27.6	1,932.00	6.90	0.42	1,932.00	6.90	0.42	1,932.00	6.90	0.42	1,932.00	6.90	0.42	7,728.00	27.60	1.68

Notes:
90% Control efficiency of oxidation catalyst
NOx emissions based on current permit limits
CO emissions based on permit limits with control efficiency of oxidation catalyst applied
Emissions from Digester Gas based on the default SDAPCD emission factors A01-E09 - Engine, Digester Gas Fired

General Information

Parameter	Value	Comment
$\%O_2$ Emission Guarantee Basis	15	
Fd - F-factor Digester Gas (dscf/mmBtu)	9244	Digester Gas Analysis 10/14/19
Fd - F-factor Natural Gas (dscf/mmBtu)	8710	Default
MW NO_x	46	Default
MW CO	28.01	Default
MW NH3	17	Default
Molar Gas Volume at 68F (scf/lb-mole)	385.3	Default
Digester Gas Fuel HHV (Btu/scf)	611	Digester Gas Analysis 10/14/19
Natural Gas Fuel HHV (Btu/scf)	1020	Default
Digester Gas Fuel Consumption Rate (Btu/bhp-hr)	7122	from Emissions Calcs March 2006
Natural Gas Fuel Consumption Rate (Btu/bhp-hr)	6620	from Emissions Calcs March 2006

Criteria Pollutant Emissions
Natural Gas

Pollutant	CAS	Concentration (ppmv) @ 15%	EF ($lb/mmft^3$)	Device 542 Emissions			Device 543 Emissions			Device 544 Emissions			Device 545 Emissions			Total Emissions		
				lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr
Carbon Monoxide (CO)	42101	39	89.23	624.58	12.27	0.63	624.58	12.27	0.63	624.58	12.27	0.63	624.58	12.27	0.63	2,498.33	49.07	2.51
Nitrogen Oxides (NOx)	42603	54	202.89	1,420.24	27.90	1.43	1,420.24	27.90	1.43	1,420.24	27.90	1.43	1,420.24	27.90	1.43	5,680.98	111.59	5.71
Sulfur Oxides (SOx)	42401	-	0.6	4.20	0.08	0.00	4.20	0.08	0.00	4.20	0.08	0.00	4.20	0.08	0.00	16.80	0.33	0.02
Total Organic Gases (TOG)	43101	-	149.94	1,049.58	20.62	1.06	1,049.58	20.62	1.06	1,049.58	20.62	1.06	1,049.58	20.62	1.06	4,198.32	82.47	4.22
Volatile Organic Compounds (VOC)	43104	-	12.04	84.28	1.66	0.08	84.28	1.66	0.08	84.28	1.66	0.08	84.28	1.66	0.08	337.12	6.62	0.34
Total Particulates (TSP)	11101	-	10.19	71.33	1.40	0.07	71.33	1.40	0.07	71.33	1.40	0.07	71.33	1.40	0.07	285.32	5.60	0.29
Particulate Matter (PM10)	85101	-	10.19	71.33	1.40	0.07	71.33	1.40	0.07	71.33	1.40	0.07	71.33	1.40	0.07	285.32	5.60	0.29

Notes:
NOx emissions based on current permit limits
CO emissions based on permit limits with control efficiency of oxidation catalyst applied
Emissions from Natural Gas based on the default SDAPCD emission factors A01-E17 - Engines, Natural Gas Fired, 4 Stroke, Lean Burn, with Catalytic Oxidation

Criteria Pollutant Emissions
Total Cogen Engine Emissions

Pollutant	CAS	Device 542 Emissions			Device 543 Emissions			Device 544 Emissions			Device 545 Emissions			Total Emissions		
		Total Annual Emissions Both Fuels (lb/yr)	Total Daily Emissions Both Fuels (lb/day)	Max Hourly Emissions Either Fuel (lb/hr)	Total Annual Emissions Both Fuels (lb/yr)	Total Daily Emissions Both Fuels (lb/day)	Max Hourly Emissions Either Fuel (lb/hr)	Total Annual Emissions Both Fuels (lb/yr)	Total Daily Emissions Both Fuels (lb/day)	Max Hourly Emissions Either Fuel (lb/hr)	Total Annual Emissions Both Fuels (lb/yr)	Total Daily Emissions Both Fuels (lb/day)	Max Hourly Emissions Either Fuel (lb/hr)	Total Annual Emissions Both Fuels (lb/yr)	Total Daily Emissions Both Fuels (lb/day)	Max Hourly Emissions Either Fuel (lb/hr)
Carbon Monoxide (CO)	42101	4.697E+03	2.681E+01	8.857E-01	4.697E+03	2.681E+01	8.857E-01	4.697E+03	2.681E+01	8.857E-01	4.697E+03	2.681E+01	8.857E-01	1.879E+04	1.073E+02	3.543E+00
Nitrogen Oxides (NOx)	42603	9.279E+03	5.596E+01	1.709E+00	9.279E+03	5.596E+01	1.709E+00	9.279E+03	5.596E+01	1.709E+00	9.279E+03	5.596E+01	1.709E+00	3.712E+04	2.239E+02	6.836E+00
Sulfur Oxides (SOx)	42401	1.442E+02	5.825E-01	3.045E-02	1.442E+02	5.825E-01	3.045E-02	1.442E+02	5.825E-01	3.045E-02	1.442E+02	5.825E-01	3.045E-02	5.768E+02	2.330E+00	1.218E-01
Total Organic Gases (TOG)	43101	2.184E+03	2.467E+01	1.056E+00	2.184E+03	2.467E+01	1.056E+00	2.184E+03	2.467E+01	1.056E+00	2.184E+03	2.467E+01	1.056E+00	8.734E+03	9.867E+01	4.223E+00
Volatile Organic Compounds (VOC)	43104	6.286E+02	3.600E+00	1.184E-01	6.286E+02	3.600E+00	1.184E-01	6.286E+02	3.600E+00	1.184E-01	6.286E+02	3.600E+00	1.184E-01	2.514E+03	1.440E+01	4.735E-01
Total Particulates (TSP)	11101	2.003E+03	8.301E+00	4.202E-01	2.003E+03	8.301E+00	4.202E-01	2.003E+03	8.301E+00	4.202E-01	2.003E+03	8.301E+00	4.202E-01	8.013E+03	3.320E+01	1.681E+00
Particulate Matter (PM10)	85101	2.003E+03	8.301E+00	4.202E-01	2.003E+03	8.301E+00	4.202E-01	2.003E+03	8.301E+00	4.202E-01	2.003E+03	8.301E+00	4.202E-01	8.013E+03	3.320E+01	1.681E+00

Notes:

Maximum hourly emissions are from engines operating on either digester gas or natural gas

TAC Emissions
Digester Gas

Pollutant	CAS	Device 542 Emissions			Device 543 Emissions			Device 544 Emissions			Device 545 Emissions			Total Emissions		Controlled by Ox Cat?	Uncontrolled EF ($lb/mmft^3$)
		EF ($lb/mmft^3$)	lb/yr	lb/hr	EF ($lb/mmft^3$)	lb/yr	lb/hr	EF ($lb/mmft^3$)	lb/yr	lb/hr	EF ($lb/mmft^3$)	lb/yr	lb/hr	lb/yr	lb/hr		
NH3	7664417	4.800E-03	3.360E-01	7.307E-05	4.800E-03	3.360E-01	7.307E-05	4.800E-03	3.360E-01	7.307E-05	4.800E-03	3.360E-01	7.307E-05	1.344E+00	2.923E-04	N	-
Acetaldehyde	75070	7.000E-05	4.900E-03	1.066E-06	7.000E-05	4.900E-03	1.066E-06	7.000E-05	4.900E-03	1.066E-06	7.000E-05	4.900E-03	1.066E-06	1.960E-02	4.262E-06	Y	7.000E-04
Benzene	71432	1.782E-02	1.247E+00	2.713E-04	1.782E-02	1.247E+00	2.713E-04	1.782E-02	1.247E+00	2.713E-04	1.782E-02	1.247E+00	2.713E-04	4.990E+00	1.085E-03	Y	1.782E-01
Chlorobenzn	108907	2.000E-05	1.400E-03	3.045E-07	2.000E-05	1.400E-03	3.045E-07	2.000E-05	1.400E-03	3.045E-07	2.000E-05	1.400E-03	3.045E-07	5.600E-03	1.218E-06	Y	2.000E-04
DiClBenzenes	25321226	1.800E-04	1.260E-02	2.740E-06	1.800E-04	1.260E-02	2.740E-06	1.800E-04	1.260E-02	2.740E-06	1.800E-04	1.260E-02	2.740E-06	5.040E-02	1.096E-05	Y	1.800E-03
Ethyl Benzene	100414	1.000E-04	7.000E-03	1.522E-06	1.000E-04	7.000E-03	1.522E-06	1.000E-04	7.000E-03	1.522E-06	1.000E-04	7.000E-03	1.522E-06	2.800E-02	6.089E-06	Y	1.000E-03
EDC	107062	1.400E-04	9.800E-03	2.131E-06	1.400E-04	9.800E-03	2.131E-06	1.400E-04	9.800E-03	2.131E-06	1.400E-04	9.800E-03	2.131E-06	3.920E-02	8.525E-06	Y	1.400E-03
Formaldehyde	50000	4.672E+00	3.270E+02	7.112E-02	4.672E+00	3.270E+02	7.112E-02	4.672E+00	3.270E+02	7.112E-02	4.672E+00	3.270E+02	7.112E-02	1.308E+03	2.845E-01	Y	4.672E+01
Hexane	110543	6.480E-03	4.536E-01	9.865E-05	6.480E-03	4.536E-01	9.865E-05	6.480E-03	4.536E-01	9.865E-05	6.480E-03	4.536E-01	9.865E-05	1.814E+00	3.946E-04	Y	6.480E-02
HCl	7647010	6.455E-02	4.519E+00	9.827E-04	6.455E-02	4.519E+00	9.827E-04	6.455E-02	4.519E+00	9.827E-04	6.455E-02	4.519E+00	9.827E-04	1.807E+01	3.931E-03	Y	6.455E-01
H2S	7783064	2.150E-02	1.505E+00	3.273E-04	2.150E-02	1.505E+00	3.273E-04	2.150E-02	1.505E+00	3.273E-04	2.150E-02	1.505E+00	3.273E-04	6.020E+00	1.309E-03	N	2.150E-02
Methylene Chlor	75092	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	2.800E-03	6.089E-07	Y	1.000E-04
MEK	78933	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	2.800E-03	6.089E-07	Y	1.000E-04
Perc	127184	5.000E-05	3.500E-03	7.612E-07	5.000E-05	3.500E-03	7.612E-07	5.000E-05	3.500E-03	7.612E-07	5.000E-05	3.500E-03	7.612E-07	1.400E-02	3.045E-06	Y	5.000E-04
Toluene	108883	6.480E-03	4.536E-01	9.865E-05	6.480E-03	4.536E-01	9.865E-05	6.480E-03	4.536E-01	9.865E-05	6.480E-03	4.536E-01	9.865E-05	1.814E+00	3.946E-04	Y	6.480E-02
1,1,1-TCA	71556	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	1.000E-05	7.000E-04	1.522E-07	2.800E-03	6.089E-07	Y	1.000E-04
TCE	79016	3.000E-05	2.100E-03	4.567E-07	3.000E-05	2.100E-03	4.567E-07	3.000E-05	2.100E-03	4.567E-07	3.000E-05	2.100E-03	4.567E-07	8.400E-03	1.827E-06	Y	3.000E-04
Xylenes	1330207	4.500E-04	3.150E-02	6.850E-06	4.500E-04	3.150E-02	6.850E-06	4.500E-04	3.150E-02	6.850E-06	4.500E-04	3.150E-02	6.850E-06	1.260E-01	2.740E-05	Y	4.500E-03
Arsenic	7440382	2.950E-04	2.065E-02	4.491E-06	2.950E-04	2.065E-02	4.491E-06	2.950E-04	2.065E-02	4.491E-06	2.950E-04	2.065E-02	4.491E-06	8.260E-02	1.796E-05	N	2.950E-04

Notes:

Emissions from Digester Gas based on the default SDAPCD emission factors A01-E09 - Engine, Digester Gas Fired

Arsenic was included but using the Encina specific emission factor from SDAPCD (https://www.sdapcd.org/content/dam/sdc/apcd/PDF/EmissionsInventoryRequestFormsInstructions/APCD-landfill1-revised-Nov-2nd-2021.pdf)

Formaldehyde emission factors based on onsite source test results, per SDAPCD inventory 3-1-22

The emission factor for the volatile TACs was controlled 90% by the oxidation catalyst

TAC Emissions Natural Gas												
Pollutant	CAS	EF (lb/mmft^3)	Device 542 Emissions		Device 543 Emissions		Device 544 Emissions		Device 545 Emissions		Total Emissions	
			lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr
1,3-Butadiene	106990	0.03	2.100E-01	2.113E-04	2.100E-01	2.113E-04	2.100E-01	2.113E-04	2.100E-01	2.113E-04	8.400E-01	8.450E-04
Acetaldehyde	75070	0.85	5.950E+00	5.986E-03	5.950E+00	5.986E-03	5.950E+00	5.986E-03	5.950E+00	5.986E-03	2.380E+01	2.394E-02
Acrolein	107028	0.01	7.000E-02	7.042E-05	7.000E-02	7.042E-05	7.000E-02	7.042E-05	7.000E-02	7.042E-05	2.800E-01	2.817E-04
Benzene	71432	0.04	2.800E-01	2.817E-04	2.800E-01	2.817E-04	2.800E-01	2.817E-04	2.800E-01	2.817E-04	1.120E+00	1.127E-03
Ethyl Benzene	100414	0.004	2.800E-02	2.817E-05	2.800E-02	2.817E-05	2.800E-02	2.817E-05	2.800E-02	2.817E-05	1.120E-01	1.127E-04
Formaldehyde	50000	5.39	3.773E+01	3.796E-02	3.773E+01	3.796E-02	3.773E+01	3.796E-02	3.773E+01	3.796E-02	1.509E+02	1.518E-01
Hexane	110543	0.11	7.700E-01	7.746E-04	7.700E-01	7.746E-04	7.700E-01	7.746E-04	7.700E-01	7.746E-04	3.080E+00	3.098E-03
Methanol	67561	0.26	1.820E+00	1.831E-03	1.820E+00	1.831E-03	1.820E+00	1.831E-03	1.820E+00	1.831E-03	7.280E+00	7.324E-03
Methylene Chlor	75092	0.002	1.400E-02	1.408E-05	1.400E-02	1.408E-05	1.400E-02	1.408E-05	1.400E-02	1.408E-05	5.600E-02	5.633E-05
Naphthalene	91203	0.007	4.900E-02	4.929E-05	4.900E-02	4.929E-05	4.900E-02	4.929E-05	4.900E-02	4.929E-05	1.960E-01	1.972E-04
PAHs-w/o	1151	0.003	2.100E-02	2.113E-05	2.100E-02	2.113E-05	2.100E-02	2.113E-05	2.100E-02	2.113E-05	8.400E-02	8.450E-05
Phenol	108952	0.002	1.400E-02	1.408E-05	1.400E-02	1.408E-05	1.400E-02	1.408E-05	1.400E-02	1.408E-05	5.600E-02	5.633E-05
Toluene	108883	0.04	2.800E-01	2.817E-04	2.800E-01	2.817E-04	2.800E-01	2.817E-04	2.800E-01	2.817E-04	1.120E+00	1.127E-03
Xylenes	1330207	0.02	1.400E-01	1.408E-04	1.400E-01	1.408E-04	1.400E-01	1.408E-04	1.400E-01	1.408E-04	5.600E-01	5.633E-04

Notes:

Emissions based on the default SDAPCD emission factors for A01-E17 - Engines, Natural Gas Fired, 4 Stroke, Lean Burn, with Catalytic Oxidation

TAC Emissions
Total Cogen Engine Emissions for Modeling

Pollutant	CAS		Device 542 Emissions		Device 543 Emissions		Device 544 Emissions		Device 545 Emissions		Total Emissions	
			Total Annual Emissions both Fuels (lb/yr)	Max Hourly Emissions from Either Fuel (lb/hr)	Total Annual Emissions both Fuels (lb/yr)	Max Hourly Emissions from Either Fuel (lb/hr)	Total Annual Emissions both Fuels (lb/yr)	Max Hourly Emissions from Either Fuel (lb/hr)	Total Annual Emissions both Fuels (lb/yr)	Max Hourly Emissions from Either Fuel (lb/hr)	Total Annual Emissions both Fuels (lb/yr)	Max Hourly Emissions from Either Fuel (lb/hr)
1,3-Butadiene	106990		2.100E-01	2.113E-04	2.100E-01	2.113E-04	2.100E-01	2.113E-04	2.100E-01	2.113E-04	8.400E-01	8.450E-04
Acetaldehyde	75070		5.955E+00	5.986E-03	5.955E+00	5.986E-03	5.955E+00	5.986E-03	5.955E+00	5.986E-03	2.382E+01	2.394E-02
Acrolein	107028		7.000E-02	7.042E-05	7.000E-02	7.042E-05	7.000E-02	7.042E-05	7.000E-02	7.042E-05	2.800E-01	2.817E-04
Benzene	71432		1.527E+00	2.817E-04	1.527E+00	2.817E-04	1.527E+00	2.817E-04	1.527E+00	2.817E-04	6.110E+00	1.127E-03
Ethyl Benzene	100414		3.500E-02	2.817E-05	3.500E-02	2.817E-05	3.500E-02	2.817E-05	3.500E-02	2.817E-05	1.400E-01	1.127E-04
Formaldehyde	50000		3.648E+02	7.112E-02	3.648E+02	7.112E-02	3.648E+02	7.112E-02	3.648E+02	7.112E-02	1.459E+03	2.845E-01
Hexane	110543		1.224E+00	7.746E-04	1.224E+00	7.746E-04	1.224E+00	7.746E-04	1.224E+00	7.746E-04	4.894E+00	3.098E-03
Methanol	67561		1.820E+00	1.831E-03	1.820E+00	1.831E-03	1.820E+00	1.831E-03	1.820E+00	1.831E-03	7.280E+00	7.324E-03
Methylene Chlor	75092		1.470E-02	1.408E-05	1.470E-02	1.408E-05	1.470E-02	1.408E-05	1.470E-02	1.408E-05	5.880E-02	5.633E-05
Naphthalene	91203		4.900E-02	4.929E-05	4.900E-02	4.929E-05	4.900E-02	4.929E-05	4.900E-02	4.929E-05	1.960E-01	1.972E-04
PAHs-w/o	1151		2.100E-02	2.113E-05	2.100E-02	2.113E-05	2.100E-02	2.113E-05	2.100E-02	2.113E-05	8.400E-02	8.450E-05
Phenol	108952		1.400E-02	1.408E-05	1.400E-02	1.408E-05	1.400E-02	1.408E-05	1.400E-02	1.408E-05	5.600E-02	5.633E-05
Toluene	108883		7.336E-01	2.817E-04	7.336E-01	2.817E-04	7.336E-01	2.817E-04	7.336E-01	2.817E-04	2.934E+00	1.127E-03
Xylenes	1330207		1.715E-01	1.408E-04	1.715E-01	1.408E-04	1.715E-01	1.408E-04	1.715E-01	1.408E-04	6.860E-01	5.633E-04
NH3	7664417		3.360E-01	7.307E-05	3.360E-01	7.307E-05	3.360E-01	7.307E-05	3.360E-01	7.307E-05	1.344E+00	2.923E-04
Chlorobenzn	108907		1.400E-03	3.045E-07	1.400E-03	3.045E-07	1.400E-03	3.045E-07	1.400E-03	3.045E-07	5.600E-03	1.218E-06
DiClBenzenes	25321226		1.260E-02	2.740E-06	1.260E-02	2.740E-06	1.260E-02	2.740E-06	1.260E-02	2.740E-06	5.040E-02	1.096E-05
EDC	107062		9.800E-03	2.131E-06	9.800E-03	2.131E-06	9.800E-03	2.131E-06	9.800E-03	2.131E-06	3.920E-02	8.525E-06
HCl	7647010		4.519E+00	9.827E-04	4.519E+00	9.827E-04	4.519E+00	9.827E-04	4.519E+00	9.827E-04	1.807E+01	3.931E-03
H2S	7783064		1.505E+00	3.273E-04	1.505E+00	3.273E-04	1.505E+00	3.273E-04	1.505E+00	3.273E-04	6.020E+00	1.309E-03
MEK	78933		7.000E-04	1.522E-07	7.000E-04	1.522E-07	7.000E-04	1.522E-07	7.000E-04	1.522E-07	2.800E-03	6.089E-07
Perc	127184		3.500E-03	7.612E-07	3.500E-03	7.612E-07	3.500E-03	7.612E-07	3.500E-03	7.612E-07	1.400E-02	3.045E-06
1,1,1-TCA	71556		7.000E-04	1.522E-07	7.000E-04	1.522E-07	7.000E-04	1.522E-07	7.000E-04	1.522E-07	2.800E-03	6.089E-07
TCE	79016		2.100E-03	4.567E-07	2.100E-03	4.567E-07	2.100E-03	4.567E-07	2.100E-03	4.567E-07	8.400E-03	1.827E-06
Arsenic	7440382		2.065E-02	4.491E-06	2.065E-02	4.491E-06	2.065E-02	4.491E-06	2.065E-02	4.491E-06	8.260E-02	1.796E-05

Notes:
Maximum Hourly emissions modeled are from the max emissions from the engines operating on either digester gas or natural gas

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Encina Wastewater Authority PTE
Flares - Permit ID 1004

Fuel Usage

Device	Digester Gas Fuel Usage				Rating (MMBtu/hr)	HHV (BTU/scf)
	Annual (million ft^3/yr)	Daily (million ft^3/day)	Hourly (million ft^3/hr)	Hourly (scfm)		
Flare(s)	300	1.571	0.0655	1091	40	611

Operation (hours/day) 24

Annual fuel usage based on permit conditions. Hourly and daily fuel usage based on rating.

There are 2 flares permitted, both rated 20 MMBtu/hr, one is not yet installed. Emissions are based on both flares.

Criteria Pollutant Emissions

Pollutant	CAS	EF (lb/mmft^3)	Emissions		
			lb/yr	lb/day	lb/hr
Carbon Monoxide (CO)	42101	75.53	22,659.00	118.67	4.94
Nitrogen Oxides (NOx)	42603	34.86	10,458.00	54.77	2.28
Sulfur Oxides (SOx)	42401	2.00	600.00	3.14	0.13
Total Organic Gases (TOG)	43101	25.21	7,563.00	39.61	1.65
Volatile Organic Compounds (VOC)	43104	12.10	3,630.00	19.01	0.79
Total Particulates (TSP)	11101	12.00	3,600.00	18.85	0.79
Particulate Matter (PM10)	85101	12.00	3,600.00	18.85	0.79

Notes:

Emissions from Digester Gas based on the default SDAPCD emission factors F02 - Flares, Digester Gas Fired, Enclosed

CO & NOx from 2021 inventory. Matches average from source testing from 2011 & 2013

TAC Emissions
Digester Gas

Pollutant	CAS	EF (lb/mmft^3)	Flare Emissions	
			lb/yr	lb/hr
Acetone	67641	7.000E-04	2.100E-01	4.583E-05
Ammonia	7664417	4.800E-03	1.440E+00	3.142E-04
Arsenic	7440382	2.950E-04	8.850E-02	1.931E-05
Benzene	71432	2.770E-02	8.310E+00	1.813E-03
Chlorobenzn	108907	2.000E-04	6.000E-02	1.309E-05
DiClBenzenes	25321226	1.800E-03	5.400E-01	1.178E-04
Ethyl Benzene	100414	1.000E-03	3.000E-01	6.547E-05
EDC	107062	1.400E-03	4.200E-01	9.165E-05
Formaldehyde	50000	2.042E-01	6.126E+01	1.337E-02
Hexane	110543	1.010E-02	3.030E+00	6.612E-04
HCl	7647010	6.455E-01	1.937E+02	4.226E-02
H2S	7783064	2.150E-02	6.450E+00	1.408E-03
Methylene Chlor	75092	1.000E-04	3.000E-02	6.547E-06
MEK	78933	1.000E-04	3.000E-02	6.547E-06
Perc	127184	5.000E-04	1.500E-01	3.273E-05
Toluene	108883	1.010E-02	3.030E+00	6.612E-04
1,1,1-TCA	71556	1.000E-04	3.000E-02	6.547E-06
TCE	79016	3.000E-04	9.000E-02	1.964E-05
Xylenes	1330207	4.500E-03	1.350E+00	2.946E-04

Notes:

Emissions from Digester Gas based on the default SDAPCD emission factors F02 - Flares, Digester Gas Fired, Enclosed

Arsenic was included but using the Encina specific emission factor from SDAPCD (https://www.sdapcd.org/content/dam/sdc/apcd/PDF/EmissionsInventoryRequestFormsInstructions/APCD-landfill1-revised-Nov-2nd-2021.pdf)

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Encina Wastewater Authority PTE
Diesel ICE- Permit ID 982044

Fuel Usage

Device	Max Rating (bhp)	Annual Diesel Fuel Usage (gal/yr)	Max Daily Diesel Fuel Usage (gal/day)	Max Hourly Diesel Fuel Usage (gal/hr)	Operations (hr/yr)
Diesel ICE	1,528	3903.0	1873.4	78.06	50.00

Hourly fuel usage is calculated from the horsepower at full load

Operation (hours/day) 24

Criteria Pollutant Emissions

Pollutant	CAS	Emission Factor (g/bhp)	Emission Factor (lb/1000 gal)	Emissions		
				lb/yr	lb/day	lb/hr
Carbon Monoxide (CO)	42101	0.52	22.530	87.93	42.21	1.76
Nitrogen Oxides (NOx)	42603	5.82	251.030	979.77	470.29	19.60
Sulfur Oxides (SOx)	42401	-	0.213	0.83	0.40	0.02
Total Organic Gases (TOG)	43101	0.29	12.333	48.14	23.11	0.96
Volatile Organic Compounds (VOC)	43104	0.37	16.090	62.80	30.14	1.26
Total Particulates (TSP)	11101	0.11	4.830	18.85	9.05	0.38
Particulate Matter (PM10)	85101	0.11	4.830	18.85	9.05	0.38

EFs based on SDAPCD inventory - EMISSION FACTORS USED ARE NOX 7.8, CO 0.7, VOC 0.5, PM 0.15 G/KW-HR PER ARB E.O. U-R-035-0121.

TAC Emissions

Pollutant	CAS	EF (lb/1000 gal)	Diesel ICE Emissions	
			lb/yr	lb/hr
DieselExhPM	9901	4.83E+00	1.89E+01	-
1,3-Butadiene	106990	2.17E-01	-	1.69E-02
Acetaldehyde	75070	7.83E-01	-	6.11E-02
Acrolein	107028	3.39E-02	-	2.65E-03
Arsenic	7440382	1.60E-03	-	1.25E-04
Benzene	71432	1.86E-01	-	1.45E-02
Cadmium	7440439	1.50E-03	-	1.17E-04
Chlorobenzn	108907	2.00E-04	-	1.56E-05
Cr(VI)	18540299	1.00E-04	-	7.81E-06
Chromium	7440473	5.00E-04	-	3.90E-05
Ethyl Benzene	100414	1.09E-02	-	8.51E-04
Formaldehyde	50000	1.73E+00	-	1.35E-01
Hexane	110543	2.69E-02	-	2.10E-03
Hydrogen Chloride	7647010	1.86E-01	-	1.45E-02
Lead	7439921	8.30E-03	-	6.48E-04
Manganese	7439965	3.10E-03	-	2.42E-04
Mercury	7439976	2.00E-03	-	1.56E-04
Naphthalene	91203	1.97E-02	-	1.54E-03
Nickel	7440020	3.90E-03	-	3.04E-04
PAHs-w/o	1151	3.62E-02	-	2.83E-03
Propylene	115071	4.67E-01	-	3.65E-02
Selenium	7782492	2.20E-03	-	1.72E-04
Toluene	108883	1.05E-01	-	8.20E-03
Xylenes	1330207	4.24E-02	-	3.31E-03
Zinc	7440666	2.24E-02	-	1.75E-03
Copper	7440508	4.10E-03	-	3.20E-04

Notes:
Annual emissions reported as DPM, hourly emissions reported as speciated toxics

Heat Rate, BTU/BHP-hr	7,000.0	*SDAPCD*
Fuel HHV, BTU/gal	137,030	*SDAPCD (19,300 BTU/lb x 7.1 lb/gal)*
BSFC, gal/BHP-hr	0.05108	*calculated*
Ratio, ROG/TOG	0.88400	*SDAPCD Annual Calculations*
Conversion factor g to lb	0.002204586	

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Encina Wastewater Authority PTE
ORF1 Headworks - Permit ID 961446

Usage

Device	Usage				
	million gal/yr	million gal/day	million gal/hr	day/yr	hr/day
ORF Headworks	13,140	36.00	1.50	365	24

Permit limits to average of 36 million gallon per day

Emissions

Pollutant	CAS	EF (lb/million gal)	ORF Headworks Emissions		
			lb/yr	lb/day	lb/hr
Criteria Pollutants					
Total Organic Gases (TOG)	43101	0.188	2,470.32	6.77	2.82E-01
Volatile Organic Compounds (VC	43104	0.16	2,102.40	5.76	2.40E-01
Toxic Air Contaminants					
Pollutant	**CAS**	**EF (lb/million gal)**	**lb/yr**	**lb/hr**	
NH3	7664417	4.86E-03	63.9	7.29E-03	
Benzene	71432	9.16E-04	12.0	1.37E-03	
CS2	75150	6.31E-03	82.9	9.47E-03	
Chloroform	67663	7.73E-03	101.6	1.16E-02	
p-DiClBenzene	106467	3.97E-03	52.2	5.96E-03	
1,4-Dioxane	123911	1.69E-02	222.1	2.54E-02	
EDC	107062	2.96E-02	388.9	4.44E-02	
H2S	7783064	4.85E-03	63.7	7.28E-03	
Methylene Chlor	75092	1.72E-02	226.0	2.58E-02	
Perc	127184	7.63E-03	100.3	1.14E-02	
Toluene	108883	2.04E-03	26.8	3.06E-03	
1,1,1-TCA	71556	2.97E-03	39.0	4.46E-03	
TCE	79016	1.79E-02	235.2	2.69E-02	
Xylenes	1330207	4.40E-04	5.8	6.60E-04	
Methane	74828	7.38E-02	969.7	1.11E-01	

Notes:
Emissions based on the default SDAPCD emission factors P15-W01 - WASTEWATER PROCESSING, ENCINA WWTP, HEADWORKS WITH CONTROLS (from site specific source test data in 1993)
Device 144601

Yorke ENGINEERING, LLC
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Encina Wastewater Authority PTE
ORF3 Activated Sludge - Permit ID 961446

Usage					
Device	Usage				
	mil gal/yr	million gal/day	mil gal/hr	day/yr	hr/day
ORF Headworks	13,140	36.00	1.50	365	24

Permit limits to average of 36 million gallon per day

Emissions					
Pollutant	CAS	EF (lb/million gal)	ORF Activated Sludge Emissions		
			lb/yr	lb/day	lb/hr
Criteria Pollutants					
Total Organic Gases (TOG)	43101	0.212	2,785.68	7.63	3.18E-01
Volatile Organic Compounds (VOC)	43104	0.184	2,417.76	6.62	2.76E-01
Toxic Air Contaminants					
Pollutant	CAS	EF (lb/million gal)	lb/yr	lb/hr	
NH3	7664417	4.86E-03	63.9	7.29E-03	
Benzene	71432	9.16E-04	12.0	1.37E-03	
CS2	75150	6.31E-03	82.9	9.47E-03	
Chlorine	7782505	0.00E+00	0.0	0.00E+00	
Chloroform	67663	2.01E-02	264.1	3.02E-02	
p-DiClBenzene	106467	3.97E-03	52.2	5.96E-03	
1,4-Dioxane	123911	1.69E-02	222.1	2.54E-02	
EDC	107062	2.96E-02	388.9	4.44E-02	
H2S	7783064	9.75E-03	128.1	1.46E-02	
Methylene Chlor	75092	1.72E-02	226.0	2.58E-02	
Perc	127184	7.63E-03	100.3	1.14E-02	
Sodium Hydroxide	1310732	0.00E+00	0.0	0.00E+00	
Toluene	108883	2.04E-03	26.8	3.06E-03	
1,1,1-TCA	71556	2.97E-03	39.0	4.46E-03	
TCE	79016	1.79E-02	235.2	2.69E-02	
Xylenes	1330207	4.40E-04	5.8	6.60E-04	
Methane	74828	8.56E-02	1124.8	1.28E-01	

Notes:

Emissions based on the default SDAPCD emission factors P15-W02 - WASTEWATER PROCESSING, ENCINA WWTP, ACTIVATED SLUDGE AERATION WITH CONTROLS (from site specific source test data in 1993)

Chlorine & Sodium Hydroxide emissions equal zero since the caustic scrubber has been removed from the process Device 144602

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Encina Wastewater Authority PTE
Natural Gas Dryer/RTO Emissions - Permit ID 001016

Fuel Usage - Dryer/RTO						
Fuel	**Annual (million ft^3/yr)**	**Daily (million ft^3/day)**	**Hourly (million ft^3/hr)**	**Hourly (scfm)**	**Rating (MMBtu/hr)**	**HHV (BTU/scf)**
Natural Gas Fuel Usage	140.0	0.38	0.0160	266	16.3	1020

Hourly fuel usage is calculated from the rating at full load

Operation (hours/day)	24
Operation (day/year)	365

Emissions					
Natural Gas					
Pollutant	**CAS**	**EF (lb/mmft^3)**	**RTO Natural Gas Emissions**		
			lb/yr	**lb/day**	**lb/hr**
Criteria Pollutants					
Carbon Monoxide (CO)	42101	84	11,760.00	32.22	1.34
Nitrogen Oxides (NOx)	42603	100	14,000.00	38.35	1.60
Sulfur Oxides (SOx)	42401	0.6	84.00	0.23	0.01
Total Organic Gases (TOG)	43101	11	1,540.00	4.22	0.18
Volatile Organic Compounds (VO	43104	5.5	770.00	2.11	0.09
Total Particulates (TSP)	11101	7.6	1,064.00	2.91	0.12
Particulate Matter (PM10)	85101	7.6	1,064.00	2.91	0.12
Toxic Air Contaminants					
Pollutant	**CAS**	**EF (lb/mmft^3)**	**lb/yr**	**lb/hr**	
Benzene	71432	2.10E-03	2.940E-01	3.356E-05	
DiClBenzenes	25321226	1.20E-03	1.680E-01	1.918E-05	
Formaldehyde	50000	7.50E-02	1.050E+01	1.199E-03	
Hexane	110543	1.80E+00	2.520E+02	2.876E-02	
Naphthalene	91203	6.10E-04	8.540E-02	9.748E-06	
Toluene	108883	3.40E-03	4.760E-01	5.433E-05	

Notes:
Emissions from Natural Gas combustion of the dryer and RTO combined based on the default SDAPCD emission factors B16 - Boiler, Natural Gas Fired, 0.3 - 100 Mmbtu/Hr, uncontrolled

Permit APCD2011-PTO-001016
Digester Gas emissions are captured in the Biosolids-RTO emissions
Emissions based on full operation on natural gas. Does not account for reduction in usage due to usage of digester gas. (i.e. Can't burn both fuels at same time at full capacity).

Device #	101602

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Encina Wastewater Authority PTE
Digester Gas Dryer & RTO Emissions - Permit ID 001016

Usage				
Device	Usage			
	ton/yr	ton/day	ton/hr	hr/day
Biosolids Processing	13,176.5	36.1	1.50	24

Daily and annual usage based on permit conditions in dry ton basis.

Emissions based on Biosolids Processing including Digester Gas Combustion

Pollutant	CAS	EF (lb/ton sludge produced)	Biosolids Processing Emissions			EF Basis
			lb/yr	lb/day	lb/hr	
Criteria Pollutants						
Carbon Monoxide (CO)	42101	0.41	5,431.20	14.88	0.62	2021 inventory. Source test Mar 2009 measured 0.62 lb/hr (48.3 ppm @3%O2). Test 10/20/09 measured 43.8 ppm @3%O2
Nitrogen Oxides (NOx)	42603	1.53	20,148.00	55.20	2.30	2021 inventory. Source test Mar 2009 measured 2.3 lb/hr (109 ppm @3%O2). Test 10/20/09 measured 65.1 ppm @3%O2
Sulfur Oxides (SOx)	42401	0.28	3,635.40	9.96	0.42	2021 inventory - matches 2005 & 2009 applications
Total Organic Gases (TOG)	43101	0.45	5,939.28	16.27	0.68	Same as VOC
Volatile Organic Compounds (VOC)	43104	0.45	5,939.28	16.27	0.68	2021 inventory. Like Kind Replacement app listed 0.68 lb/hr [Source test Mar 2009 measured 0.17 lb/hr (12.4 ppm @3%O2)]
Total Particulates (TSP)	11101	1.21	15,899.40	43.56	1.81	2021 inventory - matches 2005 & 2009 applications
Particulate Matter (PM10)	85101	1.21	15,899.40	43.56	1.81	2021 inventory - matches 2005 & 2009 applications

Toxic Air Contaminants

Pollutant	CAS	EF (lb/ton sludge produced)	lb/yr	lb/hr
Ammonia	7664417	1.46E-01	1.93E+03	2.20E-01
Arsenic (inorganic)	7440382	2.29E-05	3.02E-01	3.45E-05
Benzene	71432	4.91E-04	6.47E+00	7.39E-04
Cadmium	7440439	1.32E-05	1.73E-01	1.98E-05
Carbon Disulfide	75150	5.08E-07	6.69E-03	7.64E-07
Chlorobenzene	108907	3.54E-06	4.67E-02	5.33E-06
Chromium, Hexavalent	18540299	1.81E-07	2.39E-03	2.73E-07
Copper	7440508	1.06E-03	1.39E+01	1.59E-03
p-Dichlorobenzene {1,4-Dichlorobenzene	106467	3.19E-05	4.20E-01	4.80E-05
Ethyl Benzene	100414	1.78E-05	2.34E-01	2.67E-05
Ethylene Dichloride	107062	2.48E-05	3.27E-01	3.73E-05
Formaldehyde	50000	3.62E-03	4.77E+01	5.45E-03
Hexane	110543	1.79E-04	2.36E+00	2.69E-04
Hydrogen Chloride	7647010	1.14E-02	1.51E+02	1.72E-02
Hydrogen Sulfide	7783064	6.65E-02	8.76E+02	1.00E-01
Lead (inorganic)	7439921	3.41E-05	4.49E-01	5.13E-05
Mercury (inorganic)	7439976	1.99E-06	2.62E-02	2.99E-06
Methyl Tert Butyl Ether	1634044	9.77E-08	1.29E-03	1.47E-07
Methylene Chloride	75092	1.78E-06	2.34E-02	2.67E-06
Methyl Ethyl Ketone	78933	1.78E-06	2.34E-02	2.67E-06
Nickel (except nickel oxide)	7440020	4.13E-05	5.44E-01	6.21E-05
Perchloroethylene	127184	8.84E-06	1.17E-01	1.33E-05
Selenium	7782492	6.71E-08	8.85E-04	1.01E-07
Styrene	100425	8.31E-08	1.10E-03	1.25E-07
Toluene	108883	1.79E-04	2.36E+00	2.69E-04
Trichloroethylene	79016	5.32E-06	7.01E-02	8.00E-06
1,1,1-Trichloroethane	71556	1.78E-06	2.34E-02	2.67E-06
Xylenes (mixed)	1330207	7.98E-05	1.05E+00	1.20E-04
Zinc	7440666	1.81E-03	2.39E+01	2.73E-03

Notes:
Per SDAPCD, the EFs are based on a combination of source testing (March 2009), previous applications, and digester gas boiler EF, using the maximum EF. The source test report not available.

Engineering evalutation APCD2005-APP-983830 May 31, 2005

> Criteria pollutant emission factors provided by the applicant, developed from testing of similar equipment, and guaranteed by the manufacturer were used. Toxic metal speciation of digester sludge was obtained from averaging EWA's digester sludge samples. The speciation was applied to the PM-10 emission factor to calculate emissions. The estimates provided by the applicant were

Engineering evalutation APCD2009-APP-000770 April 23, 2010 - listed criteria pollutant and TAC emissions which match APP-983830, and are the basis for the EFs above

EFs from 2021 inventory

Emissions are based on full operation on digester gas. Does not account for reduction in usage due to usage of natural gas.
(i.e. Can't burn both fuels at same time at full capacity).

Emissions from the combination of digester gas combustion in the RTO (CD1) and the Venturi scrubber controlling the particulate from biosolids processing (CD2)

Permit APCD2011-PTO-001016

Device #	101601

APPENDIX C – PRIORITIZATION SCORE ASSESSMENT

Yorke ENGINEERING, LLC
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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Facility-wide TAC Emissions and Prioritization Score - Calculated per Source

Health Risk	Cogen Engines (542, 543, 544, 545)	Flare (1004)	Diesel Engine (982044)	ORF1 - Headworks (961446)	ORF3 - Activated Sludge (961446)	RTO-Dryer - Biosolids (001016)	All Sources	Category	Priority Level
	Prioritization Score								
Residential/Sensitive Cancer	2.46	0.27	3.86	4.41	5.47	0.75	17.21	B	Intermediate Priority
Worker Cancer	8.46	0.34	2.31	29.21	3.92	0.93	45.17	B	Intermediate Priority
Chronic	0.10	0.02	0.01	0.01	0.02	0.11	0.28	C	Low Priority
Acute	3.18	0.11	1.75	0.48	0.12	0.67	6.30	B	Intermediate Priority

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Cogen Engines (Devices 542, 543, 544, 545) - TAC Emissions and Prioritization Score

TOTAL RES/SENS CANCER SCORE:	2.46	B	Intermediate Priority
TOTAL WORKER CANCER SCORE:	8.46	B	Intermediate Priority
TOTAL CHRONIC SCORE:	0.10	C	Low Priority
TOTAL ACUTE SCORE:	3.18	B	Intermediate Priority

TOXIC AIR CONTAMINANT EMISSIONS PRIORITIZATION CALCULATIONS:

AB2588 LISTED SUBSTANCE	CAS	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	WORKER CANCER SCORE	CANCER SCORE	% OF CANCER SCORE	CHRONIC SCORE	% OF CHRONIC SCORE	ACUTE SCORE	% OF ACUTE SCORE	UNIT RISK FACTOR $(ug/m^3)^{-1}$	CHRONIC REL (ug/m^3)	ACUTE REL (ug/m^3)
1,3-Butadiene	106990	8.40E-01	8.45E-04	0.13	0.04	2%	0.00	0%	0.00	0%	1.7E-04	2.0E+00	6.6E+02
Acetaldehyde	75070	2.38E+01	2.39E-02	0.06	0.02	1%	0.00	0%	0.03	1%	2.7E-06	1.4E+02	4.7E+02
Acrolein	107028	2.80E-01	2.82E-04				0.00	0%	0.07	2%		3.5E-01	2.5E+00
Benzene	71432	6.11E+00	1.13E-03	0.16	0.05	2%	0.00	1%	0.02	1%	2.9E-05	3.0E+00	2.7E+01
Ethyl Benzene	100414	1.40E-01	1.13E-04	0.00	0.00	0%	0.00	0%			2.5E-06	2.0E+03	
Formaldehyde	50000	1.46E+03	2.84E-01	7.78	2.26	92%	0.09	93%	2.99	94%	6.0E-06	9.0E+00	5.5E+01
Hexane	110543	4.89E+00	3.10E-03				0.00	0%				7.0E+03	
Methanol	67561	7.28E+00	7.32E-03				0.00	0%	0.00	0%		4.0E+03	2.8E+04
Methylene Chlor	75092	5.88E-02	5.63E-05	0.00	0.00	0%	0.00	0%	0.00	0%	1.0E-06	4.0E+02	1.4E+04
Naphthalene	91203	1.96E-01	1.97E-04	0.01	0.00	0%	0.00	0%			3.4E-05	9.0E+00	
PAHs-w/o	1151	8.40E-02	8.45E-05	0.08	0.02	1%					1.1E-03		
Phenol	108952	5.60E-02	5.63E-05				0.00	0%	0.00	0%		2.0E+02	5.8E+03
Toluene	108883	2.93E+00	1.13E-03				0.00	0%	0.00	0%		4.2E+02	5.0E+03
Xylenes	1330207	6.86E-01	5.63E-04				0.00	0%	0.00	0%		7.0E+02	2.2E+04
NH3	7664417	1.34E+00	2.92E-04				0.00	0%	0.00	0%		2.0E+02	3.2E+03
Chlorobenzn	108907	5.60E-03	1.22E-06				0.00	0%				1.0E+03	
DiClBenzenes	25321226	5.04E-02	1.10E-05										
EDC	107062	3.92E-02	8.52E-06	0.00	0.00	0%	0.00	0%			2.1E-05	4.0E+02	
HCl	7647010	1.81E+01	3.93E-03				0.00	1%	0.00	0%		9.0E+00	2.1E+03
H2S	7783064	6.02E+00	1.31E-03				0.00	0%	0.02	1%		1.0E+01	4.2E+01
MEK	78933	2.80E-03	6.09E-07						0.00	0%			1.3E+04
Perc	127184	1.40E-02	3.04E-06	0.00	0.00	0%	0.00	0%	0.00	0%	6.1E-06	3.5E+01	2.0E+04
1,1,1-TCA	71556	2.80E-03	6.09E-07				0.00	0%	0.00	0%		1.0E+03	6.8E+04
TCE	79016	8.40E-03	1.83E-06	0.00	0.00	0%	0.00	0%			2.0E-06	6.0E+02	
Arsenic	7440382	8.26E-02	1.80E-05	0.24	0.07	3%	0.00	3%	0.05	2%	3.3E-03	1.5E-02	2.0E-01

This table uses unit risk factors and REL's from the OEHHA/ARB revised Risk Assessment Health Values as of 10/6/2023

Receptor	D = source to receptor distance (meters)	RP = receptor proximity adjustment factor	Location	Receptor Definition
offsite worker	80.6	0.385	to the engines from SDAPCD	Closest land, property boundary or building which is zoned for manufacturing, retail activity, worksites, or industrial sites (light or heavy).
resident	273	0.034	to the engines from SDAPCD	Closest land, property boundary, building, or watercraft used for areas of residence or areas which are under
sensitive	273	0.034	to the engines from SDAPCD	Closest land, property boundary or building used for the purpose of education, including but not limited to,
Short-term public access location	80.6	0.385	to the engines from SDAPCD	Closest areas such as public parks and bus stops (although not including general sidewalks).
Cancer/ Chronic	273	0.034		
Acute	80.6	0.385		

Cancer Prioritization Calculation:

Using the Emission and Potency Procedure

$$TS_{cancer} = \sum^{c} (E_c)\,(P_c)\,(RP)\,(7700)$$

where,

TS_{cancer}	=	total score, sum of scores for all compounds for which a unit risk value is available
c	=	specific carcinogenic compound
E_c	=	facility-wide or device emissions of substance c, (lbs/yr)
P_c	=	unit risk factor for substance c, $\mu g/m^3$
RP	=	facility-wide or device receptor proximity adjustment factor
7700	=	carcinogenic (or cancer) normalization factor, and 0.3 applied for worker risk

Cancer Score Evaluation:

TS ≥ 100	Category A	High Priority - Will be subject to Risk Assessment
1 ≤ TS ≤ 100	Category B	Intermediate Priority - May be subject to Risk Assessment based on additional factors
TS < 1	Category C	Low Priority - Will NOT be subject to Risk Assessment

Chronic/Acute Prioritzation Calculation:

Using the Emission and Potency Procedure

$$TS_{chronic} = \sum^{tc} (E_{tc}/P_{tc})\,(RP)\,(150)$$
$$TS_{acute} = \sum^{ta} (E_{ta}/P_{ta})\,(RP)\,(1500)$$

$TS_{chronic}$	=	total score, sum of scores for all substances with chronic RELs
TS_{acute}	=	total score, sum of scores for all substances with acute RELs
tc	=	toxic compound with a chronic REL
ta	=	toxic compound with an acute REL
E_{tc}	=	annual average hourly facility-wide or device emissions of tc, (lbs/hr)
E_{ta}	=	maximum hourly facility-wide or device emissions of ta, (lbs/hr)
P_{tc}	=	REL of substance tc, $(\mu g/m^3)$
P_{ta}	=	REL of substance ta, $(\mu g/m^3)$
RP	=	facility-wide or device receptor proximity adjustment factor
150	=	normalization factor
1500	=	normalization factor

Chronic/Acute Score Evaluation:

TS ≥ 10	Category A	High Priority - Will be subject to Risk Assessment
1 ≤ TS ≤ 10	Category B	Intermediate Priority - May be subject to Risk Assessment based on additional factors
TS < 1	Category C	Low Priority - Will NOT be subject to Risk Assessment

SDAPCD AIR TOXICS "HOT SPOTS" PROGRAM PRIORITIZATION PROCEDURES, August 2022

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Flare (Devices 1004) - TAC Emissions and Prioritization Score

TOTAL RES/SENS CANCER SCORE:	0.27	C	Low Priority
TOTAL WORKER CANCER SCORE:	0.34	C	Low Priority
TOTAL CHRONIC SCORE:	0.02	C	Low Priority
TOTAL ACUTE SCORE:	0.11	C	Low Priority

TOXIC AIR CONTAMINANT EMISSIONS PRIORITIZATION CALCULATIONS:

AB2588 LISTED SUBSTANCE	CAS	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	WORKER CANCER SCORE	CANCER SCORE	% OF CANCER SCORE	CHRONIC SCORE	% OF CHRONIC SCORE	ACUTE SCORE	% OF ACUTE SCORE	UNIT RISK FACTOR $(ug/m^3)^{-1}$	CHRONIC REL (ug/m^3)	ACUTE REL (ug/m^3)
Acetone	67641	2.10E-01	4.58E-05										
Ammonia	7664417	1.44E+00	3.14E-04				0.00	0%	0.00	0%		2.0E+02	3.2E+03
Arsenic	7440382	8.85E-02	1.93E-05	0.11	0.09	32%	0.00	16%	0.02	21%	3.3E-03	1.5E-02	2.0E-01
Benzene	71432	8.31E+00	1.81E-03	0.09	0.07	26%	0.00	7%	0.02	15%	2.9E-05	3.0E+00	2.7E+01
Chlorobenzn	108907	6.00E-02	1.31E-05				0.00	0%				1.0E+03	
DiClBenzenes	25321226	5.40E-01	1.18E-04										
Ethyl Benzene	100414	3.00E-01	6.55E-05	0.00	0.00	0%	0.00	0%			2.5E-06	2.0E+03	
EDC	107062	4.20E-01	9.17E-05	0.00	0.00	1%	0.00	0%			2.1E-05	4.0E+02	
Formaldehyde	50000	6.13E+01	1.34E-02	0.14	0.11	40%	0.00	18%	0.06	53%	6.0E-06	9.0E+00	5.5E+01
Hexane	110543	3.03E+00	6.61E-04				0.00	0%				7.0E+03	
HCl	7647010	1.94E+02	4.23E-02				0.01	57%	0.00	4%		9.0E+00	2.1E+03
H2S	7783064	6.45E+00	1.41E-03				0.00	2%	0.01	7%		1.0E+01	4.2E+01
Methylene Chlor	75092	3.00E-02	6.55E-06	0.00	0.00	0%	0.00	0%	0.00	0%	1.0E-06	4.0E+02	1.4E+04
MEK	78933	3.00E-02	6.55E-06						0.00	0%			1.3E+04
Perc	127184	1.50E-01	3.27E-05	0.00	0.00	0%	0.00	0%	0.00	0%	6.1E-06	3.5E+01	2.0E+04
Toluene	108883	3.03E+00	6.61E-04				0.00	0%	0.00	0%		4.2E+02	5.0E+03
1,1,1-TCA	71556	3.00E-02	6.55E-06				0.00	0%	0.00	0%		1.0E+03	6.8E+04
TCE	79016	9.00E-02	1.96E-05	0.00	0.00	0%	0.00	0%			2.0E-06	6.0E+02	
Xylenes	1330207	1.35E+00	2.95E-04				0.00	0%	0.00	0%		7.0E+02	2.2E+04

This table uses unit risk factors and REL's from the OEHHA/ARB revised Risk Assessment Health Values as of 10/6/2023

Receptor	D = source to receptor distance (meters)	RP = receptor proximity adjustment factor	Location	Receptor Definition
offsite worker	124	0.163	to unit from SDAPCD	Closest land, property boundary or building which is zoned for manufacturing, retail activity, worksites, or industrial sites (light or heavy).
resident	254	0.039	to unit from SDAPCD	Closest land, property boundary, building, or watercraft used for areas of residence or areas which are under
sensitive	254	0.039	to unit from SDAPCD	Closest land, property boundary or building used for the purpose of education, including but not limited to,
Short-term public access location	124	0.163	to unit from SDAPCD	Closest areas such as public parks and bus stops (although not including general sidewalks).
Cancer/ Chronic	254	0.039		
Acute	124	0.163		

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
Diesel ICE (Device 982044) - TAC Emissions and Prioritization Score

TOTAL RES/SENS CANCER SCORE:	3.86	B	Intermediate Priority
TOTAL WORKER CANCER SCORE:	2.31	B	Intermediate Priority
TOTAL CHRONIC SCORE:	0.01	C	Low Priority
TOTAL ACUTE SCORE:	1.75	B	Intermediate Priority

TOXIC AIR CONTAMINANT EMISSIONS PRIORITIZATION CALCULATIONS:

AB2588 LISTED SUBSTANCE	CAS	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	WORKER CANCER SCORE	CANCER SCORE	% OF CANCER SCORE	CHRONIC SCORE	% OF CHRONIC SCORE	ACUTE SCORE	% OF ACUTE SCORE	UNIT RISK FACTOR $(ug/m^3)^{-1}$	CHRONIC REL (ug/m^3)	ACUTE REL (ug/m^3)
DieselExhPM	9901	1.89E+01		2.31	3.86	100%	0.01	100%			3.0E-04	5.0E+00	
1,3-Butadiene	106990		1.69E-02						0.01	0%	1.7E-04	2.0E+00	6.6E+02
Acetaldehyde	75070		6.11E-02						0.03	2%	2.7E-06	1.4E+02	4.7E+02
Acrolein	107028		2.65E-03						0.28	16%		3.5E-01	2.5E+00
Arsenic	7440382		1.25E-04						0.17	9%	3.3E-03	1.5E-02	2.0E-01
Benzene	71432		1.45E-02						0.14	8%	2.9E-05	3.0E+00	2.7E+01
Cadmium	7440439		1.17E-04								4.2E-03	2.0E-02	
Chlorobenzn	108907		1.56E-05									1.0E+03	
Cr(VI)	18540299		7.81E-06								1.5E-01	2.0E-01	
Chromium	7440473		3.90E-05										
Ethyl Benzene	100414		8.51E-04								2.5E-06	2.0E+03	
Formaldehyde	50000		1.35E-01						0.65	37%	6.0E-06	9.0E+00	5.5E+01
Hexane	110543		2.10E-03									7.0E+03	
Hydrogen Chloride	7647010		1.45E-02						0.00	0%		9.0E+00	2.1E+03
Lead	7439921		6.48E-04								1.2E-05		
Manganese	7439965		2.42E-04									9.0E-02	
Mercury	7439976		1.56E-04						0.07	4%		3.0E-02	6.0E-01
Naphthalene	91203		1.54E-03								3.4E-05	9.0E+00	
Nickel	7440020		3.04E-04						0.40	23%	2.6E-04	1.4E-02	2.0E-01
PAHs-w/o	1151		2.83E-03								1.1E-03		
Propylene	115071		3.65E-02									3.0E+03	
Selenium	7782492		1.72E-04									2.0E+01	
Toluene	108883		8.20E-03						0.00	0%		4.2E+02	5.0E+03
Xylenes	1330207		3.31E-03						0.00	0%		7.0E+02	2.2E+04
Zinc	7440666		1.75E-03										
Copper	7440508		3.20E-04						0.00	0%			1.0E+02

This table uses unit risk factors and REL's from the OEHHA/ARB revised Risk Assessment Health Values as of 10/6/2023

Receptor	D = source to receptor distance (meters)	RP = receptor proximity adjustment factor	Location	Receptor Definition
offsite worker	119	0.177	to unit from SDAPCD	Closest land, property boundary or building which is zoned for manufacturing, retail activity, worksites, or industrial sites (light or heavy).
resident	168	0.089	to unit from SDAPCD	Closest land, property boundary, building, or watercraft used for areas of residence or areas which are under
sensitive	168	0.089	to unit from SDAPCD	Closest land, property boundary or building used for the purpose of education, including but not limited to,
Short-term public access location	119	0.177	to unit from SDAPCD	Closest areas such as public parks and bus stops (although not including general sidewalks).
Cancer/ Chronic	168	0.089		
Acute	119	0.177		

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
ORF1 (Device 144601) - TAC Emissions and Prioritization Score

TOTAL RES/SENS CANCER SCORE:	4.41	B	Intermediate Priority
TOTAL WORKER CANCER SCORE:	29.21	B	Intermediate Priority
TOTAL CHRONIC SCORE:	0.01	C	Low Priority
TOTAL ACUTE SCORE:	0.48	C	Low Priority

TOXIC AIR CONTAMINANT EMISSIONS PRIORITIZATION CALCULATIONS:

AB2588 LISTED SUBSTANCE	CAS	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	WORKER CANCER SCORE	CANCER SCORE	% OF CANCER SCORE	CHRONIC SCORE	% OF CHRONIC SCORE	ACUTE SCORE	% OF ACUTE SCORE	UNIT RISK FACTOR $(ug/m^3)^{-1}$	CHRONIC REL (ug/m^3)	ACUTE REL (ug/m^3)
NH3	7664417	6.39E+01	7.29E-03				0.00	2%	0.00	1%		2.0E+02	3.2E+03
Benzene	71432	1.20E+01	1.37E-03	0.81	0.12	3%	0.00	25%	0.08	16%	2.9E-05	3.0E+00	2.7E+01
CS2	75150	8.29E+01	9.47E-03				0.00	1%	0.00	0%		8.0E+02	6.2E+03
Chloroform	67663	1.02E+02	1.16E-02	1.24	0.19	4%	0.00	2%	0.12	24%	5.3E-06	3.0E+02	1.5E+02
p-DiClBenzene	106467	5.22E+01	5.96E-03	1.33	0.20	5%	0.00	0%			1.1E-05	8.0E+02	
1,4-Dioxane	123911	2.22E+02	2.54E-02	3.95	0.60	14%	0.00	0%	0.01	3%	7.7E-06	3.0E+03	3.0E+03
EDC	107062	3.89E+02	4.44E-02	18.87	2.85	65%	0.00	6%			2.1E-05	4.0E+02	
H2S	7783064	6.37E+01	7.28E-03				0.00	39%	0.26	55%		1.0E+01	4.2E+01
Methylene Chlor	75092	2.26E+02	2.58E-02	0.52	0.08	2%	0.00	3%	0.00	1%	1.0E-06	4.0E+02	1.4E+04
Perc	127184	1.00E+02	1.14E-02	1.41	0.21	5%	0.00	18%	0.00	0%	6.1E-06	3.5E+01	2.0E+04
Toluene	108883	2.68E+01	3.06E-03				0.00	0%	0.00	0%		4.2E+02	5.0E+03
1,1,1-TCA	71556	3.90E+01	4.46E-03				0.00	0%	0.00	0%		1.0E+03	6.8E+04
TCE	79016	2.35E+02	2.69E-02	1.09	0.16	4%	0.00	2%			2.0E-06	6.0E+02	
Xylenes	1330207	5.78E+00	6.60E-04				0.00	0%	0.00	0%		7.0E+02	2.2E+04

This table uses unit risk factors and REL's from the OEHHA/ARB revised Risk Assessment Health Values as of 10/6/2023

Receptor	D = source to receptor distance (meters)	RP = receptor proximity adjustment factor	Location	Receptor Definition
offsite worker	50	1.000	to unit from SDAPCD	Closest land, property boundary or building which is zoned for manufacturing, retail activity, worksites, or industrial sites (light or heavy).
resident	235	0.045	to unit from SDAPCD	Closest land, property boundary, building, or watercraft used for areas of residence or areas which are under
sensitive	235	0.045	to unit from SDAPCD	Closest land, property boundary or building used for the purpose of education, including but not limited to,
Short-term public access location	50	1.000	to unit from SDAPCD	Closest areas such as public parks and bus stops (although not including general sidewalks).
Cancer/ Chronic	235	0.045		
Acute	50	1.000		

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
ORF3 (Device 144602) - TAC Emissions and Prioritization Score

TOTAL RES/SENS CANCER SCORE:	5.47	B	Intermediate Priority
TOTAL WORKER CANCER SCORE:	3.92	B	Intermediate Priority
TOTAL CHRONIC SCORE:	0.02	C	Low Priority
TOTAL ACUTE SCORE:	0.12	C	Low Priority

TOXIC AIR CONTAMINANT EMISSIONS PRIORITIZATION CALCULATIONS:

AB2588 LISTED SUBSTANCE	CAS	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	WORKER CANCER SCORE	CANCER SCORE	% OF CANCER SCORE	CHRONIC SCORE	% OF CHRONIC SCORE	ACUTE SCORE	% OF ACUTE SCORE	UNIT RISK FACTOR $(ug/m^3)^{-1}$	CHRONIC REL (ug/m^3)	ACUTE REL (ug/m^3)
NH3	7664417	6.39E+01	7.29E-03				0.00	1%	0.00	0%		2.0E+02	3.2E+03
Benzene	71432	1.20E+01	1.37E-03	0.10	0.14	3%	0.00	17%	0.01	8%	2.9E-05	3.0E+00	2.7E+01
CS2	75150	8.29E+01	9.47E-03				0.00	0%	0.00	0%		8.0E+02	6.2E+03
Chlorine	7782505											2.0E-01	2.1E+02
Chloroform	67663	2.64E+02	3.02E-02	0.41	0.57	10%	0.00	4%	0.04	33%	5.3E-06	3.0E+02	1.5E+02
p-DiClBenzene	106467	5.22E+01	5.96E-03	0.17	0.23	4%	0.00	0%			1.1E-05	8.0E+02	
1,4-Dioxane	123911	2.22E+02	2.54E-02	0.50	0.69	13%	0.00	0%	0.00	1%	7.7E-06	3.0E+03	3.0E+03
EDC	107062	3.89E+02	4.44E-02	2.37	3.31	60%	0.00	4%			2.1E-05	4.0E+02	
H2S	7783064	1.28E+02	1.46E-02				0.01	55%	0.07	57%		1.0E+01	4.2E+01
Methylene Chlor	75092	2.26E+02	2.58E-02	0.07	0.09	2%	0.00	2%	0.00	0%	1.0E-06	4.0E+02	1.4E+04
Perc	127184	1.00E+02	1.14E-02	0.18	0.25	5%	0.00	12%	0.00	0%	6.1E-06	3.5E+01	2.0E+04
Sodium Hydroxide	1310732												8.0E+00
Toluene	108883	2.68E+01	3.06E-03				0.00	0%	0.00	0%		4.2E+02	5.0E+03
1,1,1-TCA	71556	3.90E+01	4.46E-03				0.00	0%	0.00	0%		1.0E+03	6.8E+04
TCE	79016	2.35E+02	2.69E-02	0.14	0.19	3%	0.00	2%			2.0E-06	6.0E+02	
Xylenes	1330207	5.78E+00	6.60E-04				0.00	0%	0.00	0%		7.0E+02	2.2E+04
Methane	74828	1.12E+03	1.28E-01										

This table uses unit risk factors and REL's from the OEHHA/ARB revised Risk Assessment Health Values as of 10/6/2023

Receptor	D = source to receptor distance (meters)	RP = receptor proximity adjustment factor	Location	Receptor Definition
offsite worker	141	0.126	to unit from SDAPCD	Closest land, property boundary or building which is zoned for manufacturing, retail activity, worksites, or industrial sites (light or heavy).
resident	218	0.053	to unit from SDAPCD	Closest land, property boundary, building, or watercraft used for areas of residence or areas which are under
sensitive	218	0.053	to unit from SDAPCD	Closest land, property boundary or building used for the purpose of education, including but not limited to,
Short-term public access location	141	0.126	to unit from SDAPCD	Closest areas such as public parks and bus stops (although not including general sidewalks).
Cancer/ Chronic	218	0.053		
Acute	141	0.126		

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Encina Wastewater Authority PTE with SCR & Oxidation Catalyst
RTO (Devices 101601 & 101602) - TAC Emissions and Prioritization Score

TOTAL RES/SENS CANCER SCORE:	0.75	C	Low Priority
TOTAL WORKER CANCER SCORE:	0.93	C	Low Priority
TOTAL CHRONIC SCORE:	0.11	C	Low Priority
TOTAL ACUTE SCORE:	0.67	C	Low Priority

TOXIC AIR CONTAMINANT EMISSIONS PRIORITIZATION CALCULATIONS:

AB2588 LISTED SUBSTANCE	CAS	ANNUAL EMISSIONS (lbs/yr)	MAX HOURLY EMISSIONS (lbs/hr)	WORKER CANCER SCORE	CANCER SCORE	% OF CANCER SCORE	CHRONIC SCORE	% OF CHRONIC SCORE	ACUTE SCORE	% OF ACUTE SCORE	UNIT RISK FACTOR $(ug/m^3)^{-1}$	CHRONIC REL (ug/m^3)	ACUTE REL (ug/m^3)
Benzene	71432	2.94E-01	3.36E-05	0.00	0.00	0%	0.00	0%	0.00	0%	2.9E-05	3.0E+00	2.7E+01
DiClBenzenes	25321226	1.68E-01	1.92E-05										
Formaldehyde	50000	1.05E+01	1.20E-03	0.02	0.02	2%	0.00	1%	0.00	1%	6.0E-06	9.0E+00	5.5E+01
Hexane	110543	2.52E+02	2.88E-02				0.00	0%				7.0E+03	
Naphthalene	91203	8.54E-02	9.75E-06	0.00	0.00	0%	0.00	0%			3.4E-05	9.0E+00	
Toluene	108883	4.76E-01	5.43E-05				0.00	0%	0.00	0%		4.2E+02	5.0E+03
Ammonia	7664417	1.93E+03	2.20E-01				0.01	5%	0.01	2%		2.0E+02	3.2E+03
Arsenic (inorganic)	7440382	3.02E-01	3.45E-05	0.33	0.27	36%	0.01	11%	0.04	6%	3.3E-03	1.5E-02	2.0E-01
Benzene	71432	6.47E+00	7.39E-04	0.06	0.05	7%	0.00	1%	0.01	1%	2.9E-05	3.0E+00	2.7E+01
Cadmium	7440439	1.73E-01	1.98E-05	0.24	0.20	26%	0.01	5%			4.2E-03	2.0E-02	
Carbon Disulfide	75150	6.69E-03	7.64E-07				0.00	0%	0.00	0%		8.0E+02	6.2E+03
Chlorobenzene	108907	4.67E-02	5.33E-06				0.00	0%				1.0E+03	
Chromium, Hexavalent	18540299	2.39E-03	2.73E-07	0.12	0.10	13%	0.00	0%			1.5E-01	2.0E-01	
Copper	7440508	1.39E+01	1.59E-03						0.00	1%			1.0E+02
p-Dichlorobenzene {1,4-Dichlorobenzene}	106467	4.20E-01	4.80E-05	0.00	0.00	0%	0.00	0%			1.1E-05	8.0E+02	
Ethyl Benzene	100414	2.34E-01	2.67E-05	0.00	0.00	0%	0.00	0%			2.5E-06	2.0E+03	
Ethylene Dichloride	107062	3.27E-01	3.73E-05	0.00	0.00	0%	0.00	0%			2.1E-05	4.0E+02	
Formaldehyde	50000	4.77E+01	5.45E-03	0.09	0.08	10%	0.00	3%	0.02	3%	6.0E-06	9.0E+00	5.5E+01
Hexane	110543	2.36E+00	2.69E-04				0.00	0%				7.0E+03	
Hydrogen Chloride	7647010	1.51E+02	1.72E-02				0.01	9%	0.00	0%		9.0E+00	2.1E+03
Hydrogen Sulfide	7783064	8.76E+02	1.00E-01				0.05	46%	0.51	77%		1.0E+01	4.2E+01
Lead (inorganic)	7439921	4.49E-01	5.13E-05	0.00	0.00	0%					1.2E-05		
Mercury (inorganic)	7439976	2.62E-02	2.99E-06				0.00	0%	0.00	0%		3.0E-02	6.0E-01
Methyl Tert Butyl Ether	1634044	1.29E-03	1.47E-07	0.00	0.00	0%	0.00	0%			2.6E-07	8.0E+03	
Methylene Chloride	75092	2.34E-02	2.67E-06	0.00	0.00	0%	0.00	0%	0.00	0%	1.0E-06	4.0E+02	1.4E+04
Methyl Ethyl Ketone	78933	2.34E-02	2.67E-06						0.00	0%			1.3E+04
Nickel (except nickel oxide)	7440020	5.44E-01	6.21E-05	0.05	0.04	5%	0.02	20%	0.07	10%	2.6E-04	1.4E-02	2.0E-01
Perchloroethylene	127184	1.17E-01	1.33E-05	0.00	0.00	0%	0.00	0%	0.00	0%	6.1E-06	3.5E+01	2.0E+04
Selenium	7782492	8.85E-04	1.01E-07				0.00	0%				2.0E+01	
Styrene	100425	1.10E-03	1.25E-07				0.00	0%	0.00	0%		9.0E+02	2.1E+04
Toluene	108883	2.36E+00	2.69E-04				0.00	0%	0.00	0%		4.2E+02	5.0E+03
Trichloroethylene	79016	7.01E-02	8.00E-06	0.00	0.00	0%	0.00	0%			2.0E-06	6.0E+02	
1,1,1-Trichloroethane	71556	2.34E-02	2.67E-06				0.00	0%	0.00	0%		1.0E+03	6.8E+04
Xylenes (mixed)	1330207	1.05E+00	1.20E-04				0.00	0%	0.00	0%		7.0E+02	2.2E+04
Zinc	7440666	2.39E+01	2.73E-03										

This table uses unit risk factors and REL's from the OEHHA/ARB revised Risk Assessment Health Values as of 10/6/2023

Receptor	D = source to receptor distance (meters)	RP = receptor proximity adjustment factor	Location	Receptor Definition
offsite worker	132	0.143	shortest distance to unit from SDAPCD	Closest land, property boundary or building which is zoned for manufacturing, retail activity, worksites, or industrial sites (light or heavy).
resident	268	0.035	shortest distance to unit from SDAPCD	Closest land, property boundary, building, or watercraft used for areas of residence or areas which are
sensitive	268	0.035	shortest distance to unit from SDAPCD	Closest land, property boundary or building used for the purpose of education, including but not limited
Short-term public access location	132	0.143	shortest distance to unit from SDAPCD	Closest areas such as public parks and bus stops (although not including general sidewalks).
Cancer/ Chronic	268	0.035		
Acute	132	0.143		