

APPENDIX I
EMISSIONS CALCULATIONS

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Table I-1. Estimated Emissions in the U.S. from Project A, Option A3 (Expand ITP to 60 MGD), Project B (Tijuana Canyon Flows to ITP), and Treatment of Inflows from Project C (Tijuana Sewer Repairs) ^{a, b}

Pollutant	Construction Emissions in U.S. (tons/yr) ^c				Operating Emissions in U.S., Excluding Anaerobic Digestion (tons/yr) ^c				Operating Emissions in U.S., Anaerobic Digestion Only (tons/yr) ^d				Total Emissions in U.S. (tons/yr)			
	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years
ROG/VOC	0.171	0.331	6.38	0.00	0.00	0.00	1.42	2.84	0.00	0.00	1.04	2.09	0.171	0.331	8.85	4.93
NOx	1.83	2.54	0.667	0.00	0.00	0.00	0.560	1.12	0.00	0.00	4.75	9.49	1.83	2.54	5.97	10.6
CO	1.43	3.64	1.03	0.00	0.00	0.00	0.468	0.935	0.00	0.00	13.4	26.8	1.43	3.64	14.9	27.7
SO ₂	0.00371	0.00979	0.00236	0.00	0.00	0.00	0.00121	0.00242	0.00	0.00	0.00	0.00	0.00371	0.00979	0.00357	0.00242
PM ₁₀	0.692	0.575	0.122	0.00	0.00	0.00	0.103	0.207	0.00	0.00	0.00	0.00	0.692	0.575	0.225	0.207
PM _{2.5}	0.376	0.214	0.0501	0.00	0.00	0.00	0.0410	0.0819	0.00	0.00	0.00	0.00	0.376	0.214	0.0911	0.0819
CO _{2e}	346	904	215	0.00	0.00	0.00	3,564	7,128	0.00	0.00	11,075	22,150	346	904	14,854	29,278

Note: CO = carbon monoxide; CO_{2e} = carbon dioxide equivalent; NOx = nitrogen oxides; PM_{2.5} = fine particulate matter; PM₁₀ = respirable particulate matter; ROG = reactive organic gases; SO₂ = sulfur dioxide; VOC = volatile organic compounds.

a - Estimated emissions are based on an assumed construction schedule of July 2024 through May 2026 with Expanded ITP operations beginning in July 2026 and continuing in future years. Estimates account for mobile source emissions, including on-road and non-road construction vehicles, truck hauling of fill material and solids waste, and staff commuting.

Estimates represent post-control emissions and assume the use of selective catalytic reduction and catalytic oxidation at the anaerobic digestion facility

b - Estimates assume construction and operation of the 60-MGD Expanded ITP (Project A, Option A3) at full capacity. This likely overestimates operating emissions in the early years of plant operations because the 60-MGD plant would not need to operate at full capacity until approximately 2050, based on estimated population growth in Tijuana.

c - Method: CalEEMod (see p. I-6 through I-8)

d - Method: Emission Factors (see p. I-12 through I-14)

Table I-2. Estimated Emissions in the U.S. from Project D (AFTP Phase 1) ^a

Pollutant	Construction Emissions in U.S. (tons/yr) ^b				Operating Emissions in U.S., Excluding Anaerobic Digestion (tons/yr) ^b				Operating Emissions in U.S., Anaerobic Digestion Only (tons/yr) ^c				Total Emissions in U.S. (tons/yr)			
	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years
ROG/VOC	0.00	0.00	1.23	0.00	0.00	0.00	0.197	0.590	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.590
NOx	0.00	0.00	3.01	0.00	0.00	0.00	0.224	0.672	0.00	0.00	0.00	0.00	0.00	0.00	3.23	0.672
CO	0.00	0.00	1.78	0.00	0.00	0.00	0.173	0.519	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.519
SO ₂	0.00	0.00	0.0109	0.00	0.00	0.00	0.00060	0.00180	0.00	0.00	0.00	0.00	0.00	0.00	0.0115	0.00180
PM ₁₀	0.00	0.00	0.388	0.00	0.00	0.00	0.0459	0.138	0.00	0.00	0.00	0.00	0.00	0.00	0.434	0.138
PM _{2.5}	0.00	0.00	0.152	0.00	0.00	0.00	0.0170	0.0509	0.00	0.00	0.00	0.00	0.00	0.00	0.169	0.0509
CO _{2e}	0.00	0.00	1,107	0.00	0.00	0.00	441	1,322	0.00	0.00	0.00	0.00	0.00	0.00	1,548	1,322

Note: CO = carbon monoxide; CO_{2e} = carbon dioxide equivalent; NOx = nitrogen oxides; PM_{2.5} = fine particulate matter; PM₁₀ = respirable particulate matter; ROG = reactive organic gases; SO₂ = sulfur dioxide; VOC = volatile organic compounds.

a - Estimated emissions are based on an assumed construction schedule of January 2026 through August 2026 with AFTP Phase 1 operations beginning in September 2026 and continuing in future years. Estimates account for mobile source emissions, including on-road and non-road construction vehicles, truck hauling of fill material and solids waste, and staff commuting.

b - Method: CalEEMod (see p. I-9 through I-11)

c - Not applicable to AFTP operations

Table I-3. Estimated Emissions in the U.S. from All Core Projects (Alternative 1)

Pollutant	Construction Emissions in U.S. (tons/yr)				Operating Emissions in U.S., Excluding Anaerobic Digestion (tons/yr)				Operating Emissions in U.S., Anaerobic Digestion Only (tons/yr)				Total Emissions in U.S. (tons/yr)			
	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years	2024	2025	2026	2027-Future Years
ROG/VOC	0.171	0.331	7.61	0.00	0.00	0.00	1.62	3.43	0.00	0.00	1.04	2.09	0.171	0.331	10.3	5.52
NOx	1.83	2.54	3.68	0.00	0.00	0.00	0.784	1.79	0.00	0.00	4.75	9.49	1.83	2.54	9.21	11.3
CO	1.43	3.64	2.81	0.00	0.00	0.00	0.641	1.45	0.00	0.00	13.4	26.8	1.43	3.64	16.8	28.2
SO ₂	0.00	0.00979	0.0133	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00
PM ₁₀	0.692	0.575	0.509	0.00	0.00	0.00	0.149	0.344	0.00	0.00	0.00	0.00	0.692	0.575	0.658	0.344
PM _{2.5}	0.376	0.214	0.203	0.00	0.00	0.00	0.0579	0.133	0.00	0.00	0.00	0.00	0.376	0.214	0.260	0.133
CO ₂ e	346	904	1,322	0.00	0.00	0.00	4,005	8,451	0.00	0.00	11,075	22,150	346	904	16,402	30,600

Note: CO = carbon monoxide; CO₂e = carbon dioxide equivalent; NOx = nitrogen oxides; PM_{2.5} = fine particulate matter; PM₁₀ = respirable particulate matter; ROG = reactive organic gases; SO₂ = sulfur dioxide; VOC = volatile organic compounds.

See footnotes on Tables I-1 and I-2.

Table I-4. Comparison of Estimated Annual Emissions in the U.S. from All Core Projects (Alternative 1) Versus Screening Thresholds

Pollutant	Total Emissions in U.S. (tons/yr)				CAA GCR <i>de minimis</i> (tons/yr) ^a	Exceeded?	AQIA Thresholds (Per San Diego City Guidance) (tons/yr) ^b	Exceeded?	AQIA Thresholds (Per San Diego County Guidance) (tons/yr) ^c	Exceeded?
	2024	2025	2026	2027-Future Years						
ROG/VOC	0.171	0.331	10.3	5.52	25	No	15	No	13.7	No
NOx	1.83	2.54	9.21	11.3	25	No	40	No	40	No
CO	1.43	3.64	16.8	28.2	100	No	100	No	100	No
SO ₂	0.00	0.01	0.02	0.00	N/A	N/A	40	No	40	No
PM ₁₀	0.692	0.575	0.658	0.344	N/A	N/A	15	No	15	No
PM _{2.5}	0.376	0.214	0.260	0.133	N/A	N/A	N/A	N/A	10	No
CO _{2e}	346	904	16,402	30,600	N/A	N/A	N/A	N/A	N/A	N/A

Note: AQIA = Air Quality Impact Assessment; CAA = Clean Air Act; CO = carbon monoxide; CO_{2e} = carbon dioxide equivalent; GCR = General Conformity Rule; NOx = nitrogen oxides; PM_{2.5} = fine particulate matter; PM₁₀ = respirable particulate matter; ROG = reactive organic gases; SO₂ = sulfur dioxide; VOC = volatile organic compounds.

See footnotes on Tables I-1 and I-2

a - See 40 CFR § 93.153. San Diego County is Severe Nonattainment for ozone and Maintenance for CO.

b - See https://www.sandiego.gov/sites/default/files/july_2016_ceqa_thresholds_final_0.pdf

c - See <https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/AQ-Guidelines.pdf>

Table I-5. Comparison of Estimated Daily Emissions in the U.S. from All Core Projects (Alternative 1) Versus Screening Thresholds

Pollutant	Total Emissions in U.S. (lb/day) ^a				AQIA Thresholds (Per San Diego City Guidance) (lb/day) ^b	Exceeded?	AQIA Thresholds (Per San Diego County Guidance) (lb/day) ^c	Exceeded?
	2024	2025	2026	2027- Future Years				
ROG/VOC	1.10	2.12	65.7	35.3	137	No	75	No
NOx	11.7	16.3	58.9	72.1	250	No	250	No
CO	9.17	23.2	108	180	550	No	550	No
SO ₂	0.0237	0.0626	0.0963	0.0270	250	No	250	No
PM ₁₀	4.43	3.67	4.21	2.20	100	No	100	No
PM _{2.5}	2.41	1.36	1.66	0.849	N/A	N/A	55	No
CO _{2e}	2,211	5,776	104,854	195,619	N/A	N/A	N/A	N/A

Note: AQIA = Air Quality Impact Assessment; CAA = Clean Air Act; CO = carbon monoxide; CO_{2e} = carbon dioxide equivalent; GCR = General Conformity Rule; NOx = nitrogen oxides; PM_{2.5} = fine particulate matter; PM₁₀ = respirable particulate matter; ROG = reactive organic gases; SO₂ = sulfur dioxide; VOC = volatile organic compounds.

See footnotes on Tables I-1 and I-2

a - CalEEMod does not calculate daily emissions. EPA estimated daily emissions by scaling total annual emissions based on an assumed schedule of 6 days per week (313 days/yr). This potentially underestimates daily emissions during peak construction activities (e.g., days with peak truck volume) but overestimates daily emissions from the ITP (which would operate 7 days/wk).

b - See https://www.sandiego.gov/sites/default/files/july_2016_ceqa_thresholds_final_0.pdf

c - See <https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/AQ-Guidelines.pdf>

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1713	1.8311	1.4347	3.7100e-003	0.6186	0.0736	0.6923	0.3082	0.0681	0.3763	0.0000	339.0240	339.0240	0.0715	0.0167	345.7992
2025	0.3312	2.5423	3.6355	9.7900e-003	0.4869	0.0876	0.5745	0.1311	0.0824	0.2135	0.0000	889.2080	889.2080	0.0990	0.0398	903.5376
2026	6.3816	0.6672	1.0284	2.3600e-003	0.0952	0.0263	0.1215	0.0256	0.0245	0.0501	0.0000	212.2487	212.2487	0.0335	6.8700e-003	215.1330
Maximum	6.3816	2.5423	3.6355	9.7900e-003	0.6186	0.0876	0.6923	0.3082	0.0824	0.3763	0.0000	889.2080	889.2080	0.0990	0.0398	903.5376

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1713	1.8311	1.4347	3.7100e-003	0.6186	0.0736	0.6923	0.3082	0.0681	0.3763	0.0000	339.0237	339.0237	0.0715	0.0167	345.7989
2025	0.3312	2.5423	3.6355	9.7900e-003	0.4869	0.0876	0.5745	0.1311	0.0824	0.2135	0.0000	889.2075	889.2075	0.0990	0.0398	903.5372
2026	6.3816	0.6672	1.0284	2.3600e-003	0.0952	0.0263	0.1215	0.0256	0.0245	0.0501	0.0000	212.2486	212.2486	0.0335	6.8700e-003	215.1329
Maximum	6.3816	2.5423	3.6355	9.7900e-003	0.6186	0.0876	0.6923	0.3082	0.0824	0.3763	0.0000	889.2075	889.2075	0.0990	0.0398	903.5372

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.5830	4.0000e-005	4.5800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6,123.2702	6,123.2702	0.3742	0.0454	6,146.1426
Mobile	0.0117	0.0197	0.3027	1.2400e-003	0.1696	7.2000e-004	0.1703	0.0450	6.6000e-004	0.0457	0.0000	113.9306	113.9306	1.6300e-003	2.2900e-003	114.6531
Stationary	0.2462	1.1008	0.6277	1.1800e-003		0.0362	0.0362		0.0362	0.0362	0.0000	114.2392	114.2392	0.0160	0.0000	114.6396
Waste						0.0000	0.0000		0.0000	0.0000	125.8544	0.0000	125.8544	7.4378	0.0000	311.7989
Water						0.0000	0.0000		0.0000	0.0000	40.9083	368.7563	409.6647	0.1633	0.0917	441.0729
Total	2.8408	1.1205	0.9350	2.4200e-003	0.1696	0.0370	0.2065	0.0450	0.0369	0.0819	166.7627	6,720.2053	6,886.9680	7.9930	0.1393	7,128.3166

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.5830	4.0000e-005	4.5800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6,123.2702	6,123.2702	0.3742	0.0454	6,146.1426
Mobile	0.0117	0.0197	0.3027	1.2400e-003	0.1696	7.2000e-004	0.1703	0.0450	6.6000e-004	0.0457	0.0000	113.9306	113.9306	1.6300e-003	2.2900e-003	114.6531
Stationary	0.2462	1.1008	0.6277	1.1800e-003		0.0362	0.0362		0.0362	0.0362	0.0000	114.2392	114.2392	0.0160	0.0000	114.6396
Waste						0.0000	0.0000		0.0000	0.0000	125.8544	0.0000	125.8544	7.4378	0.0000	311.7989
Water						0.0000	0.0000		0.0000	0.0000	40.9083	368.7563	409.6647	0.1633	0.0917	441.0729
Total	2.8408	1.1205	0.9350	2.4200e-003	0.1696	0.0370	0.2065	0.0450	0.0369	0.0819	166.7627	6,720.2053	6,886.9680	7.9930	0.1393	7,128.3166

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2026	1.2298	3.0107	1.7830	0.0109	0.3310	0.0567	0.3878	0.0983	0.0540	0.1524	0.0000	1,063.8818	1,063.8818	0.0870	0.1382	1,107.2467
Maximum	1.2298	3.0107	1.7830	0.0109	0.3310	0.0567	0.3878	0.0983	0.0540	0.1524	0.0000	1,063.8818	1,063.8818	0.0870	0.1382	1,107.2467

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2026	1.2298	3.0107	1.7830	0.0109	0.3310	0.0567	0.3878	0.0983	0.0540	0.1524	0.0000	1,063.8816	1,063.8816	0.0870	0.1382	1,107.2465
Maximum	1.2298	3.0107	1.7830	0.0109	0.3310	0.0567	0.3878	0.0983	0.0540	0.1524	0.0000	1,063.8816	1,063.8816	0.0870	0.1382	1,107.2465

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2026	3-31-2026	2.2746	2.2746
2	4-1-2026	6-30-2026	0.5573	0.5573
3	7-1-2026	9-30-2026	1.2345	1.2345
		Highest	2.2746	2.2746

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4585	1.0000e-005	8.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6100e-003	1.6100e-003	0.0000	0.0000	1.7100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	991.9698	991.9698	0.0606	7.3500e-003	995.6751
Mobile	7.9600e-003	0.1214	0.2043	1.2100e-003	0.1181	1.3800e-003	0.1195	0.0315	1.3000e-003	0.0328	0.0000	115.6163	115.6163	3.8900e-003	9.0700e-003	118.4156
Stationary	0.1231	0.5504	0.3138	5.9000e-004		0.0181	0.0181		0.0181	0.0181	0.0000	57.1196	57.1196	8.0100e-003	0.0000	57.3198
Waste						0.0000	0.0000		0.0000	0.0000	22.6538	0.0000	22.6538	1.3388	0.0000	56.1238
Water						0.0000	0.0000		0.0000	0.0000	6.6029	66.3761	72.9790	0.6822	0.0165	94.9533
Total	0.5895	0.6718	0.5190	1.8000e-003	0.1181	0.0195	0.1376	0.0315	0.0194	0.0509	29.2566	1,231.0834	1,260.3401	2.0936	0.0329	1,322.4892

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4585	1.0000e-005	8.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6100e-003	1.6100e-003	0.0000	0.0000	1.7100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	991.9698	991.9698	0.0606	7.3500e-003	995.6751
Mobile	7.9600e-003	0.1214	0.2043	1.2100e-003	0.1181	1.3800e-003	0.1195	0.0315	1.3000e-003	0.0328	0.0000	115.6163	115.6163	3.8900e-003	9.0700e-003	118.4156
Stationary	0.1231	0.5504	0.3138	5.9000e-004		0.0181	0.0181		0.0181	0.0181	0.0000	57.1196	57.1196	8.0100e-003	0.0000	57.3198
Waste						0.0000	0.0000		0.0000	0.0000	22.6538	0.0000	22.6538	1.3388	0.0000	56.1238
Water						0.0000	0.0000		0.0000	0.0000	6.6029	66.3761	72.9790	0.6822	0.0165	94.9533
Total	0.5895	0.6718	0.5190	1.8000e-003	0.1181	0.0195	0.1376	0.0315	0.0194	0.0509	29.2566	1,231.0834	1,260.3401	2.0936	0.0329	1,322.4892

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

USMCA Mitigation of Contaminated Transboundary Flows
PEIS Potential-to-Emit (PTE) Calculations
Project Option A1 - Expand ITP to 40 MGD (average)

Value	Parameter	Notes/Source
890,000	Biogas Production Capacity (SCF/day)	Table 2-6 of final feasibility analysis dated 9.17.21
550	Biogas Heating Value (Btu/SCF)	Not used; likely between 500 and 600 Btu/SCF
760	Potential Heat Input (MMBtu/day)	Table 2-6 of final feasibility analysis dated 9.17.21
24	Assumed Operating Schedule (hr/day)	Standard for WWTP
31.67	Potential Heat Input (MMBtu/hr)	Calculated
NA	Engine Mechanical Efficiency (%)	NA in these calculations
2,600	Potential Power Production (kWe)	Table 2-6 of final feasibility analysis dated 9.17.21

Uncontrolled/Baseline PTE

Pollutant	EF (lb/MMBtu)	PTE (lb/hr)	PTE (lb/day)	PTE (ton/yr)	SDAPCD threshold	Subject?	Major NSR threshold	Subject?	Notes
NOx	0.5	16	380	69	10 lb/day	Yes	25 ton/yr	No	a
CO	0.94	30	714	130	-	NA	100 ton/yr	No	
NMHC (VOC)	0.22	7	167	31	10 lb/day	Yes	25 ton/yr	No	b
PM ₁₀	0.00077	0.00	0.06	0.01	10 lb/day	No	100 ton/yr	No	
SO ₂	Negl.	Negl.	Negl.	Negl.	10 lb/day	No	100 ton/yr	No	c
Formaldehyde	0.0045	0.14	3.4	0.62	0.12 lb/hr	Yes	NA	NA	d
Acetaldehyde	0.0005	0.02	0.38	0.07	1.0 lb/hr	Unlikely	NA	NA	d
CO ₂	116.7	3,696	88,692	16,186	NA	NA	75000 mt/yr	No	

a - Selective catalytic reduction (SCR) will be required to satisfy SDAPCD Rule 20.2 requirements and render federal NSR requirements not applicable.

b - Catalytic oxidation (CatOx) will be required to satisfy SDAPCD Rule 20.2 requirements and render federal NSR requirements not applicable.

c - Assumes 99.9% removal of H₂S during biogas pretreatment/conditioning; consistent with other designs.

d - HAP emission factors for natural gas combustion have been used as a conservative estimate. Note however that biogas pretreatment will likely remove >99% of the NMHC resulting in negligible HAP emissions.

Controlled PTE

Pollutant	Control Eff (%)	PTE (lb/hr)	PTE (lb/day)	PTE (ton/yr)	SDAPCD threshold	Subject?	Major NSR threshold*	Subject?	Notes
NOx	90%	1.6	38	6.9	10 lb/day	Yes	25 ton/yr	No	e, g
CO	85%	4.5	107	20	-	NA	100 ton/yr	No	f
NMHC (VOC)	95%	0.3	8.4	1.5	10 lb/day	No	25 ton/yr	No	f
PM ₁₀	0%	-	-	-	10 lb/day	No	100 ton/yr	No	
SO ₂	0%	Negl.	Negl.	Negl.	10 lb/day	No	100 ton/yr	No	f
Formaldehyde	95%	0.01	0.17	0.03	0.12 lb/hr	No	NA	NA	f
Acetaldehyde	95%	0.00	0.02	0.00	1.0 lb/hr	No	NA	NA	
CO ₂	0%	3,696	88,692	16,186	NA	NA	75000 mt/yr		

* Per Rule 20.3, Major NSR will apply if an allowable pollutant PTE > 10 lb/day AND a source becomes major as a result of the project.

e - Assumes the SCR will operate with minimum control efficiency of 90%.

f - Assumes the CatOx will operate with minimum control efficiency of 95% for VOC (including organic HAP) and 85% for CO.

g - The SCR would need to operate with an estimated minimum control efficiency of 98% to reduce the controlled PTE to less than 10 lb/day. Further investigation is needed to determine if that efficiency is reasonably achievable.

USMCA Mitigation of Contaminated Transboundary Flows
PEIS Potential-to-Emit (PTE) Calculations
Project Option A2 - Expand ITP to 50 MGD (average)

Value	Parameter	Notes/Source
1,030,000	Biogas Production Capacity (SCF/day)	Table 2-6 of final feasibility analysis dated 9.17.21
550	Biogas Heating Value (Btu/SCF)	Not used; likely between 500 and 600 Btu/SCF
880	Potential Heat Input (MMBtu/day)	Table 2-6 of final feasibility analysis dated 9.17.21
24	Assumed Operating Schedule (hr/day)	Standard for WWTP
36.67	Potential Heat Input (MMBtu/hr)	Calculated
NA	Engine Mechanical Efficiency (%)	NA in these calculations
2,900	Potential Power Production (kWe)	Table 2-6 of final feasibility analysis dated 9.17.21

Uncontrolled/Baseline PTE

Pollutant	EF (lb/MMBtu)	PTE (lb/hr)	PTE (lb/day)	PTE (ton/yr)	SDAPCD threshold	Subject?	Major NSR threshold	Subject?	Notes
NOx	0.5	18	440	80	10 lb/day	Yes	25 ton/yr	No	a
CO	0.94	34	827	151	-	NA	100 ton/yr	No	
NMHC (VOC)	0.22	8	194	35	10 lb/day	Yes	25 ton/yr	No	b
PM ₁₀	0.00077	0.00	0.07	0.01	10 lb/day	No	100 ton/yr	No	
SO ₂	Negl.	Negl.	Negl.	Negl.	10 lb/day	No	100 ton/yr	No	c
Formaldehyde	0.0045	0.17	4.0	0.72	0.12 lb/hr	Yes	NA	NA	d
Acetaldehyde	0.0005	0.02	0.44	0.08	1.0 lb/hr	Unlikely	NA	NA	d
CO ₂	116.7	4,279	102,696	18,742	NA	NA	75000 mt/yr	No	

a - Selective catalytic reduction (SCR) will be required to satisfy SDAPCD Rule 20.2 requirements and render federal NSR requirements not applicable.

b - Catalytic oxidation (CatOx) will be required to satisfy SDAPCD Rule 20.2 requirements and render federal NSR requirements not applicable.

c - Assumes 99.9% removal of H₂S during biogas pretreatment/conditioning; consistent with other designs.

d - HAP emission factors for natural gas combustion have been used as a conservative estimate. Note however that biogas pretreatment will likely remove >99% of the NMHC resulting in negligible HAP emissions.

Controlled PTE

Pollutant	Control Eff (%)	PTE (lb/hr)	PTE (lb/day)	PTE (ton/yr)	SDAPCD threshold	Subject?	Major NSR threshold*	Subject?	Notes
NOx	90%	1.8	44	8.0	10 lb/day	Yes	25 ton/yr	No	e, g
CO	85%	5.2	124	23	-	NA	100 ton/yr	No	f
NMHC (VOC)	95%	0.4	9.7	1.8	10 lb/day	No	25 ton/yr	No	f
PM ₁₀	0%	-	-	-	10 lb/day	No	100 ton/yr	No	
SO ₂	0%	Negl.	Negl.	Negl.	10 lb/day	No	100 ton/yr	No	f
Formaldehyde	95%	0.01	0.20	0.04	0.12 lb/hr	No	NA	NA	f
Acetaldehyde	95%	0.00	0.02	0.00	1.0 lb/hr	No	NA	NA	
CO ₂	0%	4,279	102,696	18,742	NA	NA	75000 mt/yr		

* Per Rule 20.3, Major NSR will apply if an allowable pollutant PTE > 10 lb/day AND a source becomes major as a result of the project.

e - Assumes the SCR will operate with minimum control efficiency of 90%.

f - Assumes the CatOx will operate with minimum control efficiency of 95% for VOC (including organic HAP) and 85% for CO.

g - The SCR would need to operate with an estimated minimum control efficiency of 98% to reduce the controlled PTE to less than 10 lb/day. Further investigation is needed to determine if that efficiency is reasonably achievable.

USMCA Mitigation of Contaminated Transboundary Flows
PEIS Potential-to-Emit (PTE) Calculations
Project Option A3 - Expand ITP to 60 MGD (average)

Value	Parameter	Notes/Source
1,220,000	Biogas Production Capacity (SCF/day)	Table 2-6 of final feasibility analysis dated 9.17.21
550	Biogas Heating Value (Btu/SCF)	Not used; likely between 500 and 600 Btu/SCF
1040	Potential Heat Input (MMBtu/day)	Table 2-6 of final feasibility analysis dated 9.17.21
24	Assumed Operating Schedule (hr/day)	Standard for WWTP
43.33	Potential Heat Input (MMBtu/hr)	Calculated
NA	Engine Mechanical Efficiency (%)	NA in these calculations
3,400	Potential Power Production (kWe)	Table 2-6 of final feasibility analysis dated 9.17.21

Uncontrolled/Baseline PTE

Pollutant	EF (lb/MMBtu)	PTE (lb/hr)	PTE (lb/day)	PTE (ton/yr)	SDAPCD threshold	Subject?	Major NSR threshold	Subject?	Notes
NOx	0.5	22	520	95	10 lb/day	Yes	25 ton/yr	No	a
CO	0.94	41	978	178	-	NA	100 ton/yr	No	
NMHC (VOC)	0.22	10	229	42	10 lb/day	Yes	25 ton/yr	No	b
PM ₁₀	0.000077	0.00	0.08	0.01	10 lb/day	No	100 ton/yr	No	
SO ₂	Negl.	Negl.	Negl.	Negl.	10 lb/day	No	100 ton/yr	No	c
Formaldehyde	0.0045	0.20	4.7	0.85	0.12 lb/hr	Yes	NA	NA	d
Acetaldehyde	0.0005	0.02	0.52	0.09	1.0 lb/hr	Unlikely	NA	NA	d
CO ₂	116.7	5,057	121,368	22,150	NA	NA	75000 mt/yr	No	

a - Selective catalytic reduction (SCR) will be required to satisfy SDAPCD Rule 20.2 requirements and render federal NSR requirements not applicable.

b - Catalytic oxidation (CatOx) will be required to satisfy SDAPCD Rule 20.2 requirements and render federal NSR requirements not applicable.

c - Assumes 99.9% removal of H₂S during biogas pretreatment/conditioning; consistent with other designs.

d - HAP emission factors for natural gas combustion have been used as a conservative estimate. Note however that biogas pretreatment will likely remove >99% of the NMHC resulting in negligible HAP emissions.

Controlled PTE

Pollutant	Control Eff (%)	PTE (lb/hr)	PTE (lb/day)	PTE (ton/yr)	SDAPCD threshold	Subject?	Major NSR threshold*	Subject?	Notes
NOx	90%	2.2	52	9.5	10 lb/day	Yes	25 ton/yr	No	e, g
CO	85%	6.1	147	27	-	NA	100 ton/yr	No	f
NMHC (VOC)	95%	0.5	11.4	2.1	10 lb/day	Yes	25 ton/yr	No	f
PM ₁₀	0%	-	-	-	10 lb/day	No	100 ton/yr	No	
SO ₂	0%	Negl.	Negl.	Negl.	10 lb/day	No	100 ton/yr	No	f
Formaldehyde	95%	0.01	0.23	0.04	0.12 lb/hr	No	NA	NA	f
Acetaldehyde	95%	0.00	0.03	0.00	1.0 lb/hr	No	NA	NA	
CO ₂	0%	5,057	121,368	22,150	NA	NA	75000 mt/yr		

* Per Rule 20.3, Major NSR will apply if an allowable pollutant PTE > 10 lb/day AND a source becomes major as a result of the project.

e - Assumes the SCR will operate with minimum control efficiency of 90%.

f - Assumes the CatOx will operate with minimum control efficiency of 95% for VOC (including organic HAP) and 85% for CO.

g - The SCR would need to operate with an estimated minimum control efficiency of 98% to reduce the controlled PTE to less than 10 lb/day. Further investigation is needed to determine if that efficiency is reasonably achievable.