Appendix C

Air Quality Report and Information

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Quarterly and Daily Emissions Summary - Project

Table 1.1 Maximum Estimated Quarterly and Daily Emissions - SLOAPCD Thresholds Comparison

Emission Source	ROG+NOx	Exhaust DPM	Fugitive Dust PM10	ROG+NOx	Exhaust DPM
	tons/quarter			lb/day	
Onsite Facility Baseline	18.5	0.002	0.12	405	0.00
Hauling Baseline (Truck + Rail)	7.7	0.052	6.26	181	1.32
Total Baseline Emissions	**26.2**	**0.054**	**6.38**	**586**	**1.32**
Unmitigated					
Onsite Activities	2.59	0.080	9.43	80	2.4
Offsite Waste Hauling (Truck + Rail)	0.6	0.005	0.6031	51	0.4
Total Project Emissions Unmitigated	**3.20**	**0.085**	**10.03**	**131**	**2.8**
Total Project Change from Baseline Unmitigated	**-23.0**	**0.032**	**3.7**	**-455**	**1.5**
Mitigated					
Onsite Activities	1.93	0.030	0.94	59	0.8
Offsite Waste Hauling (Truck + Rail)	0.6	0.005	0.603	51	0.4
Total Project Emissions Mitigated	**2.54**	**0.035**	**1.54**	**110**	**1.2**
Total Project Change from Baseline Mitigated	**-23.6**	**-0.018**	**-4.8**	**-476**	**-0.1**
SLOAPCD Threshold of Significance	**2.5**	**0.13**	**2.5**	**137**	**7**

Notes:

1. Baseline emissions are based on five-year time period from 2017 to 2021. Onsite Facility Baseline based on facility-calculated annual inventory emissions. Hauling baseline emissions based on truck travel onsite and offsite for product and chemical deliveries and rail travel offsite for deliveries and shipments.

2. Offsite Waste Hauling truck emissions include fugitive dust on paved roads per AP-42 13.2.1 and assume a conservative weight of 42 tons (heavy haul truck capacity) for all vehicles traveling on the road.

3. Project emissions include on-site demolition, remediation, and off-site hauling.

4. Cumulative impacts are Project emissions minus current baseline emissions. A negative number indicates a decrease in emissions.

5. The quarterly thresholds are SLO Tier 1 Thresholds and the daily thresholds are applicable to construction projects less than 90 says but included for reference (SLOAPCD 2012).

Annual and Total Project Emissions Summary and SLOAPCD Thresholds

Table 1.2 Summary Thresholds: UMITIGATED

Pollutant	SLOCAPCD Thresholds			Unmitigated Project Construction Only		Baseline Emissions		Project Construction Change Over Baseline		Project Construction Change Over Baseline ONSITE Only	
	Daily	Quarterly		Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons
	Pounds	Tier 1	Tier 2								
		tons	tons								
ROG + NO_x	137	2.5	6.3	130.53	3.20	586	26.2	-455	-23.0	-325	-15.9
Diesel Particulate Matter	7	0.13	0.32	2.80	0.09	1.32	0.05	1.47	0.03	2.4	0.08
Fugitive Dust Particulate Matter (PM_{10})	-	2.5	-	-	10.03		6.38/0.12	-	3.65	-	9.31

Table 1.3 Summary Thresholds: MITIGATED

Pollutant	SLOCAPCD Thresholds			Project Construction Only		Baseline Emissions		Project Construction Change Over Baseline		Project Construction Change Over Baseline ONSITE Only	
	Daily	Quarterly		Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons
	Pounds	Tier 1	Tier 2								
		tons	tons								
ROG + NO_x	137	2.5	6.3	109.65	2.54	585.69	26.17	-476	-23.6	-346	-16.5
Diesel Particulate Matter	7	0.13	0.32	1.18	0.04	1.32	0.05	-0.15	-0.02	0.8	0.03
Fugitive Dust Particulate Matter (PM_{10})	-	2.5	-	-	1.54		6.38/0.12	-	-4.84	-	0.82

Annual Project Emissions Summary - Other Districts

Table 1.4 Annual and Daily Project Emissions Summary - Other Air Districts Offsite

Air District	NOx	ROG	PM10	PM2.5	CO	SOx	NOx	ROG	PM10	PM2.5	CO	SOx
	ton/year						lb/day					
SBCAPCD	9.93	0.35	0.80	0.20	3.41	0.01	117.5	3.9	22.3	2.3	36.9	0.2
SJVAPCD	0.32	0.00	0.36	0.00	0.02	0.00	5.9	0.1	6.6	0.1	0.4	0.0
VCAPCD	4.96	0.18	0.25	0.10	1.75	0.01	54.4	1.9	5.2	1.1	18.5	0.1
MDAQMD	16.84	0.62	0.36	0.35	6.06	0.02	177.3	6.6	3.8	3.7	63.8	0.2
Nevada	17.71	0.66	0.38	0.37	6.37	0.02	186.4	6.9	4.0	3.9	67.1	0.2
Utah	29.88	1.11	0.65	0.63	10.75	0.04	314.5	11.6	6.8	6.6	113.2	0.4
SCAQMD	10.09	0.37	0.39	0.21	3.58	0.01	108.8	3.9	7.3	2.2	37.9	0.1

CEQA Guidelines for Criteria Pollutants

Table 1.5 Short-term/Construction CEQA Threshold of Significance of Criteria Pollutants

Air District	Units	NOx	ROG/VOC	PM10	PM2.5	CO	SOx
SBCAPCD	ton/year	25	25	-	-	-	-
SCAQMD	lb/day	100	75	150	55	550	150
SJVAPCD	ton/year	10	10	15	15	100	27
VCAPCD	lb/day	-	-	-	-	-	-
MDAQMD	ton/year	25	25	15	12	100	25

Notes:
"-" indicates no threshold for that pollutant.

1. SBCAPCD - Environmental Review Guidelines for the Santa Barbara County Air Pollution Control District, April 2015. Also, Scope and Content of Air Quality Sections in Environmental Documents, January 2022 Limit Update. Thresholds are for operational phase only and do not apply.
2. SCAQMD - South Coast AQMD Air Quality Significance Thresholds, April 2019
3. SJVAPCD - San Joaquin Valley Air Pollution Control District Air Quality Thresholds of Significance - Criteria Pollutants, March 2015
4. VCAPCD - Ventura County Air Quality Assessment Guidelines, October 2003. Thresholds are for project's operational expected emissions and do not apply.
5. MDAQMD - MDAQMD CEQA and Federal Conformity Guidelines, August 2016

Detailed Summary - Project

Table 1.6 Summary of Project Emissions in SLOC Unmitigated

Activity	NOx	ROG	PM10	PM2.5	CO	SOx	DPM	NOx	ROG	PM10	PM2.5	CO	SOx	DPM
	ton/quarter							lb/day						
Demolition and Remediation														
Construction Equipment	2.37	0.22	0.08	0.07	1.53	0.03	0.08	72.80	6.94	2.44	2.23	47.20	0.15	2.44
Construction Fugitive Dust			9.43	0.95						292.00	29.40			
Total Onsite	2.37	0.22	9.51	1.02	1.53	0.03	0.08	72.80	6.94	294.44	31.63	47.20	0.15	2.44
Offsite Hauling														
Offsite Hauling: Trucks	0.51	0.01	0.01	0.01	0.03	0.00	0.003	46.07	0.61	0.99	0.49	2.61	0.09	0.27
Offsite Hauling: Trucks Fugitive Dust			0.59	0.15						52.62	12.92			
Offsite Hauling: Rail	0.09	0.00	0.00	0.00	0.03	0.00	0.00	3.96	0.15	0.09	0.08	1.43	0.01	0.09
Total Offsite	0.60	0.01	0.61	0.15	0.06	0.00	0.01	50.03	0.76	53.70	13.49	4.04	0.09	0.36
Overall Total	2.97	0.23	10.12	1.17	1.59	0.03	0.09	122.83	7.70	348.14	45.12	51.24	0.24	2.80
Peak Onsite, Nox+ROG	2.59							79.74						
Peak Offsite, NOX+ROG	0.61							50.79						
Peak NOX+ROG Total	3.20							130.53						
Peak Quarter Onsite Fugitive Dust	9.43													
Peak Quarter Total Fugitive Dust	10.03													

Table 1.7 Summary of Project Emissions in SLOC MITIGATED

Activity	NOx	ROG	PM10	PM2.5	CO	SOx	DPM	NOx	ROG	PM10	PM2.5	CO	SOx	DPM
	ton/quarter							lb/day						
Demolition and Remediation, projected tons/year rate														
Construction Equipment	1.82	0.11	0.03	0.02	2.80	0.03	0.03	55.60	3.26	0.82	0.77	86.40	0.16	0.82
Construction Fugitive Dust			0.94	0.10						29.20	3.15			
Total Onsite	1.82	0.11	0.97	0.12	2.80	0.03	0.03	55.60	3.26	30.02	3.92	86.40	0.16	0.82
Offsite Hauling, projected tons/year rate														
Offsite Hauling: Trucks	0.51	0.01	0.01	0.01	0.03	0.00	0.00	46.07	0.61	0.99	0.49	2.61	0.09	0.27
Offsite Hauling: Trucks Fugitive Dust			0.59	0.15						52.62	12.92			
Offsite Hauling: Rail	0.09	0.00	0.00	0.00	0.03	0.00	0.00	3.96	0.15	0.09	0.08	1.43	0.01	0.09
Total Offsite	0.60	0.01	0.61	0.15	0.06	0.00	0.01	50.03	0.76	53.70	13.49	4.04	0.09	0.36
Overall Total	2.42	0.12	1.58	0.27	2.86	0.03	0.04	105.63	4.02	83.72	17.41	90.44	0.25	1.18
Peak Onsite, Nox+ROG	1.93							58.86						
Peak Offsite, NOX+ROG	0.61							50.79						
Peak NOX+ROG Total	2.54							109.65						
Peak Quarter Onsite Fugitive Dust	0.94													
Peak Quarter Total Fugitive Dust	1.54													

Total GHG Emissions: Project

Table 2.1 GHG Emissions by Project Year, within California

Year	SLOAPCD		SBCAPCD	SJVAPCD	SCAQMD	VCAPCD	MDAQMD	Total
	SMR On-site Activities	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	
	Annual MT/yr							
2024	1,976	447	1,287	60	1,285	635	2,128	7,820
2025	1,976	447	1,287	60	1,285	635	2,128	7,820
2026	1,976	447	1,287	60	1,285	635	2,128	7,820
	MT Total							
Total GHG Emissions by Activity	5,928	1,342	3,862	181	3,856	1,906	6,385	23,461
Total GHG Emissions by Activity Amortized Over Project Life	237	54	154	7	154	76	255	938
Baseline Annual GHG emissions (MT/yr)								201,695
Net Change in GHG Emissions (MT/yr)								-200,757

Notes:

1. SMR on-site demolition and remediation emissions are based on peak quarter on-site activity assumed conservatively to occur over all quarters of the Project for project duration of 3 years.
2. Per SLOAPCD Handbook, GHG emission calculations are amortized over the length of the project life, which is prescribed as 25 years for industrial projects.
3. To present a conservative estimate, it has been assumed that the peak quarter emissions calculated for each air district will be emitted during th entire 3 year period
4. Baseline is based on five-year time period from 2017 to 2021 and includes onsite facility baseline GHG emissions and offsite hauling baseline GHG emissions within SLO County.

	Total	Amortized
Total within SLOC, onsite+offsite	7270	291

Project Fuel Use

Diesel efficiency, kg CO2e/gallon	8.43	as per MMR table 2-3
Onsite, gallons/year	234,501	
Onsite, gallons/day average	642	
Offsite gallons/year, onsite and offsite, within CA	693,564	within CA
Total	928,065	within CA

On-Site Quarterly Emission Summary - Project

Table 3.1 On-site Quarterly Emissions Summary

Pollutant	Unmitigated Emissions	Mitigated Emissions
	ton/qtr	
ROG+NOx	2.59	1.93
Exhaust PM10	0.08	0.03
Fugitive PM10	9.43	0.94

CalEEMod Outputs

Table 3.2 CalEEMod Model Results Peak Quarter Emissions

Scenario	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	CO2e
	tons/qtr										MT/qtr
Unmitigated	0.22	2.37	1.53	0.03	9.43	0.08	9.51	0.95	0.07	1.02	494.00
Mitigated	0.11	1.82	2.80	0.03	0.94	0.03	0.97	0.10	0.02	0.13	548.00
Percent Reduction	50%	23%	-83%	0%	90%	63%	90%	89%	71%	87%	-11%

Notes:
1. This is based on CalEEMod Annual Outputs Section 2.1 Overall Construction. See CalEEMod Report. Only one quarter of emissions data was entered into CalEEMod; while table units in CalEEMod output are "ton/yr," emissions are actually representative of quarterly emissions based on the entered activity duration. Peak quarter inputs are based on 95 days, so tons/qtr emissions here are conservative (>90 days for one calendar quarter).
2. Mitigated emissions account for PM10 reduction measures based on prescribed % reductions, as described in CalEEMod User Manual Appendix A, Section 12.1 (SCAQMD Fugitive Dust http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/fugitive-dust).
3. The unmitigated assumes default Tier fleet mix built into CalEEMod.
4. This assumes default HP and load factor for equipment, except for the excavators and loaders as described in the PD
5. Peak quarter of on-site activity is based on assumed overlap of demolition and remediation (April - July 2024).
6. See other assumptions in CalEEMod inputs below.

Table 3.3 CalEEMod model Results Daily - Based on Peak Quarter

Scenario	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	CO2e
	lb/day										
Unmitigated	6.9400	72.8000	47.2000	0.1500	292.0000	2.4400	294.0000	29.4000	2.2300	31.6000	16770
Mitigated	3.2600	55.6000	86.4000	0.1600	29.2000	0.8200	30.0000	3.1500	0.7700	3.9200	18605

Notes:
1. This is based on Summer CalEEMod run (peak quarter April - July), Section 2.1. See CalEEMod report

Fugitive Dust from Material Movement inputs to CalEEMod

Table 3.4 Dust from Material Movement

Fugitive Emission Source	Quantity	Unit	
Material loading and unloading [1]	22,476	CY of material	Assumes Project would be 85% of conservative alternative as per PD tables, total soil and materials
Building demolition [2]	8,901	tons	Same as conservative alt
Remediation[3]	12,664	CY of material	Same as conservative alt
Grading[4]	68,635	CY of material	applied 0.53 ratio of cut + fill between PD and conserv alt
Grading Trucks[4]	784	trucks/qrtr	applied 0.53 ratio of cut + fill between PD and conserv alt

Notes:

1. For original estimate (conservative alernative) this assumes 26,443 cubic yards of aboveground and belowground demolition material and soil is loaded and unloaded during the peak quarter based on sum of materials in Project Description , excluding scrap metal and asbestos. This assumption also is the basis for CalEEMod input for 2,644 vehicles traveling maximum distance of 1 mile based on size of facility. This assumes 50% of roads are paved.
2. For original estimate (conservative alt) building demolition material quantity is based on total project material quantities, including: aboveground concrete (4,350 tons), and belowground concrete (41,300 tons), asphalt (37,300 tons), and mixed debris (2,500 tons). Peak quarter demolition quantity calculated based on 3 year project duration and 25% safety factor. For CalEEMod demolition input, the debris tons are ratioed based on the number of days per period (ie 15 days over 85 days total duration for Demolition Period 1) to calculate a fraction of the total 8,901 tons for each period.
3. The Remediation period is the total volume of waste, divided into half a quarter and a 25% safety factor is added to account for a peak. This assumption is also the basis for the CalEEMod input for 1,266 vehicles traveling the maximum distance of 0.6 mile based on the size of the facility. This assumes 50% of roads are paved.
4. For original estimate (conservative alt) grading assumes a target of 3,500 CY of material moved per day from stockpiles to reuse sites over a 37-day period. Because the material quantity per day is a maximum target, a safety factor is not applied. For material hauling, this period assumes 5 trucks per day making 8 trips per day back and forth between the stockpile and reuse site, over 37 days, for a total of 1,480 trucks during this period. Reduced by the ratio of total cut+fill (0.53) between the conservative alternative and the Project. Also assumes 50% of roads are paved.
5. Fugitive dust mitigation measures are as follows: Soil stabilizer PM10 reduction of 84% based on SCAQMD Table XI-D dust suppressant on unpaved parking areas and Table XI-A dust suppressant on disturbed areas. Replace cover of area disturbed PM10 reduction of 40% based on SCAQMD Table XI-E windblown dust from inactive areas. Clean paved road PM10 reduction of 26% from SCAQMD Table XI-C arterial/collector street sweeping.
6. Assumes mean vehicle speed for worker and hauling trips of 27.5 mph based on average of 40 mph for workers (CalEEMod default) and 15 mph for hauling.

Fugitive Dust from Material Crushing

Table 3.5 PM Emissions from Material Crushing

Material	Debris Quantity[1]			Emission Factors[3]		Daily Emissions		Quarterly Emissions		Annual Emissions	
				PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
	tons/day	tons/qtr	tons/yr[2]	lb/ton	lb/ton	lb/day	lb/day	ton/qtr	ton/qtr	ton/yr	ton/yr
Concrete	16	885	2,833	0.0024	0.0024	0.04	0.04	0.001	0.001	0.003	0.003
Asphalt	7	391	1,250	0.0024	0.0024	0.02	0.02	0.000	0.000	0.002	0.002

Notes:

1. Debris quantity is based on total Project scaled to peak quarter from Project description

Concrete			Asphalt		
Above grade concrete	4350	tons	Below grade asphalt	3750	tons
Below grade concrete	4150	tons	**Total Project asphalt**	3750	tons
Total Project concrete	**8500**	**tons**	Peak quarterly estimate*	391	tons
Peak quarterly estimate*	885	tons	Daily estimate**	7	tons
Daily estimate**	16	tons			

* Quarterly estimate assumes a Project duration of 3 years, 4 quarters/year, and 25% safety factor for peak quarter estimate.
** Daily estimate is based on peak quarterly estimate and 55 operating days/quarter for below grade demolition.
2. Tons/yr debris quantity is based on total quantity divided by three.
3. Emission factors from EPA AP-42, Table 11.19.2-2, for tertiary crushing. This assume the PM2.5 emission factor is the same as PM10 emission factor.

Equipment Use Comparisons and Peak Quarter Equipment Use Determination

Table 3.6 Equiment Values used for Peak Quarter in the EIR CalEEMod Runs and HRA Analysis (averaged over 3 years)

	EIR Revised CalEEMod Project											
	Simultaneous Above and Below Ground Work: Peak Quarter				Abovegrnd ONLY (Pre BelowGrnd) Only				Post Peak AboveGrnd Levels Only			
Equipment	Number	Use Factor	Hp	Hours per day	Number	Use Factor	Hp	Hours per day	Number	Use Factor	Hp	Hours per day
Aerial Lift	2	0.40	63	8	2	0.40	63	8		0.40	63	
Auger Drill Rig		0.38	221	2	1	0.38	221	2	1	0.38	221	
Concrete Crusher & Asphalt Pulverizer	1	0.85	12	8		0.85	12		1	0.85	12	
Cranes	1	0.29	231	8	2	0.29	231	8		0.29	231	
Crawler tractor/grader 1	3	0.41	354	8		0.41	354		3	0.41	354	
Crawler tractor/grader 2		0.43	104			0.43	104			0.43	104	
Excavators 1	2	0.38	344	6		0.38	344			0.38	344	6
Excavators 2	2	0.38	619	6	2	0.38	619		2	0.38	619	
Excavators 3		0.38	425			0.38	425			0.38	425	
Fork Lift	3	0.2	82	8	1	0.20	82	6		0.20	82	
Front End Loader/backhoe	1	0.37	243	6	1	0.37	243	6	1	0.37	243	6
Generator Set	8	0.74	84	8	4	0.74	84	8	4	0.74	84	6
Hydraulic Braker Ram		0.42	510			0.42	510			0.42	510	
Off-Highway Trucks 1		0.38	370			0.38	370			0.38	370	
Off-Highway Trucks 2	2	0.38	475	8	2	0.38	475	8	2	0.38	475	6
Off-Highway Trucks 3		0.38	402			0.38	402			0.38	402	
Rollers		0.38	134			0.38	134			0.38	134	
Skid Steer Loader		0.37	65			0.37	65			0.37	65	
Total #, HP or HP-hr	25		2292	16695			1455	7158			1700	4197
Percent Reduction from Peak Quarter levels					reduction -->		37%	57%	reduction -->		26%	75%

Notes: Reduction levels used in the HRA to estaimte 3 year average construction emissions based on peak emissions

Project Trucks Emission Summary - Project

Table 4.1 Annual Truck Emissions: EMFAC Only (not on-road fugitive dust)

Total Annual	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
	ton/year						MT/year
SLOAPCD	2.03E+00	2.65E-02	4.46E-02	2.21E-02	1.07E-01	3.99E-03	4.00E+02
SBCAPCD	5.48E-01	7.86E-03	1.11E-02	5.55E-03	3.78E-02	1.02E-03	1.02E+02
SJVAPCD	3.18E-01	4.43E-03	6.62E-03	3.30E-03	2.03E-02	6.02E-04	6.04E+01
VCAPCD	1.20E-01	1.56E-03	2.63E-03	1.30E-03	6.32E-03	2.35E-04	2.36E+01
SCAQMD	1.47E-01	1.89E-03	3.24E-03	1.61E-03	7.45E-03	2.89E-04	2.90E+01

Table 4.2 Daily Truck Emissions: EMFAC Only (not on-road fugitive dust)

Total Daily	Daily Emissions						
	NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
	lb/day						
SLOAPCD	4.61E+01	6.15E-01	9.92E-01	4.92E-01	2.61E+00	8.92E-02	9.86E+03
SBCAPCD	1.87E+01	2.72E-01	3.75E-01	1.88E-01	1.33E+00	3.45E-02	3.82E+03
SJVAPCD	5.86E+00	8.16E-02	1.22E-01	6.08E-02	3.74E-01	1.11E-02	1.23E+03
VCAPCD	3.43E+00	4.46E-02	7.51E-02	3.72E-02	1.81E-01	6.72E-03	7.43E+02
SCAQMD	4.19E+00	5.39E-02	9.27E-02	4.59E-02	2.13E-01	8.26E-03	9.13E+02

Routes and Trip Counts

Table 4.3 Trip Counts

Trip Number	Waste Type	Waste Route1	County	Number of Round Trips per Year1	Miles per Round Trip per Vehicle	Total Miles per Year	Number of Round Trips per Day2	Miles per Day
				trips/year	VMT/RT/Vehicle	VMT/year	trips/day	VMT/day
1	Concrete and Asphalt	Regional Facility	SLOAPCD	146	25.8	3772.0	7.00	180.60
1	Concrete and Asphalt	Regional Facility	SBCAPCD	146	19.4	2836.3	7.00	135.80
2	Mixed debris	Regional Facility	SLOAPCD	1338	25.8	34524.5	21.00	541.80
2	Mixed debris	Regional Facility	SBCAPCD	1338	19.4	25960.3	21.00	407.40
3	Soil	Kettleman City	SLOAPCD	760	216.0	164160.0	7.00	1512.00
3	Soil	Kettleman City	SJVAPCD	760	40.0	30400.0	7.00	280.00
5	Asbestos	Veolia	SLOAPCD	140	25.8	3612.0	2.00	51.60
5	Asbestos	Veolia	SBCAPCD	140	157.2	22008.0	2.00	314.40
5	Asbestos	Veolia	VCAPCD	140	86.8	12152.0	2.00	173.60
5	Asbestos	Veolia	SCAQMD	140	107.2	15008.0	2.00	214.40
						Max trips/day =	**37**	

Notes:

1. This assumes peak quarterly trips occur throughout the year (4 quarters) for conservative annual estimate.
2. Number of round trips per day is based on week during peak quarter with maximum number of shipments. This assumes 5 working days/week. This is rounded up to nearest whole trip for conservative estimate
3. Miles per year total 314,433
4. Trips per year 2,384

Emission Factors

Table 4.4 Total EFs (Diesel and Tire Wear Emission Factors)

Emission Factor	Emission Factor Description	Unit	NOx	ROG	PM10	DPM	PM2.5	CO	SO_2	CO_2e
EF1	Running exhaust, tire and brake wear particulate emissions	g/mile	8.4832	0.1032	0.1952	0.0519	0.0962	0.3577	0.0172	1901
EF2	Start exhaust tailpipe	g/trip	3.1133	--	--		--	--	--	--
EF3	Idle exhaust, diurnal evaporative HC emissions, resting evaporative losses	g/vehicle/day	34.3991	1.1608	0.0936	0.0936	0.0896	9.9083	0.0309	3416

Source: EMFAC2021 (v1.0.2) Emission Rates. Statewide (CA), Calendar Year 2024, Annual, T7 Public Utility. Aggregated speed and model years. Diesel fuel.

Greenhouse Gas Global Warming Potentials

Pollutant	GWP
CO2	1
CH4	25
N2O	298

PM Calcs	Project PM10
PM running	0.05192043
PM tire	0.03600001
PM brake	0.10731132
Total	0.1952
PM Idling/veh/day	0.093637931

Emission Calculations

Table 4.5 Annual Emission Calculations, EMFAC Only (not Fugitive Dust)

Trip Number	Classification	Final Destination	Air District	Annual Emissions						
				NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
				ton/year						MT/year
1	Concrete and Asphalt	Regional Facility	SLOAPCD	4.18E-02	6.16E-04	8.27E-04	4.15E-04	3.08E-03	7.65E-05	7.67E+00
1	Concrete and Asphalt	Regional Facility	SBCAPCD	3.31E-02	5.10E-04	6.25E-04	3.15E-04	2.72E-03	5.87E-05	5.89E+00
2	Mixed debris	Regional Facility	SLOAPCD	3.83E-01	5.64E-03	7.57E-03	3.79E-03	2.82E-02	7.00E-04	7.02E+01
2	Mixed debris	Regional Facility	SBCAPCD	3.03E-01	4.67E-03	5.72E-03	2.89E-03	2.49E-02	5.37E-04	5.39E+01
3	Soil	Kettleman City	SLOAPCD	1.57E+00	1.96E-02	3.54E-02	1.75E-02	7.30E-02	3.14E-03	3.15E+02
3	Soil	Kettleman City	SJVAPCD	3.18E-01	4.43E-03	6.62E-03	3.30E-03	2.03E-02	6.02E-04	6.04E+01
5	Asbestos	Veolia	SLOAPCD	4.00E-02	5.90E-04	7.92E-04	3.97E-04	2.95E-03	7.32E-05	7.34E+00
5	Asbestos	Veolia	SBCAPCD	2.12E-01	2.68E-03	4.75E-03	2.35E-03	1.02E-02	4.22E-04	4.23E+01
5	Asbestos	Veolia	VCAPCD	1.20E-01	1.56E-03	2.63E-03	1.30E-03	6.32E-03	2.35E-04	2.36E+01
5	Asbestos	Veolia	SCAQMD	1.47E-01	1.89E-03	3.24E-03	1.61E-03	7.45E-03	2.89E-04	2.90E+01

Table 4.6 Daily Emission Calculations: EMFAC Only (not on-road fugitive dust)

Trip Number	Classification	Final Destination	Air District	Daily Emissions						
				NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
				lb/day						
1	Concrete and Asphalt	Regional Facility	SLOAPCD	4.00E+00	5.90E-02	7.92E-02	3.97E-02	2.95E-01	7.32E-03	8.10E+02
1	Concrete and Asphalt	Regional Facility	SBCAPCD	3.17E+00	4.88E-02	5.99E-02	3.02E-02	2.60E-01	5.62E-03	6.22E+02
2	Mixed debris	Regional Facility	SLOAPCD	1.20E+01	1.77E-01	2.38E-01	1.19E-01	8.86E-01	2.20E-02	2.43E+03
2	Mixed debris	Regional Facility	SBCAPCD	9.50E+00	1.46E-01	1.80E-01	9.06E-02	7.80E-01	1.69E-02	1.87E+03
3	Soil	Kettleman City	SLOAPCD	2.89E+01	3.62E-01	6.52E-01	3.22E-01	1.35E+00	5.78E-02	6.39E+03
3	Soil	Kettleman City	SJVAPCD	5.86E+00	8.16E-02	1.22E-01	6.08E-02	3.74E-01	1.11E-02	1.23E+03
5	Asbestos	Veolia	SLOAPCD	1.14E+00	1.69E-02	2.26E-02	1.13E-02	8.44E-02	2.09E-03	2.31E+02
5	Asbestos	Veolia	SBCAPCD	6.06E+00	7.67E-02	1.36E-01	6.71E-02	2.92E-01	1.21E-02	1.33E+03
5	Asbestos	Veolia	VCAPCD	3.43E+00	4.46E-02	7.51E-02	3.72E-02	1.81E-01	6.72E-03	7.43E+02
5	Asbestos	Veolia	SCAQMD	4.19E+00	5.39E-02	9.27E-02	4.59E-02	2.13E-01	8.26E-03	9.13E+02

Conversions for Emission Calculations

Annual Emission Factor Look-up for formulas		Annual	Daily
First sum	EF1	= miles/year * g/mile * tons/grams	= miles/day * g/mile * tons/grams
Second sum	EF2	= 2* trucks/year * g/trip * tons/grams (assumes truck starts twice in round trip)	= trips/day * g/trip * tons/grams
Third sum	EF3	= trips/year * g/vehicle/day * tons/grams	= trips/day * g/vehicle/day * tons/grams

Conversions

453.592	grams/lb
2000	lb/ton
907184	grams/ton
2204.62	lb/metric ton

DPM Emissions

Table 4.7 DPM Emissions Only

Trip Number	Classification	Final Destination	Air District	Annual Emissions DPM ton/year	Daily Emissions DPM lb/day
1	Concrete and Asphalt	Regional Facility	SLOAPCD	2.31E-04	2.21E-02
1	Concrete and Asphalt	Regional Facility	SBCAPCD	1.77E-04	1.70E-02
2	Mixed debris	Regional Facility	SLOAPCD	2.11E-03	6.64E-02
2	Mixed debris	Regional Facility	SBCAPCD	1.62E-03	5.10E-02
3	Soil	Kettleman City	SLOAPCD	9.47E-03	1.75E-01
3	Soil	Kettleman City	SJVAPCD	1.82E-03	3.35E-02
5	Asbestos	Veolia	SLOAPCD	2.21E-04	6.32E-03
5	Asbestos	Veolia	SBCAPCD	1.27E-03	3.64E-02
5	Asbestos	Veolia	VCAPCD	7.10E-04	2.03E-02
5	Asbestos	Veolia	SCAQMD	8.73E-04	2.50E-02

Fugitive Dust from Paved Roads

Table 4.8 Fugitive Dust from Paved Roads

Trip Number	Classification	Final Destination	Air District	Annual Emissions Fugitive PM10 ton/year	Daily Emissions Fugitive PM10 lb/day	Annual Emissions Fugitive PM2.5 ton/year	Daily Emissions Fugitive PM2.5 lb/day
1	Concrete and Asphalt	Regional Facility	SLOAPCD	0.0	4.2	0.0107	1.0204
1	Concrete and Asphalt	Regional Facility	SBCAPCD	0.0	3.1	0.0080	0.7673
2	Mixed debris	Regional Facility	SLOAPCD	0.4	12.5	0.0975	3.0611
2	Mixed debris	Regional Facility	SBCAPCD	0.3	9.4	0.0733	2.3018
3	Soil	Kettleman City	SLOAPCD	1.9	34.8	0.4637	8.5427
3	Soil	Kettleman City	SJVAPCD	0.3	6.4	0.0859	1.5820
5	Asbestos	Veolia	SLOAPCD	0.0	1.2	0.0102	0.2915
5	Asbestos	Veolia	SBCAPCD	0.3	7.2	0.0622	1.7763
5	Asbestos	Veolia	VCAPCD	0.1	4.0	0.0343	0.9808
5	Asbestos	Veolia	SCAQMD	0.2	4.9	0.0424	1.2114

Notes:

1. Calculated based on AP-42, 13.2.1 as shown below:

Equation 1 = $$E = k\,(sL)^{0.91} \times (W)^{1.02}$$

where:
E = particulate emission factor (having units matching the units of k)
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m2)
W = average weight (tons) of vehicles traveling the road

Constants		Unit	Source	
k	0.0022	lb/VMT PM10	Table 13.2.1-1	
k	0.00054	lb/VMT PM2.5	Table 13.2.1-1	
sL	0.2	g/m3	Table 13.2.1-2	assumes 5k-10k average daily traffic
W	42	tons	Max capacity of heavy haul truck	
Calculation of particulate emission factor				
E =	0.023	lb/VMT PM10		
E =	0.006	lb/VMT PM2.5		

Project Rail Emissions Summary - Project

Table 5.1 Annual Locomotive Emissions

Total Annual1	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	ton/year						MT/year
SLOAPCD	3.77E-01	1.39E-02	8.14E-03	7.90E-03	1.35E-01	4.88E-04	4.76E+01
SBCAPCD	9.38E+00	3.47E-01	2.03E-01	1.97E-01	3.37E+00	1.22E-02	1.19E+03
VCAPCD	4.84E+00	1.79E-01	1.05E-01	1.02E-01	1.74E+00	6.28E-03	6.12E+02
SCAQMD	9.94E+00	3.68E-01	2.15E-01	2.08E-01	3.58E+00	1.29E-02	1.26E+03
MDAQMD	1.68E+01	6.23E-01	3.64E-01	3.53E-01	6.06E+00	2.18E-02	2.13E+03
Nevada	1.77E+01	6.55E-01	3.83E-01	3.71E-01	6.37E+00	2.30E-02	2.24E+03
Utah	2.99E+01	1.11E+00	6.46E-01	6.27E-01	1.08E+01	3.87E-02	3.78E+03

Table 5.2 Daily Locomotive Emissions

Total Daily1	Daily Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	pounds/day						
SLOAPCD	3.96E+00	1.47E-01	8.57E-02	8.31E-02	1.43E+00	5.14E-03	5.52E+02
SBCAPCD	9.87E+01	3.65E+00	2.13E+00	2.07E+00	3.55E+01	1.28E-01	1.38E+04
VCAPCD	5.10E+01	1.89E+00	1.10E+00	1.07E+00	1.83E+01	6.61E-02	7.10E+03
SCAQMD	1.05E+02	3.87E+00	2.26E+00	2.19E+00	3.76E+01	1.36E-01	1.46E+04
MDAQMD	1.77E+02	6.56E+00	3.83E+00	3.72E+00	6.38E+01	2.30E-01	2.47E+04
Nevada	1.86E+02	6.90E+00	4.03E+00	3.91E+00	6.71E+01	2.42E-01	2.60E+04
Utah	3.15E+02	1.16E+01	6.80E+00	6.60E+00	1.13E+02	4.08E-01	4.38E+04

Trip Information

Table 5.3 Waste Shipment Information

			Quarterly			Daily		
Waste Type	Trip Number	Waste Route	Number Railcars	Number of Trains	Average Train Load4	Average Daily Number of Railcars during Maximum Week	Number of Trains	Daily Average Train Load4
			no. rail cars	no. trains	tons/train/RT	no. railcars/day	no. trains/day	tons/train/RT
Soil	4	Utah	380	48	1069	8	1	1080
Annual				192				

Notes:

1. The number of railcars is based on peak quarter (railcars/quarter). The number of daily rail cars is based on maximum week during peak quarter and assumes 5 working days/week.
2. The number of rail cars is based on capacity of railcar (100 cubic yards [cy]) and estimated density of soil (3 g/cm3 = 5000 lb/cy)
   250 tons/rail car
3. The number of rail cars per train is based on estimated locomotive tow capacity (tons/locomotive), assuming a 2,000 ton capacity and weight of rail car.
   8 rail cars/train
4. Train load calculation assumptions
   10 ton/car — Empty rail car — https://www.up.com/customers/all/equipment/descriptions/gondolas/index.htm
   average tons
   250 waste/rail car
   260 total tons/rail car — Loaded flat rail car
   135 tons/rail car — Average rail car load for one RT (assumes loaded on way there and unloaded on way back)

The average train load is based on the assumption that the train is fully loaded on the way to the waste disposal facility and unloaded (only empty rail cars) on the way back. The average weight of the train is used for the average round trip load.

Table 5.4 Rail Route Information

Waste Type	Trip Number	Air District	One-way Miles	Round Trip Miles	Total ton-miles	Total ton-mile/yr	Ton-mile/day
			VMT	VMT/RT	ton-miles/qtr	ton-mile/yr	ton-mile/day
Soil	4	SLOAPCD	4.5	9	461700	1846800	9720
Soil	4	SBCAPCD	112	224	11498706	45994825	242078
Soil	4	VCAPCD	58	116	5936598	23746392	124981
Soil	4	SCAQMD	119	238	12187000	48748001	256568
Soil	4	MDAQMD	201	403	20649529	82598116	434727
Soil	4	Nevada	212	423	21708108	86832432	457013
Soil	4	Utah	357	714	36632304	146529216	771206

Notes:
1. Total ton-miles/yr assumes peak quarter transportation occurs throughout the year (4 quarters).
2. Ton-miles/day is based on maximum week of railcars during peak quarter.

Emission Factors

Table 5.5 Locomotive Emission Factors

Engine Type	Unit	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
Large line haul	g/gal	74.00	2.74	1.60	1.55	26.62	0.10	10307.48
Large line haul	g/ton-mile	0.19	0.01	0.00	0.00	0.07	0.00	25.77

Notes:

Large Line Haul Notes

1. NOx, PM10, ROG, and PM2.5 emission factors give the expected fleet average emission factors by calendar year. The year 2025 is used as the worst-case year for rail transportation emissions.
2. NOx and PM10 emission factors were taken from Tables 5 and 6 of EPA document EPA-420-F-09-025.

General Notes

1. Source of NOx, PM10, PM2.5, ROG, CO, and SO2 emission factors and derivations: EPA document Emission Factors for Locomotives (EPA-420-F-09-025; https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100500B.pdf)
2. ROG emission factors were calculated by multiplying the HC emission factors found in Table 7 of EPA-420-F-09-025 by a factor of 1.053 according to guidance in the document.
3. CO emission factors were calculated based on the CO emission factor in Tables 1 and 2 for large line and switching, respectively, and the conversion factors in Table 3 of EPA-420-F-09-025. The CO emission factor was developed in the context of adopting new emission standards, which, for CO, were intended to cap CO emissions at pre-control levels and resulted in a projection of CO emission factors remaining the same for all tiers of emission standards. Recent testing also suggests that emission controls designed to reduce PM and HC emissions are also reducing CO emissions, according to EPA-420-F-09-025. As such, the CO emission factor presents a conservative estimate to use for calculating CO emissions.

4. PM2.5 emission factors were calculated by multiplying PM10 emissions by a factor of 0.97, following guidance in EPA-420-F-09-025.
5. SO2 emission factors were calculated with the below conversions/assumptions (calculation method in EPA document, derived from NONROAD Technical Document NR-009c). The assumption of 100% conversion of sulfur in fuel to SO2 is a conservative estimate, as the actual fraction of fuel sulfur emitted as SO2 may be as low as 95 percent, according to EPA-420-F-09-025.

7.05	Fuel density (lb/gal)
453.592	g/lb
100%	sulfur in fuel to SO2 conversion
2	g SO2/ g S
15	sulfur content (ppm) - ultra low sulfur fuel

Equation: SO2 (g/gal) = (fuel density [lb/gal]) x (conversion factor [g/lb]) x (64 g SO2/32 g S) x (S content of fuel [ppm])

6. CO2, CH4, and N2O emission factors were derived from 2018 EPA Emission Factors for Greenhouse Gas Inventories (https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf)

CO2 from Table 2, Diesel Fuel	10210	g CO2/gallon fuel
CH4 from Table 5, Diesel Locomotives	0.8	g CO2/gallon fuel
N2O from Table 5, Diesel Locomotives	0.26	g CO2/gallon fuel

7. CO2e was calculated using global warming potentials (GWP) below, taken from IPCC Fifth Assessment Report 2014, Working Group 1 Climate Change 2013: The Physical Science Basis (Chapter 8)

CO2	1
CH4	25
N2O	298

8. The conversion from g/gal to g/ton-mile is 400 ton-miles/gal, as indicated in EPA-420-F-09-025.

Emission Calculations

Table 5.6 Annual Emissions

Waste Type	Trip Number	Air District/State1	Annual Emissions						
			NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
			ton/year						MT/year
Soil	4	SLOAPCD	3.77E-01	1.39E-02	8.14E-03	7.90E-03	1.35E-01	4.88E-04	4.76E+01
Soil	4	SBCAPCD	9.38E+00	3.47E-01	2.03E-01	1.97E-01	3.37E+00	1.22E-02	1.19E+03
Soil	4	VCAPCD	4.84E+00	1.79E-01	1.05E-01	1.02E-01	1.74E+00	6.28E-03	6.12E+02
Soil	4	SCAQMD	9.94E+00	3.68E-01	2.15E-01	2.08E-01	3.58E+00	1.29E-02	1.26E+03
Soil	4	MDAQMD	1.68E+01	6.23E-01	3.64E-01	3.53E-01	6.06E+00	2.18E-02	2.13E+03
Soil	4	Nevada	1.77E+01	6.55E-01	3.83E-01	3.71E-01	6.37E+00	2.30E-02	2.24E+03
Soil	4	Utah	2.99E+01	1.11E+00	6.46E-01	6.27E-01	1.08E+01	3.87E-02	3.78E+03

Notes:
1. Emissions summarized by air districts within California, and by state outside of California.

Annual Emission Calculation Assumptions

453.592	g/lb
2000	lb/ton
907184	g/ton
1000000	g/metric ton (MT)

Table 5.7 Daily Emissions

Waste Type	Trip Number	Air District	Daily Emissions						
			NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
			pounds/day						
Soil	4	SLOAPCD	3.96E+00	1.47E-01	8.57E-02	8.31E-02	1.43E+00	5.14E-03	5.52E+02
Soil	4	SBCAPCD	9.87E+01	3.65E+00	2.13E+00	2.07E+00	3.55E+01	1.28E-01	1.38E+04
Soil	4	VCAPCD	5.10E+01	1.89E+00	1.10E+00	1.07E+00	1.83E+01	6.61E-02	7.10E+03
Soil	4	SCAQMD	1.05E+02	3.87E+00	2.26E+00	2.19E+00	3.76E+01	1.36E-01	1.46E+04
Soil	4	MDAQMD	1.77E+02	6.56E+00	3.83E+00	3.72E+00	6.38E+01	2.30E-01	2.47E+04
Soil	4	Nevada	1.86E+02	6.90E+00	4.03E+00	3.91E+00	6.71E+01	2.42E-01	2.60E+04
Soil	4	Utah	3.15E+02	1.16E+01	6.80E+00	6.60E+00	1.13E+02	4.08E-01	4.38E+04
Soil	4	Incremental Increase in SCAQMD over baseline	4.67E+01	1.73E+00	1.01E+00	9.79E-01	1.68E+01	6.05E-02	6.50E+03

Notes:
1. Emissions summarized by air districts within California, and by state outside of California.

Table 6.1 Aboveground Demolition and Belowground Demolition and Remediation Waste Transport Amounts - Peak Quarter PROJECT

Trip Number1	Waste Type	Mode	Waste Route Destination	Number of Round Trips2,3	Max Shipments per Week
1	Concrete and Asphalt	Truck	Regional Facility	37	16
2	Mixed debris	Truck	Regional Facility	335	52
3	Soil	Truck	Kettleman City	190	19
4	Soil	Rail	Utah	380	38
5	Asbestos	Truck	Veolia	35	5

Notes:

1. This is based on SMR AQ MODEL INPUTS_04-27-22.xlsx.

2 The number of trips for Concrete and Asphalt is based on the combined total project trips (210 for Concrete and 190 for Asphalt) divided over an assumed duration of 3 years, and 4 qtr/year.

3. This represents peak quarter of waste transport. For Concrete and Asphalt, a 25% safety factor was applied to estimate peak quarter.

4. Mixed debris quantity includes Mixed Metals, Trash/C&D, and Mixed Debris material types as noted in Tables 5 and 9 of the Project Description. Max shipments per week occurs during Week 24 (month 6).

5. Asbestos trucking assumed to occur prior to peak quarter (see Table 12.1) but is included for conservativeness. Number of round trips derived from Project Description, Table 4.

6. Fraction of waste material from conserv alt ---> 0.86

7. Soil quantities and asbestos assumed the same as the conserv alternative

Offsite Waste Transport Assumptions

% of concrete and asphalt to off-site facility	50%

Peak Quarter Rail Transport Assumptions

Peak Qtr Week	Estimated Rail cars per Week
1	0
2	0
3	0
4	38
5	38
6	38
7	38
8	38
9	38
10	38
11	38
12	38
13	38

Assumptions:

100	cy per railcar
8	railcars per train
800	cy per train
4.75	trains per week
3800	cy per week max
200000	total soil
52.6	weeks

Baseline Facility Data Summary

Table 7.1 Baseline Facility CEIR Data

Data Year1	TOG	ROG VOC	NOx	ROG+NOx	CO	SO2	PM	N2O	CH4	CO2	CO2e2
	tons/year										
2014	31.2	22.6	64.7	87.3	12.4	133.9	25.8	1.0	8.3	284,546	285,052
2015	30.4	22.2	53.7	75.9	7.4	98.8	24.4	0.9	8.2	242,692	243,165
2016	31.7	22.8	55.2	78.0	12	82.7	25.0	0.9	9.0	266,796	267,289
2017	30.2	22.1	59.3	81.4	7.2	64.7	25.0	0.9	9.9	258,626	259,142
2018	43.6	28.5	44.9	73.4	6.5	67.9	23.7	0.7	12.3	222,810	223,326
2019	41.7	27.6	51.1	78.7	6.1	80.3	24.2	0.8	12.3	229,329	229,875
2020	39.8	26.6	42.7	69.3	4.7	52.9	22.7	0.7	11.5	205,593	206,089
2021	38.2	25.8	40.6	66.4	4.3	43.0	21.0	0.6	10.3	168,369	168,805
avg	35.9	24.8	51.5	76.3	7.6	78.0	24.0	0.8	10.2	234,845	235,343
avg 5 yr	38.7	26.1	47.7	73.8	5.8	61.8	23.3	0.7	11.3	216,945	217,447
Avg tons/quarter	9.7	6.5	11.9	18.5	1.4	15.4	5.8	0.2	2.8	54,236	54,362

1. Data provided by P66 Santa Maria in CEIR files by reporting year.

2. Carbon dioxide equivalent (total GHG) calculated based on the global warming potential of each greenhouse gas. CO2 = 1, CH4 = 25, N2O = 298.

Table 7.2 Facility 5-Year Baseline Emissions Summary

Emission	Daily (lb)	Quarterly (tons)	Annual (metric tons)
Facility ROG+NOx	404.60	18.46	
Facility PM10	127.78	5.83	
Facility GHG			197,265
Trucking ROG + NOx	176.23	7.67	
Trucking DPM onsite	0.04	0.0016	
Trucking DPM offsite	1.17	0.05	
Trucking PM10 onsite	2.90	0.12	
Trucking PM10 offsite	143.73	6.26	
Rail ROG + NOx	4.85	0.04	
Rail DPM	0.11	0.0009	
Rail and Truck GHG			4430.1

Table 7.3 Facility Baseline Daily Emissions

Data Year1	TOG	ROG VOC	NOx	ROG+NOx	CO	SO2	PM	N2O	CH4	CO2	CO2e2
	pounds/day average										
2014	171.0	123.8	354.5	478.4	67.9	733.7	141.4	5.5	45.5	1,559,156	1,561,926
2015	166.6	121.6	294.2	415.9	40.5	541.4	133.7	4.9	44.9	1,329,819	1,332,412
2016	173.7	124.9	302.5	427.4	65.8	453.2	137.0	4.9	49.3	1,461,896	1,464,598
2017	165.5	121.1	324.9	446.0	39.5	354.5	137.0	4.9	54.2	1,417,128	1,419,954
2018	238.9	156.2	246.0	402.2	35.6	372.1	129.9	3.8	67.4	1,220,876	1,223,704
2019	228.5	151.2	280.0	431.2	33.4	440.0	132.6	4.4	67.4	1,256,597	1,259,588
2020	218.1	145.8	234.0	379.7	25.8	289.9	124.4	3.8	63.0	1,126,535	1,129,254
2021	209.3	141.4	222.5	363.8	23.6	235.6	115.1	3.3	56.4	922,569	924,960
avg	196.4	135.8	282.3	418.1	41.5	427.5	131.4	4.5	56.0	1,286,822	1,289,550
avg 5 yr	212.1	143.1	261.5	404.6	31.6	338.4	127.8	4.1	61.7	1,188,741	1,191,492

Facility CEIR Data GHG MT

Data Year	N2O	CH4	CO2	CO2e2
2017	0.8	9.0	234,622	235,089
2018	0.6	11.2	202,130	202,598
2019	0.7	11.2	208,044	208,539
2020	0.6	10.4	186,511	186,961
2021	0.5	9.3	152,742	153,138
average 5 yrs	0.7	10.2	196,810	197,265

Trucks MTCO2e/year, onsite and offsite, within CA	4,416	
Rail MTCO2e/year, onsite and offsite, within CA	627	
Total rail and truck, MT/yr	5,043	
Fuel Use		
Diesel efficiency, kg CO2e/gallon	8.43	as per MMR table 2-3
Trucks gallons/year, onsite and offsite, within CA	524,065	
Rail gallons/year, onsite and offsite, within CA	74,397	
Total rail and truck, annual gallons	598,462	

Trucks Baseline Onsite Trip/Miles Counts

Table 8.1 Onsite Trucking Mileage and Trip Counts

Year	Onsite Miles	Round Trip Miles per truck type	Total Round Trip Miles per Day	Total Round Trip Miles per Quarter	Total Round Trip Miles per Year	Trucks/year	Trucks/ quarter	Trucks/Day
2017	Crude Trucks	4	52	4652	18608	4652	1163	13
2017	Coke Trucks	3	79	7062	28246	10052	2513	28
2017	Sulfur Trucks	3	3	234	930	361	91	1
2017	Chemical Delivery Trucks	2	2	30	115	50	13	1
2018	Crude Trucks	4	32	2900	11600	2900	725	8
2018	Coke Trucks	3	76	6693	26765	9525	2382	27
2018	Sulfur Trucks	3	5	466	1859	722	181	2
2018	Chemical Delivery Trucks	2	2	30	115	50	13	1
2019	Crude Trucks	4	68	5872	23488	5872	1468	17
2019	Coke Trucks	3	53	4665	18656	6639	1660	19
2019	Sulfur Trucks	3	3	214	855	332	83	1
2019	Chemical Delivery Trucks	2	2	30	115	50	13	1
2020	Crude Trucks	4	56	4928	19708	4927	1232	14
2020	Coke Trucks	3	76	6716	26858	9558	2390	27
2020	Sulfur Trucks	3	5	301	1205	468	117	2
2020	Chemical Delivery Trucks	2	2	30	115	50	13	1
2021	Crude Trucks	4	40	3384	13536	3384	846	10
2021	Coke Trucks	3	56	4903	19605	6977	1745	20
2021	Sulfur Trucks	3	5	255	1020	396	99	2
2021	Chemical Delivery Trucks	2	2	30	115	50	13	1
					Total Crude, Coke, and Sulfur Trucks over 5 Year Baseline	**66765**	trucks	
					Average Daily Crude, Coke, and Sulfur Trucks	**37**	trucks/day	

Notes:

1. Coke trucks: 30% travel about 3.3 miles round trip and 70% travel 2.6 miles round trip.
2. Sulfur Trucks: 75% travel about 2.7 miles and 25% travel about 2.2 miles round trip.
3. Trucks/day calculated based on annual trucks over 365 days.
4. Quarterly and daily truck trips are rounded up to a whole number.

Trucks Baseline Offsite Trip/Miles Counts Within SLO County

Table 8.2 Offsite Trucking Mileage and Trip Counts within SLOC

Year	Offsite Miles	One-way Trip Miles From Facility Gate	Round Trip Miles per truck type	Total Round Trip Miles per Day	Total Round Trip Miles per Quarter	Total Round Trip Miles per Year	Trucks/year	Trucks/quarter	Trucks/Day
2017	Crude Trucks	79.1	158.2	2056.6	183986.6	735946.4	4652	1163	13
2017	Coke Trucks	80.8	161.6	4524.8	406100.8	1624403.2	10052	2513	28
2017	Sulfur Trucks	80.8	161.6	161.6	14705.6	58337.6	361	91	1
2017	Chemical Delivery Trucks	12.6	25.2	25.2	327.6	1260.0	50	13	1
2018	Crude Trucks	79.1	158.2	1265.6	114695.0	458780.0	2900	725	8
2018	Coke Trucks	80.8	161.6	4363.2	384931.2	1539240.0	9525	2382	27
2018	Sulfur Trucks	80.8	161.6	323.2	29249.6	116675.2	722	181	2
2018	Chemical Delivery Trucks	12.6	25.2	25.2	327.6	1260.0	50	13	1
2019	Crude Trucks	79.1	158.2	2689.4	232237.6	928950.4	5872	1468	17
2019	Coke Trucks	80.8	161.6	3070.4	268256.0	1072862.4	6639	1660	19
2019	Sulfur Trucks	80.8	161.6	161.6	13412.8	53651.2	332	83	1
2019	Chemical Delivery Trucks	12.6	25.2	25.2	327.6	1260.0	50	13	1
2020	Crude Trucks	79.1	158.2	2214.8	194902.4	779451.4	4927	1232	14
2020	Coke Trucks	80.8	161.6	4363.2	386224.0	1544572.8	9558	2390	27
2020	Sulfur Trucks	80.8	161.6	323.2	18907.2	75628.8	468	117	2
2020	Chemical Delivery Trucks	12.6	25.2	25.2	327.6	1260.0	50	13	1
2021	Crude Trucks	79.1	158.2	1582.0	133837.2	535348.8	3384	846	10
2021	Coke Trucks	80.8	161.6	3232.0	281992.0	1127483.2	6977	1745	20
2021	Sulfur Trucks	80.8	161.6	323.2	15998.4	63993.6	396	99	2
2021	Chemical Delivery Trucks	12.6	25.2	25.2	327.6	1260.0	50	13	1
						Total Crude, Coke, and Sulfur Trucks over 5 Year Baseline	**66765**	trucks	
						Average Daily Crude, Coke, and Sulfur Trucks	**37**	trucks/day	

Notes:

1. Coke is sent east to Kern County or Las Vegas (CA-101 -> CA-41 -> CA-46)
2. Sulfur trucks are sent to Kern County (CA-101 -> CA-41 -> CA-46)
3. Crude Trucks come from Monterey County (Ragged Point CA/County Line Rd, Big Sur, CA)
4. Conservatively assume shortest delivery distance for chemical delivery trucks as there are several distances based on type.
5. Trucks/day calculated based on annual trucks over 365 days.
6. Quarterly and daily truck trips are rounded up to a whole number.

Year	Avg Miles per Year	Trucks per Year	Avg Truck per Day
2017	2,419,947	15,115	41.4
2018	2,115,955	13,197	36.2
2019	2,056,724	12,893	35.3
2020	2,400,913	15,003	41.1
2021	1,728,086	10,807	29.6
Avg	2,144,325	13,403	36.7

Emissions Factors

Table 8.3 Facility Baseline Trucking Emission Factors

Emission Factor	Emission Factor Description	Unit	NOx + ROG	DPM	PM10 - Tire/Brake Wear	CO2e	CO	ROG	TOG	Nox	SO2	PM2.5	
EF1	Running exhaust, tire and brake wear particulate emissions	g/mile	12.173	0.085	10.590	1975	0.529056466	0.157257047	0.179025177	12.01592312	0.017850526	0.081495384	
EF2	Start exhaust tailpipe	g/trip	1.591	-	-	-				1.591			
EF3	Idle exhaust, diurnal evaporative HC emissions, resting evaporative losses	g/vehicle/day	42.100	0.166	-	3580	7.532366689	1.323870231	1.507125483	40.77588242	0.032337884	0.158562281	

Notes:

1. Source: EMFAC2021 (v1.0.3) Emission Rates, Statewide (CA), calendar years 2017-2021, Annual, T7 Public Class 8, aggregated speed and model years, diesel fuel. Emission factors are averages of 2017-2021 emission factors for each pollutant and unit.
2. DPM EF1 emission factors are only for running exhaust.
3. PM10 EF1 emission factors do not include running exhaust. EF3 emission factors do not include idling exhaust. Both are captured in the DPM emission factors.
4. EF2 calculations assume the truck starts twice in one round trip (2 trips).

Greenhouse Gas Global Warming Potentials

Pollutant	GWP
CO2	1
CH4	25
N2O	298

Trucks Baseline Emission Calculations

Table 8.4 Facility Trucking Baseline Onsite Emission Calculations

Year		ROG + NOX			DPM			PM10 (Tire/Brake/Dust)			CO2e	CO		ROG		TOG		Nox		SO2		PM2.5	
	Truck Type	tons/year	tons/quarter	lb/day	tons/year	tons/quarter	lb/day	tons/year	tons/quarter	lb/day	MT/yr	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day
2017	Crude Trucks	4.82E-01	1.20E-01	2.69E+00	2.60E-03	6.49E-04	1.45E-02	2.17E-01	5.43E-02	1.21E+00	53.4	4.95E-02	2.77E-01	1.00E-02	5.60E-02	1.14E-02	6.37E-02	4.72E-01	2.64E+00	5.32E-04	2.97E-03	2.48E-03	1.39E-02
2017	Coke Trucks	8.81E-01	2.20E-01	4.91E+00	4.49E-03	1.12E-03	2.50E-02	3.30E-01	8.24E-02	1.84E+00	91.8	9.99E-02	5.57E-01	1.96E-02	1.09E-01	2.23E-02	1.24E-01	8.61E-01	4.80E+00	9.14E-04	5.09E-03	4.29E-03	2.39E-02
2017	Sulfur Trucks	3.05E-02	7.69E-03	1.69E-01	1.53E-04	3.86E-05	8.49E-04	1.09E-02	2.74E-03	6.01E-02	3.1	3.54E-03	1.96E-02	6.88E-04	3.81E-03	7.83E-04	4.34E-03	2.98E-02	1.65E-01	3.12E-05	1.73E-04	1.47E-04	8.12E-04
2017	Chemical Delivery Trucks	4.04E-03	1.05E-03	1.62E-01	1.99E-05	5.18E-06	7.97E-04	1.34E-03	3.49E-04	5.37E-02	0.4	4.82E-04	1.93E-02	9.29E-05	3.72E-03	1.06E-04	4.23E-03	3.95E-03	1.58E-01	4.05E-06	1.62E-04	1.91E-05	7.63E-04
2018	Crude Trucks	3.00E-01	7.51E-02	1.66E+00	1.62E-03	4.05E-04	8.93E-03	1.35E-01	3.39E-02	7.47E-01	33.3	3.08E-02	1.70E-01	6.24E-03	3.44E-02	7.11E-03	3.92E-02	2.94E-01	1.62E+00	3.32E-04	1.83E-03	1.55E-03	8.55E-03
2018	Coke Trucks	8.35E-01	2.09E-01	4.73E+00	4.25E-03	1.06E-03	2.41E-02	3.12E-01	7.81E-02	1.77E+00	87.0	9.47E-02	5.37E-01	1.85E-02	1.05E-01	2.11E-02	1.20E-01	8.16E-01	4.63E+00	8.66E-04	4.91E-03	4.07E-03	2.31E-02
2018	Sulfur Trucks	6.10E-02	1.53E-02	3.38E-01	3.06E-04	7.68E-05	1.70E-03	2.17E-02	5.44E-03	1.20E-01	6.3	7.08E-03	3.92E-02	1.38E-03	7.62E-03	1.57E-03	8.68E-03	5.96E-02	3.30E-01	6.23E-05	3.45E-04	2.93E-04	1.62E-03
2018	Chemical Delivery Trucks	4.04E-03	1.05E-03	1.62E-01	1.99E-05	5.18E-06	7.97E-04	1.34E-03	3.49E-04	5.37E-02	0.4	4.82E-04	1.93E-02	9.29E-05	3.72E-03	1.06E-04	4.23E-03	3.95E-03	1.58E-01	4.05E-06	1.62E-04	1.91E-05	7.63E-04
2019	Crude Trucks	6.08E-01	1.52E-01	3.52E+00	3.28E-03	8.20E-04	1.90E-02	2.74E-01	6.85E-02	1.59E+00	67.4	6.25E-02	3.62E-01	1.26E-02	7.32E-02	1.44E-02	8.33E-02	5.96E-01	3.45E+00	6.71E-04	3.89E-03	3.14E-03	1.82E-02
2019	Coke Trucks	5.82E-01	1.45E-01	3.33E+00	2.96E-03	7.41E-04	1.70E-02	2.18E-01	5.45E-02	1.25E+00	60.6	6.60E-02	3.78E-01	1.29E-02	7.40E-02	1.47E-02	8.42E-02	5.69E-01	3.26E+00	6.04E-04	3.46E-03	2.84E-03	1.62E-02
2019	Sulfur Trucks	2.80E-02	7.01E-03	1.69E-01	1.41E-04	3.52E-05	8.49E-04	9.98E-03	2.50E-03	6.01E-02	2.9	3.26E-03	1.96E-02	6.33E-04	3.81E-03	7.20E-04	4.34E-03	2.74E-02	1.65E-01	2.87E-05	1.73E-04	1.35E-04	8.12E-04
2019	Chemical Delivery Trucks	4.04E-03	1.05E-03	1.62E-01	1.99E-05	5.18E-06	7.97E-04	1.34E-03	3.49E-04	5.37E-02	0.4	4.82E-04	1.93E-02	9.29E-05	3.72E-03	1.06E-04	4.23E-03	3.95E-03	1.58E-01	4.05E-06	1.62E-04	1.91E-05	7.63E-04
2020	Crude Trucks	5.10E-01	1.28E-01	2.90E+00	2.75E-03	6.88E-04	1.56E-02	2.30E-01	5.75E-02	1.31E+00	56.6	5.24E-02	2.98E-01	1.06E-02	6.03E-02	1.21E-02	6.86E-02	5.00E-01	2.84E+00	5.63E-04	3.20E-03	2.63E-03	1.50E-02
2020	Coke Trucks	8.37E-01	2.09E-01	4.73E+00	4.27E-03	1.07E-03	2.41E-02	3.14E-01	7.84E-02	1.77E+00	87.3	9.50E-02	5.37E-01	1.86E-02	1.05E-01	2.12E-02	1.20E-01	8.19E-01	4.63E+00	8.69E-04	4.91E-03	4.08E-03	2.31E-02
2020	Sulfur Trucks	3.95E-02	9.88E-03	3.38E-01	1.99E-04	4.97E-05	1.70E-03	1.41E-02	3.52E-03	1.20E-01	4.1	4.59E-03	3.92E-02	8.92E-04	7.62E-03	1.02E-03	8.68E-03	3.86E-02	3.30E-01	4.04E-05	3.45E-04	1.90E-04	1.62E-03
2020	Chemical Delivery Trucks	4.04E-03	1.05E-03	1.62E-01	1.99E-05	5.18E-06	7.97E-04	1.34E-03	3.49E-04	5.37E-02	0.4	4.82E-04	1.93E-02	9.29E-05	3.72E-03	1.06E-04	4.23E-03	3.95E-03	1.58E-01	4.05E-06	1.62E-04	1.91E-05	7.63E-04
2021	Crude Trucks	3.51E-01	8.76E-02	2.07E+00	1.89E-03	4.72E-04	1.12E-02	1.58E-01	3.95E-02	9.34E-01	38.9	3.60E-02	2.13E-01	7.28E-03	4.31E-02	8.29E-03	4.90E-02	3.43E-01	2.03E+00	3.87E-04	2.29E-03	1.81E-03	1.07E-02
2021	Coke Trucks	6.11E-01	1.53E-01	3.50E+00	3.12E-03	7.79E-04	1.79E-02	2.29E-01	5.72E-02	1.31E+00	63.7	6.94E-02	3.98E-01	1.36E-02	7.79E-02	1.55E-02	8.86E-02	5.98E-01	3.43E+00	6.34E-04	3.64E-03	2.98E-03	1.71E-02
2021	Sulfur Trucks	3.34E-02	8.36E-03	3.38E-01	1.68E-04	4.20E-05	1.70E-03	1.19E-02	2.98E-03	1.20E-01	3.4	3.88E-03	3.92E-02	7.55E-04	7.62E-03	8.59E-04	8.68E-03	3.27E-02	3.30E-01	3.42E-05	3.45E-04	1.61E-04	1.62E-03
2021	Chemical Delivery Trucks	4.04E-03	1.05E-03	1.62E-01	1.99E-05	5.18E-06	7.97E-04	1.34E-03	3.49E-04	5.37E-02	0.4	4.82E-04	1.93E-02	9.29E-05	3.72E-03	1.06E-04	4.23E-03	3.95E-03	1.58E-01	4.05E-06	1.62E-04	1.91E-05	7.63E-04
		ROG + NOX			DPM			PM10			CO2e	CO		ROG		TOG		Nox		SO2		PM2.5	
		tons/year	tons/quarter	lb/day	tons/year	tons/quarter	lb/day	tons/year	tons/quarter	lb/day	MT/yr	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day
2017		1.40E+00	3.49E-01	7.93E+00	7.26E-03	1.82E-03	4.12E-02	5.59E-01	1.40E-01	3.16E+00	1.49E+02	1.53E-01	8.72E-01	3.04E-02	1.72E-01	3.46E-02	1.96E-01	1.37E+00	7.76E+00	1.48E-03	8.40E-03	6.94E-03	3.94E-02
2018		1.20E+00	3.00E-01	6.89E+00	6.20E-03	1.55E-03	3.55E-02	4.71E-01	1.18E-01	2.69E+00	1.27E+02	1.33E-01	7.66E-01	2.63E-02	1.51E-01	2.99E-02	1.72E-01	1.17E+00	6.74E+00	1.26E-03	7.25E-03	5.93E-03	3.40E-02
2019		1.22E+00	3.06E-01	7.18E+00	6.40E-03	1.60E-03	3.76E-02	5.03E-01	1.26E-01	2.95E+00	1.31E+02	1.32E-01	7.78E-01	2.63E-02	1.55E-01	2.99E-02	1.76E-01	1.20E+00	7.03E+00	1.31E-03	7.68E-03	6.13E-03	3.60E-02
2020		1.39E+00	3.48E-01	8.13E+00	7.24E-03	1.81E-03	4.22E-02	5.59E-01	1.40E-01	3.25E+00	1.48E+02	1.52E-01	8.93E-01	3.02E-02	1.77E-01	3.44E-02	2.01E-01	1.36E+00	7.95E+00	1.48E-03	8.62E-03	6.92E-03	4.04E-02
2021		9.99E-01	2.50E-01	6.08E+00	5.19E-03	1.30E-03	3.15E-02	4.00E-01	1.00E-01	2.42E+00	1.06E+02	1.10E-01	6.69E-01	2.17E-02	1.32E-01	2.47E-02	1.51E-01	9.78E-01	5.94E+00	1.06E-03	6.43E-03	4.97E-03	3.02E-02
Average		**1.24E+00**	**3.11E-01**	**7.24E+00**	**6.46E-03**	**1.62E-03**	**3.76E-02**	**4.99E-01**	**1.25E-01**	**2.90E+00**	**132.33**	**1.36E-01**	**7.96E-01**	**2.70E-02**	**1.57E-01**	**3.07E-02**	**1.79E-01**	**1.22E+00**	**7.08E+00**	**1.32E-03**	**7.68E-03**	**6.18E-03**	**3.60E-02**

Table 8.5 Facility Trucking Baseline Offsite Emission Calculations within SLOC

Year		ROG + NOX			DPM			PM10 (Tire/Brake/Dust)			CO2e	CO		ROG		TOG		Nox		SO2		PM2.5	
	Truck Type	ton/yr	ton/quarter	lb/day	tons/year	tons/quarter	lb/day	tons/year	tons/quarter	lb/day	MT/yr	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day	tons/year	lb/day
2017	Crude Trucks	1.01E+01	2.52E+00	5.64E+01	7.00E-02	1.75E-02	3.91E-01	8.59E+00	2.15E+00	4.80E+01	1470.4	4.68E-01	2.61E+00	1.34E-01	7.51E-01	1.53E-01	8.55E-01	9.97E+00	5.57E+01	1.46E-02	8.19E-02	6.69E-02	3.74E-01
2017	Coke Trucks	2.23E+01	5.57E+00	1.24E+02	1.54E-01	3.86E-02	8.60E-01	1.90E+01	4.74E+00	1.06E+02	3244.7	1.03E+00	5.74E+00	2.96E-01	1.65E+00	3.37E-01	1.88E+00	2.20E+01	1.22E+02	3.23E-02	1.80E-01	1.48E-01	8.23E-01
2017	Sulfur Trucks	8.00E-01	2.02E-01	4.43E+00	5.54E-03	1.40E-03	3.07E-02	6.81E-01	1.72E-01	3.77E+00	116.5	3.70E-02	2.05E-01	1.06E-02	5.89E-02	1.21E-02	6.71E-02	7.90E-01	4.37E+00	1.16E-03	6.43E-03	5.30E-03	2.94E-02
2017	Chemical Delivery Trucks	1.93E-02	5.02E-03	7.73E-01	1.27E-04	3.31E-05	5.10E-03	1.47E-02	3.82E-03	5.88E-01	2.7	1.15E-03	4.60E-02	2.91E-04	1.17E-02	3.32E-04	1.33E-02	1.90E-02	7.61E-01	2.66E-05	1.06E-03	1.22E-04	4.88E-03
2018	Crude Trucks	6.30E+00	1.57E+00	3.47E+01	4.36E-02	1.09E-02	2.41E-01	5.36E+00	1.34E+00	2.95E+01	916.6	2.92E-01	1.61E+00	8.38E-02	4.62E-01	9.54E-02	5.26E-01	6.21E+00	3.43E+01	9.13E-03	5.04E-02	4.17E-02	2.30E-01
2018	Coke Trucks	2.11E+01	5.28E+00	1.20E+02	1.46E-01	3.66E-02	8.29E-01	1.80E+01	4.49E+00	1.02E+02	3074.5	9.77E-01	5.54E+00	2.81E-01	1.59E+00	3.20E-01	1.81E+00	2.08E+01	1.18E+02	3.06E-02	1.74E-01	1.40E-01	7.93E-01
2018	Sulfur Trucks	1.60E+00	4.01E-01	8.87E+00	1.11E-02	2.78E-03	6.14E-02	1.36E+00	3.41E-01	7.55E+00	233.1	7.40E-02	4.10E-01	2.13E-02	1.18E-01	2.42E-02	1.34E-01	1.58E+00	8.75E+00	2.32E-03	1.29E-02	1.06E-02	5.88E-02
2018	Chemical Delivery Trucks	1.93E-02	5.02E-03	7.73E-01	1.27E-04	3.31E-05	5.10E-03	1.47E-02	3.82E-03	5.88E-01	2.7	1.15E-03	4.60E-02	2.91E-04	1.17E-02	3.32E-04	1.33E-02	1.90E-02	7.61E-01	2.66E-05	1.06E-03	1.22E-04	4.88E-03
2019	Crude Trucks	1.27E+01	3.19E+00	7.38E+01	8.83E-02	2.21E-02	5.11E-01	1.08E+01	2.71E+00	6.28E+01	1856.0	5.91E-01	3.42E+00	1.70E-01	9.82E-01	1.93E-01	1.12E+00	1.26E+01	7.28E+01	1.85E-02	1.07E-01	8.45E-02	4.89E-01
2019	Coke Trucks	1.47E+01	3.68E+00	8.42E+01	1.02E-01	2.55E-02	5.84E-01	1.25E+01	3.13E+00	7.17E+01	2143.0	6.81E-01	3.90E+00	1.96E-01	1.12E+00	2.23E-01	1.27E+00	1.45E+01	8.31E+01	2.13E-02	1.22E-01	9.75E-02	5.58E-01
2019	Sulfur Trucks	7.36E-01	1.84E-01	4.43E+00	5.10E-03	1.27E-03	3.07E-02	6.26E-01	1.57E-01	3.77E+00	107.2	3.40E-02	2.05E-01	9.78E-03	5.89E-02	1.11E-02	6.71E-02	7.26E-01	4.37E+00	1.07E-03	6.43E-03	4.88E-03	2.94E-02
2019	Chemical Delivery Trucks	1.93E-02	5.02E-03	7.73E-01	1.27E-04	3.31E-05	5.10E-03	1.47E-02	3.82E-03	5.88E-01	2.7	1.15E-03	4.60E-02	2.91E-04	1.17E-02	3.32E-04	1.33E-02	1.90E-02	7.61E-01	2.66E-05	1.06E-03	1.22E-04	4.88E-03
2020	Crude Trucks	1.07E+01	2.67E+00	6.08E+01	7.41E-02	1.85E-02	4.21E-01	9.10E+00	2.28E+00	5.17E+01	1557.3	4.95E-01	2.82E+00	1.42E-01	8.09E-01	1.62E-01	9.21E-01	1.06E+01	6.00E+01	1.55E-02	8.82E-02	7.09E-02	4.03E-01
2020	Coke Trucks	2.12E+01	5.30E+00	1.20E+02	1.47E-01	3.67E-02	8.29E-01	1.80E+01	4.51E+00	1.02E+02	3085.2	9.80E-01	5.54E+00	2.82E-01	1.59E+00	3.21E-01	1.81E+00	2.09E+01	1.18E+02	3.07E-02	1.74E-01	1.40E-01	7.93E-01
2020	Sulfur Trucks	1.04E+00	2.59E-01	8.87E+00	7.19E-03	1.80E-03	6.14E-02	8.83E-01	2.21E-01	7.55E+00	151.1	4.80E-02	4.10E-01	1.38E-02	1.18E-01	1.57E-02	1.34E-01	1.02E+00	8.75E+00	1.50E-03	1.29E-02	6.88E-03	5.88E-02
2020	Chemical Delivery Trucks	1.93E-02	5.02E-03	7.73E-01	1.27E-04	3.31E-05	5.10E-03	1.47E-02	3.82E-03	5.88E-01	2.7	1.15E-03	4.60E-02	2.91E-04	1.17E-02	3.32E-04	1.33E-02	1.90E-02	7.61E-01	2.66E-05	1.06E-03	1.22E-04	4.88E-03
2021	Crude Trucks	7.35E+00	1.84E+00	4.34E+01	5.09E-02	1.27E-02	3.01E-01	6.25E+00	1.56E+00	3.69E+01	1069.6	3.40E-01	2.01E+00	9.77E-02	5.78E-01	1.11E-01	6.58E-01	7.25E+00	4.28E+01	1.07E-02	6.30E-02	4.87E-02	2.88E-01
2021	Coke Trucks	1.55E+01	3.87E+00	8.87E+01	1.07E-01	2.68E-02	6.14E-01	1.32E+01	3.29E+00	7.55E+01	2252.1	7.15E-01	4.10E+00	2.06E-01	1.18E+00	2.34E-01	1.34E+00	1.53E+01	8.75E+01	2.24E-02	1.29E-01	1.03E-01	5.88E-01
2021	Sulfur Trucks	8.78E-01	2.19E-01	8.87E+00	6.08E-03	1.52E-03	6.14E-02	7.47E-01	1.87E-01	7.55E+00	127.8	4.06E-02	4.10E-01	1.17E-02	1.18E-01	1.33E-02	1.34E-01	8.66E-01	8.75E+00	1.27E-03	1.29E-02	5.82E-03	5.88E-02
2021	Chemical Delivery Trucks	1.93E-02	5.02E-03	7.73E-01	1.27E-04	3.31E-05	5.10E-03	1.47E-02	3.82E-03	5.88E-01	2.7	1.15E-03	4.60E-02	2.91E-04	1.17E-02	3.32E-04	1.33E-02	1.90E-02	7.61E-01	2.66E-05	1.06E-03	1.22E-04	4.88E-03
		ROG + NOX			**DPM**			**PM10**			**CO2e**	**CO**		**ROG**		**TOG**		**Nox**		**SO2**		**PM2.5**	
		ton/yr	**ton/quarter**	**lb/day**	**tons/year**	**tons/quarter**	**lb/day**	**tons/year**	**tons/quarter**	**lb/day**	**MT/yr**	**tons/year**	**lb/day**	**tons/year**	**lb/day**	**tons/year**	**lb/day**	**tons/year**	**lb/day**	**tons/year**	**lb/day**	**tons/year**	**lb/day**
2017		3.32E+01	8.30E+00	1.86E+02	2.30E-01	5.75E-02	1.29E+00	2.83E+01	7.06E+00	1.58E+02	4.83E+03	1.54E+00	8.61E+00	4.42E-01	2.47E+00	5.03E-01	2.81E+00	3.28E+01	1.83E+02	4.82E-02	2.69E-01	2.20E-01	1.23E+00
2018		2.90E+01	7.26E+00	1.64E+02	2.01E-01	5.03E-02	1.14E+00	2.47E+01	6.18E+00	1.40E+02	4.23E+03	1.34E+00	7.60E+00	3.86E-01	2.18E+00	4.39E-01	2.49E+00	2.86E+01	1.62E+02	4.21E-02	2.38E-01	1.92E-01	1.09E+00
2019		2.82E+01	7.06E+00	1.63E+02	1.95E-01	4.89E-02	1.13E+00	2.40E+01	6.00E+00	1.39E+02	4.11E+03	1.31E+00	7.57E+00	3.75E-01	2.17E+00	4.27E-01	2.47E+00	2.78E+01	1.61E+02	4.09E-02	2.37E-01	1.87E-01	1.08E+00
2020		3.29E+01	8.24E+00	1.90E+02	2.28E-01	5.71E-02	1.32E+00	2.80E+01	7.01E+00	1.62E+02	4.80E+03	1.52E+00	8.81E+00	4.38E-01	2.53E+00	4.99E-01	2.88E+00	3.25E+01	1.88E+02	4.78E-02	2.76E-01	2.18E-01	1.26E+00
2021		2.37E+01	5.93E+00	1.42E+02	1.64E-01	4.11E-02	9.82E-01	2.02E+01	5.04E+00	1.21E+02	3.45E+03	1.10E+00	6.57E+00	3.15E-01	1.89E+00	3.59E-01	2.15E+00	2.34E+01	1.40E+02	3.44E-02	2.06E-01	1.57E-01	9.39E-01
Average		**2.94E+01**	**7.36E+00**	**1.69E+02**	**2.04E-01**	**5.10E-02**	**1.17E+00**	**2.50E+01**	**6.26E+00**	**1.44E+02**	**4283.65**	**1.36E+00**	**7.83E+00**	**3.91E-01**	**2.25E+00**	**4.45E-01**	**2.56E+00**	**2.90E+01**	**1.67E+02**	**4.27E-02**	**2.45E-01**	**1.95E-01**	**1.12E+00**

Conversions

Conversions	
453.592	g/lb
2000	lb/ton
907184	g/ton
2204.62	lb/metric ton

Working Days	
52	weeks/year
365	days/year
90	days/quarter
7	days/week

Truck and Rail Summary Combined Baseline Emission Calculations

Table 8.6 Truck Baseline Summary, tpy, combined onsite and offsite

Year	ROG	Nox	ROG+Nox	CO	SO2	PM10	DPM	PM2.5
2017	4.72E-01	3.41E+01	34.6	1.69E+00	4.96E-02	28.8	0.24	2.27E-01
2018	4.12E-01	2.98E+01	30.2	1.48E+00	4.34E-02	25.2	0.21	1.98E-01
2019	4.02E-01	2.90E+01	29.4	1.44E+00	4.22E-02	24.5	0.20	1.93E-01
2020	4.68E-01	3.39E+01	34.3	1.68E+00	4.93E-02	28.6	0.24	2.25E-01
2021	3.37E-01	2.44E+01	24.7	1.21E+00	3.54E-02	20.6	0.17	1.62E-01

Rail Summary, tpy, within SLOC only

Year	ROG	NOx	ROG+Nox	CO	SOx	PM10	DPM	PM2.5
2017	6.08E-03	3.69E-03	9.78E-03	3.90E-02	1.41E-04	3.69E-03	3.69E-03	3.58E-03
2018	8.33E-03	5.06E-03	1.34E-02	5.35E-02	1.93E-04	5.06E-03	5.06E-03	4.91E-03
2019	6.39E-03	3.88E-03	1.03E-02	4.10E-02	1.48E-04	3.88E-03	3.88E-03	3.76E-03
2020	3.92E-03	2.38E-03	6.30E-03	2.52E-02	9.07E-05	2.38E-03	2.38E-03	2.31E-03
2021	6.53E-03	3.96E-03	1.05E-02	4.19E-02	1.51E-04	3.96E-03	3.96E-03	3.84E-03

Truck and Rail, tpy, within SLOC only

Year	ROG	NOx	ROG+Nox	CO	SOx	PM10	DPM	PM2.5
2017	0.5	34.1	34.6	1.7	0.0	28.8	0.24	0.2
2018	0.4	29.8	30.2	1.5	0.0	25.2	0.21	0.2
2019	0.4	29.0	29.5	1.5	0.0	24.5	0.21	0.2
2020	0.5	33.9	34.3	1.7	0.0	28.6	0.24	0.2
2021	0.3	24.4	24.7	1.2	0.0	20.6	0.17	0.2
avg	0.4	30.2	30.7	1.5	0.0	25.5	0.21	0.2
avg tpq	0.1	7.6	7.7	0.4	0.01	6.38	0.05	0.1

Truck and Rail, pounds/day DAILY , within SLOC only

Year	ROG	NOx	ROG+Nox	CO	SOx	PM10	DPM	PM2.5
2017	2.8	195.3	198.1	10.6	0.3	161.3	1.4	1.4
2018	2.5	173.8	176.4	9.7	0.2	142.4	1.3	1.2
2019	2.5	172.0	174.4	9.3	0.2	141.9	1.3	1.2
2020	3.0	201.7	204.7	11.3	0.3	165.1	1.5	1.4
2021	2.2	149.6	151.8	8.2	0.2	123.0	1.1	1.1
avg	2.6	178.5	181.1	9.8	0.3	146.7	1.3	1.3

Onsite Vehicles Only

	ROG	NO_x	ROG + NO_x	CO	SO_2	PM_{10}	DPM	$PM_{2.5}$
Avg tpy	0.03	1.22	1.24	0.14	0.00	0.50	0.01	0.01
Avg TPQ	0.007	0.304	0.311	0.034	0.000	0.125	0.002	0.002
Avg lb/day	0.16	7.08	7.24	0.80	0.01	2.90	0.04	0.04
Rail								
Avg tpy	0.01	0.16	0.16	0.04	0.00	0.00	0.00	0.00
Avg TPQ	0.00	0.04	0.04	0.01	0.00	0.00	0.00	0.00
Avg lb/day	0.19	4.66	4.85	1.20	0.00	0.11	0.11	0.11
Truck+Rail								
Avg TPQ	0.01	0.34	0.35	0.04	0.00	0.13	0.003	0.002
Avg lb/day	0.34	11.75	12.09	1.99	0.01	3.01	0.15	0.15

Offsite

Trucks	ROG	NO_x	ROG + NO_x	CO	SO_2	PM_{10}	DPM	$PM_{2.5}$
Avg tpy	0.39	29.03	29.42	1.36	0.04	25.03	0.20	0.19
Avg TPQ	0.098	7.257	7.357	0.340	0.011	6.260	0.051	0.049
Avg lb/day	2.25	166.74	168.99	7.83	0.25	143.73	1.17	1.12
Rail								
Avg tpy								
Avg TPQ								
Avg lb/day								
Truck+Rail								
Avg TPQ								
Avg lb/day								

Rail Baseline Emissions Summary

Table 9.1 Annual Locomotive Emissions in SLOC

Year	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	ton/year						MT/year
2017	1.52E-01	6.08E-03	3.69E-03	3.58E-03	3.90E-02	1.41E-04	1.37E+01
2018	2.08E-01	8.33E-03	5.06E-03	4.91E-03	5.35E-02	1.93E-04	1.88E+01
2019	1.60E-01	6.39E-03	3.88E-03	3.76E-03	4.10E-02	1.48E-04	1.44E+01
2020	9.79E-02	3.92E-03	2.38E-03	2.31E-03	2.52E-02	9.07E-05	8.84E+00
2021	1.63E-01	6.53E-03	3.96E-03	3.84E-03	4.19E-02	1.51E-04	1.47E+01
Average	**1.56E-01**	**6.25E-03**	**3.80E-03**	**3.68E-03**	**4.01E-02**	**1.45E-04**	**1.41E+01**

Table 9.2 Daily Locomotive Emissions in SLOC

Year	Daily Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	pounds/day						
2017	4.24E+00	1.70E-01	1.03E-01	1.00E-01	1.09E+00	3.93E-03	4.22E+02
2018	5.20E+00	2.08E-01	1.27E-01	1.23E-01	1.34E+00	4.82E-03	5.18E+02
2019	3.85E+00	1.54E-01	9.38E-02	9.09E-02	9.90E-01	3.57E-03	3.83E+02
2020	6.17E+00	2.47E-01	1.50E-01	1.46E-01	1.58E+00	5.71E-03	6.14E+02
2021	3.85E+00	1.54E-01	9.38E-02	9.09E-02	9.90E-01	3.57E-03	3.83E+02
Average	**4.66E+00**	**1.87E-01**	**1.13E-01**	**1.10E-01**	**1.20E+00**	**4.32E-03**	**4.64E+02**

Trip Information

Table 9.3 Facility Rail Baseline Shipment Information

Year	Quarterly			Daily		
	Number Railcars1	Number of Trains2	Average Train Load4	Average Daily Number of Railcars during Maximum Week3	Number of Trains2	Daily Average Train Load4
	no. rail cars	no. trains	tons/train/RT	no. railcars/day	no. trains/day	tons/train/RT
2017	99	13	1023	11	2	743
2018	135	17	1072	27	4	911
2019	104	13	1075	10	2	675
2020	64	8	1072	8	1	1080
2021	106	14	1019	10	2	675
Average	101	13	1052	13	2	817
Average Annual	405	52	1052			

Notes:

1. The quarterly number of railcars is based on the annual total railcar shipments divided by 4.
2. The number of rail cars per train is based on estimated locomotive tow capacity (tons/locomotive), assuming a 2,000 ton capacity and weight of rail car.

8	rail cars/train

3. The average daily number of railcars is calculated as the average number of railcars for shipments that occurred during the corresponding year.
4. Train load calculation assumptions

10	ton/car average tons	Empty rail car https://www.up.com/customers/all/equipment/descriptions/gondolas/index.htm
250	waste/rail car	Capacity of railcar (100 cubic yards [cy]) and estimated density of soil (3 g/cm3 = 5000 lb/cy)
260	total tons/rail car	Loaded flat rail car
135	tons/rail car	Average rail car load for one RT (assumes loaded on way there and unloaded on way back)

The average train load is based on the assumption that the train is fully loaded on the way to the waste disposal facility and unloaded (only empty rail cars) on the way back. The average weight of the train is used for the average round trip load.

Table 9.4 Rail Route Information within SLOC

Trip Number	One-way Miles	Round Trip Miles	Total ton-miles	Total ton-mile/yr	Ton-mile/day
	VMT	VMT/RT	ton-miles/qtr	ton-mile/yr	ton-mile/day
2017	5.0	10	132975	531900	7425
2018	5.0	10	182250	729000	9113
2019	5.0	10	139725	558900	6750
2020	5.0	10	85725	342900	10800
2021	5.0	10	142695	570780	6750

Notes:

1. Total ton-miles/yr assumes peak quarter transportation occurs throughout the year (4 quarters).
2. Ton-miles/day is based on maximum week of railcars during peak quarter.
3. One way miles includes 0.5 miles onsite and 4.5 miles between site and SLOC-SBC line

Emission Factors

Table 9.5 Locomotive Emission Factors

Engine Type	Unit	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
Large line haul	g/gal	103.60	4.15	2.52	2.44	26.62	0.10	10307.48
Large line haul	g/ton-mile	0.26	0.01	0.01	0.01	0.07	0.00	25.77

Notes:

Large Line Haul Notes

1. NOx, PM10, ROG, and PM2.5 emission factors give the expected fleet average emission factors by calendar year. For calendar year specific emission factors (NOx, PM10, ROG (HC)), the average of calendar years 2017-2021 is used.

2. NOx and PM10 emission factors were taken from Tables 5 and 6 of EPA document EPA-420-F-09-025.

General Notes

1. Source of NOx, PM10, PM2.5, ROG, CO, and SO2 emission factors and derivations: EPA document Emission Factors for Locomotives (EPA-420-F-09-025; https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100500B.pdf)

2. ROG emission factors were calculated by multiplying the HC emission factors found in Table 7 of EPA-420-F-09-025 by a factor of 1.053 according to guidance in the document.

3. CO emission factors were calculated based on the CO emission factor in Tables 1 and 2 for large line and switching, respectively, and the conversion factors in Table 3 of EPA-420-F-09-025. The CO emission factor was developed in the context of adopting new emission standards, which, for CO, were intended to cap CO emissions at pre-control levels and resulted in a projection of CO emission factors remaining the same for all tiers of emission standards. Recent testing also suggests that emission controls designed to reduce PM and HC emissions are also reducing CO emissions, according to EPA-420-F-09-025. As such, the CO emission factor presents a conservative estimate to use for calculating CO emissions.

4. PM2.5 emission factors were calculated by multiplying PM10 emissions by a factor of 0.97, following guidance in EPA-420-F-09-025.

5. SO2 emission factors were calculated with the below conversions/assumptions (calculation method in EPA document, derived from NONROAD Technical Document NR-009c). The assumption of 100% conversion of sulfur in fuel to SO2 is a conservative estimate, as the actual fraction of fuel sulfur emitted as SO2 may be as low as 95 percent, according to EPA-420-F-09-025.

7.05	Fuel density (lb/gal)
453.592	g/lb
100%	sulfur in fuel to SO2 conversion
2	g SO2/ g S
15	sulfur content (ppm) - ultra low sulfur fuel

Equation: SO2 (g/gal) = (fuel density [lb/gal]) x (conversion factor [g/lb]) x (64 g SO2/32 g S) x (S content of fuel [ppm])

6. CO2, CH4, and N2O emission factors were derived from 2018 EPA Emission Factors for Greenhouse Gas Inventories (https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf)

CO2 from Table 2, Diesel Fuel	10210	g CO2/gallon fuel
CH4 from Table 5, Diesel Locomotives	0.8	g CO2/gallon fuel
N2O from Table 5, Diesel Locomotives	0.26	g CO2/gallon fuel

7. CO2e was calculated using global warming potentials (GWP) below, taken from IPCC Fifth Assessment Report 2014, Working Group 1 Climate Change 2013: The Physical Science Basis (Chapter 8)

CO2	1
CH4	25
N2O	298

8. The conversion from g/gal to g/ton-mile is 400 ton-miles/gal, as indicated in EPA-420-F-09-025.

Rail Baseline Emission Calculations

Table 9.6 Facility Rail Baseline Annual Emissions Calculations within SLOC

Year	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	ton/year						MT/year
2017	1.52E-01	6.08E-03	3.69E-03	3.58E-03	3.90E-02	1.41E-04	1.37E+01
2018	2.08E-01	8.33E-03	5.06E-03	4.91E-03	5.35E-02	1.93E-04	1.88E+01
2019	1.60E-01	6.39E-03	3.88E-03	3.76E-03	4.10E-02	1.48E-04	1.44E+01
2020	9.79E-02	3.92E-03	2.38E-03	2.31E-03	2.52E-02	9.07E-05	8.84E+00
2021	1.63E-01	6.53E-03	3.96E-03	3.84E-03	4.19E-02	1.51E-04	1.47E+01
Average	**1.56E-01**	**6.25E-03**	**3.80E-03**	**3.68E-03**	**4.01E-02**	**1.45E-04**	**1.41E+01**

Annual Emission Calculation Assumptions

453.592	g/lb
2000	lb/ton
907184	g/ton
1000000	g/metric ton (MT)

Table 9.7 Facility Rail Baseline Daily Emissions Calculations within SLOC only

Year	Daily Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	pounds/day						
2017	4.24E+00	1.70E-01	1.03E-01	1.00E-01	1.09E+00	3.93E-03	4.22E+02
2018	5.20E+00	2.08E-01	1.27E-01	1.23E-01	1.34E+00	4.82E-03	5.18E+02
2019	3.85E+00	1.54E-01	9.38E-02	9.09E-02	9.90E-01	3.57E-03	3.83E+02
2020	6.17E+00	2.47E-01	1.50E-01	1.46E-01	1.58E+00	5.71E-03	6.14E+02
2021	3.85E+00	1.54E-01	9.38E-02	9.09E-02	9.90E-01	3.57E-03	3.83E+02
Average	**4.66E+00**	**1.87E-01**	**1.13E-01**	**1.10E-01**	**1.20E+00**	**4.32E-03**	**4.64E+02**

Annual Emissions within CA

Year	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	ton/year						MT/year
2017	6.76E+00	2.71E-01	1.64E-01	1.59E-01	1.74E+00	6.26E-03	6.10E+02
2018	9.26E+00	3.71E-01	2.25E-01	2.19E-01	2.38E+00	8.58E-03	8.36E+02
2019	7.10E+00	2.84E-01	1.73E-01	1.68E-01	1.82E+00	6.58E-03	6.41E+02
2020	4.36E+00	1.74E-01	1.06E-01	1.03E-01	1.12E+00	4.03E-03	3.93E+02
2021	7.25E+00	2.90E-01	1.76E-01	1.71E-01	1.86E+00	6.72E-03	6.55E+02
Average	**6.95E+00**	**2.78E-01**	**1.69E-01**	**1.64E-01**	**1.78E+00**	**6.43E-03**	**6.27E+02**

RT Miles within CA ->	445	includes SLOC, estimates to POLA

Table 10.1 HARP2 Assumptions Project - Unmitigated

Peak day fuel use, gal	749	see GHG calcs for fuel use calcs
hours/day	8	
peak hour emissions used to calculate acute impacts.		
Annual emissions used for cancer and chronic and uses DPM only		
Peak Mitigated with Tier 4i	60.0	DPM pounds/qrtr
Peak Unmitigated	160.0	DPM pounds/qrtr
Peak duration	3	months
Prepeak Period, mo	3	the period of abovegrnd only
Post peak belowGnd period, mo	30	the period of below ground/remed only
Remediation only duration	0	the period of remed only
Fraction pre-peak reduction	0.570	taken from equipment tab in project calcs
Fraction post peak reduction	0.750	taken from equipment tab in project calcs
Fraction remediation only reduction	0.620	taken from equipment tab in project calcs
Rail DPM Annual Average	3.6	lbs/yr, assumes 1 mile onsite
Mitigated with Tier 4i, total 3 yr	247	total
Unmitigated, total 3 yr	640	total
Mitigated with Tier 4i, annual	82	DPM pounds/year 3 year average
Unmitigated, annual	213	DPM pounds/year 3 year average
Mitigated flag (1=mit, 0=unmit)	0	
DPM Value used in inputs	213	DPM, lbs/yr 3 yr avg
Fug Dust	25133	value used in inputs, pounds/year, 3 yr avg
Fug Dust	12.08	value used in inputs, pounds/hr

Table 10.1 HARP2 Inputs Project - Unmitigated

Source	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual lbs/yr	PeakHr lbs/hr	MWAF	Notes
1	0	0	9901	DieselExhPM	1	213.2	0	1	DPM Only
1	0	0	1151	PAHsnonNapth	1	0	7.9E-04	1	DPM Only
1	0	0	50000	Formaldehyde	1	0	2.4E-02	1	DPM Only
1	0	0	71432	Benzene	1	0	2.6E-03	1	DPM Only
1	0	0	75070	Acetaldehyde	1	0	1.1E-02	1	DPM Only
1	0	0	91203	PAHsNapth	1	0	2.8E-04	1	DPM Only
1	0	0	100414	Ethylbenzene	1	0	1.5E-04	1	DPM Only
1	0	0	106990	13Butadiene	1	0	3.1E-03	1	DPM Only
1	0	0	107028	Acrolein	1	0	4.8E-04	1	DPM Only
1	0	0	108883	Toluene	1	0	1.5E-03	1	DPM Only
1	0	0	110543	Hexane	1	0	3.8E-04	1	DPM Only
1	0	0	1330207	Xylenes	1	0	6.0E-04	1	DPM Only
1	0	0	7439921	Lead	1	36	1.7E-02	1	DPM and dust
1	0	0	7439965	Manganese	1	0	4.4E-05	1	DPM Only
1	0	0	7439976	Mercury	1	0	2.8E-05	1	DPM Only
1	0	0	7440020	Nickel	1	3	1.3E-03	1	DPM and dust
1	0	0	7440382	Arsenic	1	1	3.0E-04	1	DPM and dust
1	0	0	7440439	Cadmium	1	1	4.6E-04	1	DPM and dust
1	0	0	7440508	Copper	1	0	5.8E-05	1	DPM Only
1	0	0	7647010	Hydrochloricacid	1	0	2.6E-03	1	DPM Only
1	0	0	7664417	Ammonia	1	0	2.7E-01	1	DPM Only
1	0	0	7782492	Selenium	1	0	3.1E-05	1	DPM Only
1	0	0	18540299	Hexchromium	1	0	1.4E-06	1	DPM Only
1	0	0	7429905	Aluminum	1	3317	1.6E+00	1	Dust Only
1	0	0	7440393	Barium	1	40	2.0E-02	1	Dust Only
1	0	0	7440417	Beryllium	1	0	2.0E-05	1	Dust Only
1	0	0	7440473	Chromiumtotal	1	10	5.0E-03	1	Dust Only
1	0	0	7440508	Copper	1	4	1.8E-03	1	Dust Only
1	0	0	7439965	Manganese	1	40	2.0E-02	1	Dust Only
1	0	0	7782492	Selenium	1	0	2.0E-05	1	Dust Only
1	0	0	1175	Silicacrystalline5	1	4120	2.0E+00	1	Dust Only
1	0	0	7440666	Zinc	1	25	1.2E-02	1	Dust Only

Emissions Factors Diesel Combustion

Toxic Compound	CAS NO.	SCAQMD 2016 EF, lb/1000 gal	Tier 4 EF, lb/1000 gal	Tier 3 with 90% Catalyst EF, lb/1000 gal
PAHs non-Napth	1151	0.0559	0.008385	0.00559
DPM	9901	-	-	-
Formaldehyde	50000	1.7261	0.258915	0.17261
Benzene	71432	0.1863	0.027945	0.01863
Acetaldehyde	75070	0.7833	0.117495	0.07833
PAHs Napth	91203	0.0197	0.002955	0.00197
Ethyl benzene	100414	0.0109	0.001635	0.00109
1,3-Butadiene	106990	0.2174	0.03261	0.02174
Acrolein	107028	0.0339	0.005085	0.00339
Toluene	108883	0.1054	0.01581	0.01054
Hexane	110543	0.0269	0.004035	0.00269
Xylenes	1330207	0.0424	0.00636	0.00424
Lead	7439921	0.0083	0.001245	0.00083
Manganese	7439965	0.0031	0.000465	0.00031
Mercury and mercury compounds	7439976	0.002	0.0003	0.0002
Nickel	7440020	0.0039	0.000585	0.00039
Arsenic	7440382	0.0016	0.00024	0.00016
Cadmium	7440439	0.0015	0.000225	0.00015
Copper	7440508	0.0041	0.000615	0.00041
Hydrochloric acid	7647010	0.1863	0.027945	0.01863
Ammonia*	7664417	2.9	2.9	2.9
Selenium and compounds	7782492	0.0022	0.00033	0.00022
Hexavalent chromium	18540299	0.0001	0.000015	0.00001

Use of Tier 4 allows for a fraction reduction of *0.85*

Use of Tier 3 with 90% catalyst allows for a fraction reduction of *0.90*

Source: SCAQMD 2016

Used Tier 4 for acute DPM as most engines are Tier 4 by 2025

Emission Factors Fugitive Dust TAC

Metal	CAS	lb/lb-PM30
Aluminum	7429905	0.080509
Arsenic	7440382	0.000014
Barium	7440393	0.000979
Beryllium	7440417	0.000001
Cadmium	7440439	0.000022
Chromium (total)	7440473	0.000248
Copper	7440508	0.000088
Lead	7439921	0.000867
Manganese	7439965	0.000973
Nickel	7440020	0.000065
Selenium	7782492	0.000001
Silica, crystalline5	1175	0.100000
Zinc	7440666	0.000605

CARB TAC PM Profiles, profile 394, CARB 2018

lbs PM30/PM10 based on CEIDARS ratio fugitive dust unpaved roads (0.594)

Pm10 Fugitive Dust Emissions	25133	unmitigated, pounds/year, 3 yr avg
	12	unmitigated, pounds/hr
	2505	mitigated, pounds per year
	1.20	mitigated pounds/hr

Table 10.1 HARP2 Assumptions Project - Mitigated

Peak day fuel use, gal	749	see GHG calcs for fuel use calcs
hours/day	8	
peak hour emissions used to calculate acute impacts.		
Annual emissions used for cancer and chronic and uses DPM only		
Peak Mitigated with Tier 4i	60.0	DPM pounds/qrtr
Peak Unmitigated	160.0	DPM pounds/qrtr
Peak duration	3	months
Prepeak Period, mo	3	the period of abovegrnd only
Post peak belowGnd period, mo	30	the period of below ground/remed only
Remediation only duration	0	the period of remed only
Fraction pre-peak reduction	0.570	taken from equipment tab in project calcs
Fraction post peak reduction	0.750	taken from equipment tab in project calcs
Fraction remediation only reduction	0.620	taken from equipment tab in project calcs
Rail DPM Annual Average	3.6	lbs/yr, assumes 1 mile onsite
Mitigated with Tier 4i, total 3 yr	247	total
Unmitigated, total 3 yr	640	total
Mitigated with Tier 4i, annual	82	DPM pounds/year 3 year average
Unmitigated, annual	213	DPM pounds/year 3 year average
Mitigated flag (1=mit, 0=unmit)	1	
DPM Value used in inputs	82	DPM, lbs/yr 3 yr avg
Fug Dust	2505	value used in inputs, pounds/year, 3 yr avg
Fug Dust	1.20	value used in inputs, pounds/hr

Table 10.1 HARP2 Inputs Project - Mitigated

Source	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual lbs/yr	PeakHr lbs/hr	MWAF	Notes
1	0	0	9901	DieselExhPM	1	82.2	0	1	DPM Only
1	0	0	1151	PAHsnonNapth	1	0	7.9E-04	1	DPM Only
1	0	0	50000	Formaldehyde	1	0	2.4E-02	1	DPM Only
1	0	0	71432	Benzene	1	0	2.6E-03	1	DPM Only
1	0	0	75070	Acetaldehyde	1	0	1.1E-02	1	DPM Only
1	0	0	91203	PAHsNapth	1	0	2.8E-04	1	DPM Only
1	0	0	100414	Ethylbenzene	1	0	1.5E-04	1	DPM Only
1	0	0	106990	13Butadiene	1	0	3.1E-03	1	DPM Only
1	0	0	107028	Acrolein	1	0	4.8E-04	1	DPM Only
1	0	0	108883	Toluene	1	0	1.5E-03	1	DPM Only
1	0	0	110543	Hexane	1	0	3.8E-04	1	DPM Only
1	0	0	1330207	Xylenes	1	0	6.0E-04	1	DPM Only
1	0	0	7439921	Lead	1	4	1.8E-03	1	DPM and dust
1	0	0	7439965	Manganese	1	0	4.4E-05	1	DPM Only
1	0	0	7439976	Mercury	1	0	2.8E-05	1	DPM Only
1	0	0	7440020	Nickel	1	0	1.8E-04	1	DPM and dust
1	0	0	7440382	Arsenic	1	0	5.0E-05	1	DPM and dust
1	0	0	7440439	Cadmium	1	0	6.5E-05	1	DPM and dust
1	0	0	7440508	Copper	1	0	5.8E-05	1	DPM Only
1	0	0	7647010	Hydrochloricacid	1	0	2.6E-03	1	DPM Only
1	0	0	7664417	Ammonia	1	0	2.7E-01	1	DPM Only
1	0	0	7782492	Selenium	1	0	3.1E-05	1	DPM Only
1	0	0	18540299	Hexchromium	1	0	1.4E-06	1	DPM Only
1	0	0	7429905	Aluminum	1	331	1.6E-01	1	Dust Only
1	0	0	7440393	Barium	1	4	2.0E-03	1	Dust Only
1	0	0	7440417	Beryllium	1	0	2.0E-06	1	Dust Only
1	0	0	7440473	Chromiumtotal	1	1	5.0E-04	1	Dust Only
1	0	0	7440508	Copper	1	0	1.8E-04	1	Dust Only
1	0	0	7439965	Manganese	1	4	2.0E-03	1	Dust Only
1	0	0	7782492	Selenium	1	0	2.0E-06	1	Dust Only
1	0	0	1175	Silicacrystalline5	1	411	2.0E-01	1	Dust Only
1	0	0	7440666	Zinc	1	2	1.2E-03	1	Dust Only

Emissions Factors Diesel Combustion

Toxic Compound	CAS NO.	SCAQMD 2016 EF, lb/1000 gal	Tier 4 EF, lb/1000 gal	Tier 3 with 90% Catalyst EF, lb/1000 gal
PAHs non-Napth	1151	0.0559	0.008385	0.00559
DPM	9901	-	-	-
Formaldehyde	50000	1.7261	0.258915	0.17261
Benzene	71432	0.1863	0.027945	0.01863
Acetaldehyde	75070	0.7833	0.117495	0.07833
PAHs Napth	91203	0.0197	0.002955	0.00197
Ethyl benzene	100414	0.0109	0.001635	0.00109
1,3-Butadiene	106990	0.2174	0.03261	0.02174
Acrolein	107028	0.0339	0.005085	0.00339
Toluene	108883	0.1054	0.01581	0.01054
Hexane	110543	0.0269	0.004035	0.00269
Xylenes	1330207	0.0424	0.00636	0.00424
Lead	7439921	0.0083	0.001245	0.00083
Manganese	7439965	0.0031	0.000465	0.00031
Mercury and mercury compounds	7439976	0.002	0.0003	0.0002
Nickel	7440020	0.0039	0.000585	0.00039
Arsenic	7440382	0.0016	0.00024	0.00016
Cadmium	7440439	0.0015	0.000225	0.00015
Copper	7440508	0.0041	0.000615	0.00041
Hydrochloric acid	7647010	0.1863	0.027945	0.01863
Ammonia*	7664417	2.9	2.9	2.9
Selenium and compounds	7782492	0.0022	0.00033	0.00022
Hexavalent chromium	18540299	0.0001	0.000015	0.00001

Use of Tier 4 allows for a fraction reduction of *0.85*

Use of Tier 3 with 90% catalyst allows for a fraction reduction of *0.90*

Source: SCAQMD 2016

Used Tier 4 for acute DPM as most engines are Tier 4 by 2025

Emission Factors Fugitive Dust TAC

Metal	CAS	lb/lb-PM30
Aluminum	7429905	0.080509
Arsenic	7440382	0.000014
Barium	7440393	0.000979
Beryllium	7440417	0.000001
Cadmium	7440439	0.000022
Chromium (total)	7440473	0.000248
Copper	7440508	0.000088
Lead	7439921	0.000867
Manganese	7439965	0.000973
Nickel	7440020	0.000065
Selenium	7782492	0.000001
Silica, crystalline5	1175	0.100000
Zinc	7440666	0.000605

CARB TAC PM Profiles, profile 394, CARB 2018

lbs PM30/PM10 based on CEIDARS ratio fugitive dust unpaved roads (0.594)

Pm10 Fugitive Dust Emissions	25133	unmitigated, pounds/year, 3 yr avg
	12	unmitigated, pounds/hr
	2505	mitigated, pounds per year
	1.20	mitigated pounds/hr

HARP Project Summary Report 11/18/2023 1:23:39 PM

PROJECT INFORMATION
HARP Version: 22118
Project Name: SMR_demo
Project Output Directory: C:\HARP2\Projects\SMR_demo
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):720000
Y (m):3880000
Zone:10
No. of Sources:1
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:32
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
1	0	0	9901	DieselExhPM	1	213.2	0	1
1	0	0	1151	PAHsnonNapth	1	0	0.000785045625	1
1	0	0	50000	Formaldehyde	1	0	0.024240916875	1
1	0	0	71432	Benzene	1	0	0.002616350625	1
1	0	0	75070	Acetaldehyde	1	0	0.011000469375	1
1	0	0	91203	PAHsNapth	1	0	0.000276661875	1
1	0	0	100414	Ethylbenzene	1	0	0.000153076875	1
1	0	0	106990	13Butadiene	1	0	0.00305311125	1
1	0	0	107028	Acrolein	1	0	0.000476083125	1
1	0	0	108883	Toluene	1	0	0.00148021125	1
1	0	0	110543	Hexane	1	0	0.000377776875	1
1	0	0	1330207	Xylenes	1	0	0.000595455	1
1	0	0	7439921	Lead	1	35.7	0.0172906542304647	1
1	0	0	7439965	Manganese	1	0	4.3535625E-05	1
1	0	0	7439976	Mercury	1	0	2.80875E-05	1
1	0	0	7440020	Nickel	1	2.7	0.00134233224190335	1
1	0	0	7440382	Arsenic	1	0.6	0.000299790963640722	1
1	0	0	7440439	Cadmium	1	0.9	0.000456855710721135	1
1	0	0	7440508	Copper	1	0	5.7579375E-05	1
1	0	0	7647010	Hydrochloricacid	1	0	0.002616350625	1
1	0	0	7664417	Ammonia	1	0	0.2715125	1
1	0	0	7782492	Selenium	1	0	3.089625E-05	1
1	0	0	18540299	Hexchromium	1	0	1.404375E-06	1
1	0	0	7429905	Aluminum	1	3317.1	1.63773068923377	1
1	0	0	7440393	Barium	1	40.3	0.0199150199947815	1
1	0	0	7440417	Beryllium	1	0	2.03422063276624E-05	1
1	0	0	7440473	Chromiumtotal	1	10.2	0.00504486716926028	1
1	0	0	7440508	Copper	1	3.6	0.00179011415683429	1

1	0	0	7439965	Manganese	1	40.1	0.0197929667568155	1
1	0	0	7782492	Selenium	1	0	2.03422063276624E-05	1
1	0	0	1175	Silicacrystalline	5	1	4120.2	2.03422063276624 1
1	0	0	7440666	Zinc	1	24.9	0.0123070348282358	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1175MAXHR.txt
1175PER.txt
1330207MAXHR.txt
1330207PER.txt
18540299MAXHR.txt
18540299PER.txt
193395MAXHR.txt
193395PER.txt
205823MAXHR.txt
205823PER.txt
205992MAXHR.txt
205992PER.txt
218019MAXHR.txt
218019PER.txt
50000MAXHR.txt
50000PER.txt
50328MAXHR.txt
50328PER.txt
53703MAXHR.txt
53703PER.txt
56553MAXHR.txt
56553PER.txt
630080MAXHR.txt
630080PER.txt
71432MAXHR.txt
71432PER.txt
7429905MAXHR.txt
7429905PER.txt
7439921MAXHR.txt

7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440360MAXHR.txt
7440360PER.txt
7440382MAXHR.txt
7440382PER.txt
7440393MAXHR.txt
7440393PER.txt
7440417MAXHR.txt
7440417PER.txt
7440439MAXHR.txt
7440439PER.txt
7440473MAXHR.txt
7440473PER.txt
7440508MAXHR.txt
7440508PER.txt
7440622MAXHR.txt
7440622PER.txt
7440666MAXHR.txt
7440666PER.txt
7446095MAXHR.txt
7446095PER.txt
75070MAXHR.txt
75070PER.txt
7647010MAXHR.txt
7647010PER.txt
7664417MAXHR.txt
7664417PER.txt
7782492MAXHR.txt
7782492PER.txt
7782505MAXHR.txt
7782505PER.txt
7783064MAXHR.txt
7783064PER.txt
91203MAXHR.txt
91203PER.txt
9901MAXHR.txt
9901PER.txt
9960MAXHR.txt
9960PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH23118
Official: True

PolID PolAbbrev InhCancer OralCancer AcuteREL InhChronicREL OralChronicREL InhChronic8HRREL

9901	DieselExhPM	1.1			5		
1151	PAHs-w/o	3.9	12				
50000	Formaldehyde	0.021		55	9		9
71432	Benzene	0.1		27	3		3
75070	Acetaldehyde	0.01		470	140		300
91203	Naphthalene	0.12			9		
100414	Ethyl Benzene	0.0087			2000		
106990	1,3-Butadiene	0.6		660	2		9
107028	Acrolein			2.5	0.35		0.7
108883	Toluene			5000	420		830
110543	Hexane				7000		
1330207	Xylenes			22000	700		
7439921	Lead	0.042	0.0085				
7439965	Manganese				0.09		0.17
7439976	Mercury			0.6	0.03	0.00016	0.06
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
7440439	Cadmium	15			0.02	0.0005	
7440508	Copper			100			
7647010	HCl			2100	9		
7664417	NH3			3200	200		
7782492	Selenium				20	0.005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7429905	Aluminum						
7440393	Barium						
7440417	Beryllium	8.4			0.007	0.002	
7440473	Chromium						
1175	Silica, Crystln				3		
7440666	Zinc						

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274
AERPLOT: 13329

METEOROLOGICAL INFORMATION
Version:
Surface File: C:\HARP2\MET\SLO_Mesa1.SFC
Profile File: C:\HARP2\MET\SLO_Mesa1.PFL
Surface Station: 723940
Upper Station: 93214
On-Site Station: 92004
Start Date & Time: 8 1 1 1
End Date & Time: 12 12 31 24
Hours Processed: 43848
Calm Hours: 162
Missing Hours: 1408

LIST OF AIR DISPERSION FILES
AERMOD Input File: \SMR_demo_AERMOD.inp

AERMOD Output File: \SMR_demo_AERMOD.out
AERMOD Error File: \SMR_demo_AERMOD.ERR
Plotfile list

_____
MAX1HR1.PLT
MAX1HR10.PLT
MAX1HR11.PLT
MAX1HR12.PLT
MAX1HR13.PLT
MAX1HR14.PLT
MAX1HR15.PLT
MAX1HR16.PLT
MAX1HR18.PLT
MAX1HR19.PLT
MAX1HR2.PLT
MAX1HR20.PLT
MAX1HR21.PLT
MAX1HR22.PLT
MAX1HR25.PLT
MAX1HR26.PLT
MAX1HR27.PLT
MAX1HR28.PLT
MAX1HR29.PLT
MAX1HR3.PLT
MAX1HR30.PLT
MAX1HR31.PLT
MAX1HR32.PLT
MAX1HR33.PLT
MAX1HR34.PLT
MAX1HR35.PLT
MAX1HR36.PLT
MAX1HR39.PLT
MAX1HR4.PLT
MAX1HR40.PLT
MAX1HR41.PLT
MAX1HR42.PLT
MAX1HR44.PLT
MAX1HR47.PLT
MAX1HR48.PLT
MAX1HR5.PLT
MAX1HR50.PLT
MAX1HR51.PLT
MAX1HR52.PLT
MAX1HR53.PLT
MAX1HR54.PLT
MAX1HR55.PLT
MAX1HR56.PLT
MAX1HR57.PLT
MAX1HR58.PLT
MAX1HR6.PLT
MAX1HR66.PLT
MAX1HR67.PLT
MAX1HR68.PLT
MAX1HR7.PLT

MAX1HR70.PLT
MAX1HR71.PLT
MAX1HR8.PLT
MAX1HR9.PLT
PERIOD1.PLT
PERIOD10.PLT
PERIOD11.PLT
PERIOD12.PLT
PERIOD13.PLT
PERIOD14.PLT
PERIOD15.PLT
PERIOD16.PLT
PERIOD18.PLT
PERIOD19.PLT
PERIOD2.PLT
PERIOD20.PLT
PERIOD21.PLT
PERIOD22.PLT
PERIOD25.PLT
PERIOD26.PLT
PERIOD27.PLT
PERIOD28.PLT
PERIOD29.PLT
PERIOD3.PLT
PERIOD30.PLT
PERIOD31.PLT
PERIOD32.PLT
PERIOD33.PLT
PERIOD34.PLT
PERIOD35.PLT
PERIOD36.PLT
PERIOD39.PLT
PERIOD4.PLT
PERIOD40.PLT
PERIOD41.PLT
PERIOD42.PLT
PERIOD44.PLT
PERIOD47.PLT
PERIOD48.PLT
PERIOD5.PLT
PERIOD50.PLT
PERIOD51.PLT
PERIOD52.PLT
PERIOD53.PLT
PERIOD54.PLT
PERIOD55.PLT
PERIOD56.PLT
PERIOD57.PLT
PERIOD58.PLT
PERIOD6.PLT
PERIOD66.PLT
PERIOD67.PLT
PERIOD68.PLT
PERIOD7.PLT

PERIOD70.PLT
PERIOD71.PLT
PERIOD8.PLT
PERIOD9.PLT

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

_____
CancerRisk.csv
CancerRiskSumByRec.csv
GLCList.csv
HRAInput.hra
MitigatedCancerRisk.csv
MitigatedCancerRiskSumByRec.csv
MitigatedGLCList.csv
MitigatedHRAInput.hra
MitigatedNCAcuteRisk.csv
MitigatedNCAcuteRiskSumByRec.csv
MitigatedNCChronicRisk.csv
MitigatedNCChronicRiskSumByRec.csv
MitigatedOutput.txt
MitigatedPathwayRec.csv
MitigatedPolDB.csv
NCAcuteRisk.csv
NCAcuteRiskSumByRec.csv
NCChronicRisk.csv
NCChronicRiskSumByRec.csv
Output.txt
PathwayRec.csv
PolDB.csv

Spatial averaging files (\sa\)

_____

HARP2 - HRACalc (dated 22118) 11/18/2023 1:22:03 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 3

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 1
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\HARP2\Projects\SMR_demo\hra\CancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\CancerRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 22118) 11/18/2023 12:58:54 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCAcute
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: C:\HARP2\Projects\SMR_demo\hra\NCAcuteRisk.csv

Acute risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\NCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 22118) 11/18/2023 12:56:28 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: C:\HARP2\Projects\SMR_demo\hra\NCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\NCChronicRiskSumByRec.csv
HRA ran successfully

HARP Project Summary Report 11/18/2023 1:11:18 PM

PROJECT INFORMATION
HARP Version: 22118
Project Name: SMR_demo
Project Output Directory: C:\HARP2\Projects\SMR_demo
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):720000
Y (m):3880000
Zone:10
No. of Sources:1
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:32
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
1	0	0	9901	DieselExhPM	1	82.2	0	1
1	0	0	1151	PAHsnonNapth	1	0	0.000785045625	1
1	0	0	50000	Formaldehyde	1	0	0.024240916875	1
1	0	0	71432	Benzene	1	0	0.002616350625	1
1	0	0	75070	Acetaldehyde	1	0	0.011000469375	1
1	0	0	91203	PAHsNapth	1	0	0.000276661875	1
1	0	0	100414	Ethylbenzene	1	0	0.000153076875	1
1	0	0	106990	13Butadiene	1	0	0.00305311125	1
1	0	0	107028	Acrolein	1	0	0.000476083125	1
1	0	0	108883	Toluene	1	0	0.00148021125	1
1	0	0	110543	Hexane	1	0	0.000377776875	1
1	0	0	1330207	Xylenes	1	0	0.000595455	1
1	0	0	7439921	Lead	1	3.6	0.00182850857983954	1
1	0	0	7439965	Manganese	1	0	4.3535625E-05	1
1	0	0	7439976	Mercury	1	0	2.80875E-05	1
1	0	0	7440020	Nickel	1	0.3	0.000183117170057174	1
1	0	0	7440382	Arsenic	1	0.1	5.01138712430837E-05	1
1	0	0	7440439	Cadmium	1	0.1	6.45059940962744E-05	1
1	0	0	7440508	Copper	1	0	5.7579375E-05	1
1	0	0	7647010	Hydrochloricacid	1	0	0.002616350625	1
1	0	0	7664417	Ammonia	1	0	0.2715125	1
1	0	0	7782492	Selenium	1	0	3.089625E-05	1
1	0	0	18540299	Hexchromium	1	0	1.404375E-06	1
1	0	0	7429905	Aluminum	1	330.7	0.163252051736983	1
1	0	0	7440393	Barium	1	4	0.00198516636215213	1
1	0	0	7440417	Beryllium	1	0	2.02774909310739E-06	1
1	0	0	7440473	Chromiumtotal	1	1	0.000502881775090632	1
1	0	0	7440508	Copper	1	0.4	0.00017844192019345	1

1	0	0	7439965	Manganese	1	4	0.00197299986759349	1
1	0	0	7782492	Selenium	1	0	2.02774909310739E-06	1
1	0	0	1175	Silicacrystalline	5	1	410.7	0.202774909310739	1
1	0	0	7440666	Zinc	1	2.5	0.00122678820132997	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1175MAXHR.txt
1175PER.txt
1330207MAXHR.txt
1330207PER.txt
18540299MAXHR.txt
18540299PER.txt
193395MAXHR.txt
193395PER.txt
205823MAXHR.txt
205823PER.txt
205992MAXHR.txt
205992PER.txt
218019MAXHR.txt
218019PER.txt
50000MAXHR.txt
50000PER.txt
50328MAXHR.txt
50328PER.txt
53703MAXHR.txt
53703PER.txt
56553MAXHR.txt
56553PER.txt
630080MAXHR.txt
630080PER.txt
71432MAXHR.txt
71432PER.txt
7429905MAXHR.txt
7429905PER.txt
7439921MAXHR.txt

7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440360MAXHR.txt
7440360PER.txt
7440382MAXHR.txt
7440382PER.txt
7440393MAXHR.txt
7440393PER.txt
7440417MAXHR.txt
7440417PER.txt
7440439MAXHR.txt
7440439PER.txt
7440473MAXHR.txt
7440473PER.txt
7440508MAXHR.txt
7440508PER.txt
7440622MAXHR.txt
7440622PER.txt
7440666MAXHR.txt
7440666PER.txt
7446095MAXHR.txt
7446095PER.txt
75070MAXHR.txt
75070PER.txt
7647010MAXHR.txt
7647010PER.txt
7664417MAXHR.txt
7664417PER.txt
7782492MAXHR.txt
7782492PER.txt
7782505MAXHR.txt
7782505PER.txt
7783064MAXHR.txt
7783064PER.txt
91203MAXHR.txt
91203PER.txt
9901MAXHR.txt
9901PER.txt
9960MAXHR.txt
9960PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH23118
Official: True

PolID PolAbbrev InhCancer OralCancer AcuteREL InhChronicREL OralChronicREL InhChronic8HRREL

9901	DieselExhPM	1.1			5		
1151	PAHs-w/o	3.9	12				
50000	Formaldehyde	0.021		55	9		9
71432	Benzene	0.1		27	3		3
75070	Acetaldehyde	0.01		470	140		300
91203	Naphthalene	0.12			9		
100414	Ethyl Benzene	0.0087			2000		
106990	1,3-Butadiene	0.6		660	2		9
107028	Acrolein			2.5	0.35		0.7
108883	Toluene			5000	420		830
110543	Hexane				7000		
1330207	Xylenes			22000	700		
7439921	Lead	0.042	0.0085				
7439965	Manganese				0.09		0.17
7439976	Mercury			0.6	0.03	0.00016	0.06
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
7440439	Cadmium	15			0.02	0.0005	
7440508	Copper			100			
7647010	HCl			2100	9		
7664417	NH3			3200	200		
7782492	Selenium				20	0.005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7429905	Aluminum						
7440393	Barium						
7440417	Beryllium	8.4			0.007	0.002	
7440473	Chromium						
1175	Silica, Crystln				3		
7440666	Zinc						

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274
AERPLOT: 13329

METEOROLOGICAL INFORMATION
Version:
Surface File: C:\HARP2\MET\SLO_Mesa1.SFC
Profile File: C:\HARP2\MET\SLO_Mesa1.PFL
Surface Station: 723940
Upper Station: 93214
On-Site Station: 92004
Start Date & Time: 8 1 1 1
End Date & Time: 12 12 31 24
Hours Processed: 43848
Calm Hours: 162
Missing Hours: 1408

LIST OF AIR DISPERSION FILES
AERMOD Input File: \SMR_demo_AERMOD.inp

AERMOD Output File: \SMR_demo_AERMOD.out
AERMOD Error File: \SMR_demo_AERMOD.ERR
Plotfile list

_____
MAX1HR1.PLT
MAX1HR10.PLT
MAX1HR11.PLT
MAX1HR12.PLT
MAX1HR13.PLT
MAX1HR14.PLT
MAX1HR15.PLT
MAX1HR16.PLT
MAX1HR18.PLT
MAX1HR19.PLT
MAX1HR2.PLT
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LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

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CancerRisk.csv
CancerRiskSumByRec.csv
GLCList.csv
HRAInput.hra
MitigatedCancerRisk.csv
MitigatedCancerRiskSumByRec.csv
MitigatedGLCList.csv
MitigatedHRAInput.hra
MitigatedNCAcuteRisk.csv
MitigatedNCAcuteRiskSumByRec.csv
MitigatedNCChronicRisk.csv
MitigatedNCChronicRiskSumByRec.csv
MitigatedOutput.txt
MitigatedPathwayRec.csv
MitigatedPolDB.csv
NCAcuteRisk.csv
NCAcuteRiskSumByRec.csv
NCChronicRisk.csv
NCChronicRiskSumByRec.csv
Output.txt
PathwayRec.csv
PolDB.csv
RunDataChronic unmitigated.txt

Spatial averaging files (\sa\)

_____

HARP2 - HRACalc (dated 22118) 11/18/2023 1:18:37 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 3

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 1
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\HARP2\Projects\SMR_demo\hra\MitigatedCancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\MitigatedCancerRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 22118) 11/18/2023 1:10:39 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCAcute
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to:

C:\HARP2\Projects\SMR_demo\hra\MitigatedNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\MitigatedNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 22118) 11/18/2023 1:19:37 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to:

C:\HARP2\Projects\SMR_demo\hra\MitigatedNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\MitigatedNCChronicRiskSumByRec.csv
HRA ran successfully

Phillips66 SMR Demolition and Remediation Project Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Phillips66 SMR Demolition and Remediation Project
Construction Start Date	7/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.90
Precipitation (days)	1.60
Location	35.04025648015404, -120.59063649643826
County	San Luis Obispo
City	Unincorporated
Air District	San Luis Obispo County APCD
Air Basin	South Central Coast
TAZ	3322
EDFZ	6
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Southern California Gas
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Heavy Industry	9,496	1000sqft	218	9,496,000	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers
Construction	C-9	Use Dust Suppressants
Construction	C-10-B	Water Active Demolition Sites
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.94	72.8	47.2	0.15	2.44	292	294	2.23	29.4	31.6	16,562	0.89	0.60	16,770
Mit.	3.26	55.6	86.4	0.16	0.82	29.2	30.0	0.77	3.15	3.92	18,390	0.97	0.62	18,605
% Reduced	53%	24%	-83%	-11%	66%	90%	90%	66%	89%	88%	-11%	-8%	-2%	-11%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.23	13.0	8.37	0.03	0.43	51.7	52.1	0.40	5.21	5.61	2,946	0.16	0.11	2,983
Mit.	0.58	9.95	15.4	0.03	0.15	5.17	5.32	0.14	0.56	0.70	3,272	0.17	0.11	3,309
% Reduced	53%	24%	-84%	-11%	66%	90%	90%	66%	89%	88%	-11%	-8%	-2%	-11%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.22	2.37	1.53	< 0.005	0.08	9.43	9.51	0.07	0.95	1.02	488	0.03	0.02	494
Mit.	0.11	1.82	2.80	0.01	0.03	0.94	0.97	0.02	0.10	0.13	542	0.03	0.02	548

% Reduced	53%	24%	-84%	-11%	66%	90%	90%	66%	89%	88%	-11%	-8%	-2%	-11%

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	6.94	72.8	47.2	0.15	2.44	292	294	2.23	29.4	31.6	16,562	0.89	0.60	16,770
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.23	13.0	8.37	0.03	0.43	51.7	52.1	0.40	5.21	5.61	2,946	0.16	0.11	2,983
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.22	2.37	1.53	< 0.005	0.08	9.43	9.51	0.07	0.95	1.02	488	0.03	0.02	494

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.26	55.6	86.4	0.16	0.82	29.2	30.0	0.77	3.15	3.92	18,390	0.97	0.62	18,605
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2025	0.58	9.95	15.4	0.03	0.15	5.17	5.32	0.14	0.56	0.70	3,272	0.17	0.11	3,309
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.11	1.82	2.80	0.01	0.03	0.94	0.97	0.02	0.10	0.13	542	0.03	0.02	548

3. Construction Emissions Details

3.1. Demolition, Remediation and Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	6.30	58.8	36.5	0.12	2.40	—	2.40	2.21	—	2.21	12,986	0.53	0.11	13,030
Dust From Material Movement	—	—	—	—	—	0.65	0.65	—	0.07	0.07	—	—	—	—
Demolition	—	—	—	—	—	3.00	3.00	—	0.45	0.45	—	—	—	—
Onsite truck	0.52	13.8	7.93	0.03	0.03	287	287	0.02	28.7	28.7	2,931	0.34	0.48	3,085
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.12	10.5	6.51	0.02	0.43	—	0.43	0.39	—	0.39	2,312	0.09	0.02	2,320
Dust From Material Movement	—	—	—	—	—	0.12	0.12	—	0.01	0.01	—	—	—	—
Demolition	—	—	—	—	—	0.53	0.53	—	0.08	0.08	—	—	—	—

Onsite truck	0.09	2.50	1.44	< 0.005	0.01	50.9	50.9	< 0.005	5.09	5.09	523	0.06	0.08	550
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.91	1.19	< 0.005	0.08	—	0.08	0.07	—	0.07	383	0.02	< 0.005	384
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—
Demolition	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—
Onsite truck	0.02	0.46	0.26	< 0.005	< 0.005	9.30	9.30	< 0.005	0.93	0.93	86.6	0.01	0.01	91.1
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.21	2.69	0.00	0.00	0.62	0.62	0.00	0.15	0.15	646	0.02	0.02	656
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.04	0.43	0.00	0.00	0.11	0.11	0.00	0.03	0.03	111	< 0.005	< 0.005	112
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	18.4	< 0.005	< 0.005	18.6
Vendor	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
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Demolition, Remediation and Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.63	41.6	75.8	0.14	0.79	—	0.79	0.75	—	0.75	14,813	0.60	0.12	14,864
Dust From Material Movement	—	—	—	—	—	0.65	0.65	—	0.07	0.07	—	—	—	—
Demolition	—	—	—	—	—	1.92	1.92	—	0.29	0.29	—	—	—	—
Onsite truck	0.52	13.8	7.93	0.03	0.03	26.0	26.0	0.02	2.64	2.66	2,931	0.34	0.48	3,085
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	7.40	13.5	0.02	0.14	—	0.14	0.13	—	0.13	2,638	0.11	0.02	2,647
Dust From Material Movement	—	—	—	—	—	0.12	0.12	—	0.01	0.01	—	—	—	—
Demolition	—	—	—	—	—	0.34	0.34	—	0.05	0.05	—	—	—	—
Onsite truck	0.09	2.50	1.44	< 0.005	0.01	4.60	4.61	< 0.005	0.47	0.47	523	0.06	0.08	550
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	1.35	2.46	< 0.005	0.03	—	0.03	0.02	—	0.02	437	0.02	< 0.005	438
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—
Demolition	—	—	—	—	—	0.06	0.06	—	0.01	0.01	—	—	—	—
Onsite truck	0.02	0.46	0.26	< 0.005	< 0.005	0.84	0.84	< 0.005	0.09	0.09	86.6	0.01	0.01	91.1

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.21	2.69	0.00	0.00	0.62	0.62	0.00	0.15	0.15	646	0.02	0.02	656
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.04	0.43	0.00	0.00	0.11	0.11	0.00	0.03	0.03	111	< 0.005	< 0.005	112
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	18.4	< 0.005	< 0.005	18.6
Vendor	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
Hauling	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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition, Remediation and Grading	Demolition	7/1/2025	9/29/2025	5.00	65.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition, Remediation and Grading	Aerial Lifts	Diesel	Average	2.00	8.00	63.0	0.40
Demolition, Remediation and Grading	Crushing/Proc. Equipment	Diesel	Average	1.00	8.00	12.0	0.85
Demolition, Remediation and Grading	Cranes	Diesel	Average	1.00	8.00	231	0.29
Demolition, Remediation and Grading	Other Material Handling Equipment	Diesel	Average	2.00	6.00	344	0.38
Demolition, Remediation and Grading	Excavators	Diesel	Average	2.00	6.00	619	0.38
Demolition, Remediation and Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	243	0.37
Demolition, Remediation and Grading	Off-Highway Trucks	Diesel	Average	2.00	8.00	475	0.38
Demolition, Remediation and Grading	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Demolition, Remediation and Grading	Graders	Diesel	Average	3.00	8.00	354	0.41
Demolition, Remediation and Grading	Generator Sets	Diesel	Average	8.00	8.00	84.0	0.74

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition, Remediation and Grading	Aerial Lifts	Diesel	Average	2.00	8.00	63.0	0.40
Demolition, Remediation and Grading	Crushing/Proc. Equipment	Diesel	Average	1.00	8.00	12.0	0.85
Demolition, Remediation and Grading	Cranes	Diesel	Tier 4 Interim	1.00	8.00	231	0.29
Demolition, Remediation and Grading	Other Material Handling Equipment	Diesel	Tier 4 Interim	2.00	6.00	344	0.38
Demolition, Remediation and Grading	Excavators	Diesel	Tier 4 Interim	2.00	6.00	619	0.38
Demolition, Remediation and Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	1.00	6.00	243	0.37
Demolition, Remediation and Grading	Off-Highway Trucks	Diesel	Tier 4 Interim	2.00	8.00	475	0.38
Demolition, Remediation and Grading	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Demolition, Remediation and Grading	Graders	Diesel	Tier 4 Interim	3.00	8.00	354	0.41
Demolition, Remediation and Grading	Generator Sets	Diesel	Average	8.00	8.00	84.0	0.74

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition, Remediation and Grading	—	—	—	—
Demolition, Remediation and Grading	Worker	20.0	44.0	LDA,LDT1,LDT2
Demolition, Remediation and Grading	Vendor	—	0.00	HHDT,MHDT
Demolition, Remediation and Grading	Hauling	0.00	0.00	HHDT
Demolition, Remediation and Grading	Onsite truck	784	0.60	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition, Remediation and Grading	—	—	—	—
Demolition, Remediation and Grading	Worker	20.0	44.0	LDA,LDT1,LDT2
Demolition, Remediation and Grading	Vendor	—	0.00	HHDT,MHDT
Demolition, Remediation and Grading	Hauling	0.00	0.00	HHDT
Demolition, Remediation and Grading	Onsite truck	784	0.60	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition, Remediation and Grading	68,635	0.00	80.0	8,901	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Single phase for all activities: demolition, remediation and grading occurring at the same time
Construction: Off-Road Equipment	Equipment list based on PD, noise report and Applicant Air Report, worst case quarter estimate
Construction: Off-Road Equipment EF	Enter generators manually from Appendix D of CalEEMod manual for 2025 generator sets 50-100hp. Other material handling equipment set to same EF as excavator 344hp in order to allow for mitigation
Construction: Dust From Material Movement	Based on Applicant material and areas graded. Material imported based on grading material movement onsite
Construction: On-Road Fugitive Dust	Based on Applicant submissions
Construction: Trips and VMT	Distances based on Applicant data
Land Use	Area based on Project Description

Conservative Alternative Air Spreadsheets

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Quarterly and Daily Emissions Summary - Conservative Removal Alternative

Table 1.1 Maximum Estimated Quarterly and Daily Emissions - SLOAPCD Thresholds Comparison - Conservative Alternative

Emission Source	ROG+NOx	Exhaust DPM	Fugitive Dust PM10	ROG+NOx	Exhaust DPM
	tons/quarter			lb/day	
Onsite Facility Baseline	18.5	0.002	0.12	405	0.0
Hauling Baseline (Truck + Rail)	7.7	0.052	6.26	181	1.32
Total Baseline Emissions	**26.2**	**0.054**	**6.38**	**586**	**1.32**
Unmitigated					
Onsite Activities	3.95	0.110	17.71	121	3.4
Offsite Waste Hauling (Truck + Rail)	0.6	0.005	0.621	51	0.4
Total Project Emissions Unmitigated	**4.58**	**0.115**	**18.33**	**172**	**3.8**
Total Project Change from Baseline Unmitigated	**-21.6**	**0.062**	**11.9**	**-414**	**2.4**
Mitigated					
Onsite Activities	2.96	0.030	1.70	91	0.9
Offsite Waste Hauling (Truck + Rail)	0.6	0.005	0.621	51	0.4
Total Project Emissions Mitigated	**3.59**	**0.035**	**2.32**	**141**	**1.3**
Total Project Change from Baseline Mitigated	**-22.6**	**-0.018**	**-4.1**	**-444**	**0.0**
SLOAPCD Threshold of Significance	**2.5**	**0.13**	**2.5**	**137**	**7**

Notes:

1. Baseline emissions are based on five-year time period from 2017 to 2021. Onsite Facility Baseline based on facility-calculated annual inventory emissions. Hauling baseline emissions based on truck travel onsite and offsite for product and chemical deliveries and rail travel offsite for deliveries and shipments.

2. Offsite Waste Hauling truck emissions include fugitive dust on paved roads per AP-42 13.2.1 and assume a conservative weight of 42 tons (heavy haul truck capacity) for all vehicles traveling on the road.

3. Project emissions include on-site demolition, remediation, and off-site hauling.

4. Cumulative impacts are Project emissions minus current baseline emissions. A negative number indicates a decrease in emissions.

5. The quarterly thresholds are SLO Tier 1 Thresholds and the daily thresholds are applicable to construction projects less than 90 says but included for reference (SLOAPCD 2012).

Annual and Total Project Emissions Summary and SLOAPCD Thresholds

Table 1.2 Summary Thresholds: UMITIGATED - Conservative Alternative

Pollutant	SLOCAPCD Thresholds			Unmitigated Project Construction Only		Project Construction Change Over Baseline		Project Construction Change Over Baseline ONSITE Only	
	Daily	Quarterly		Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons
	Pounds	Tier 1	Tier 2						
		tons	tons						
ROG + NO_x	137	2.5	6.3	172.09	4.58	-414	-21.6	-283	-14.5
Diesel Particulate Matter	7	0.13	0.32	3.76	0.12	2.43	0.06	3.4	0.11
Fugitive Dust Particulate Matter (PM_{10})	-	2.5	-	-	18.33	-	11.95	-	17.59

Table 1.3 Summary Thresholds: MITIGATED - Conservative Alternative

Pollutant	SLOCAPCD Thresholds			Project Construction Only		Project Construction Change Over Baseline		Project Construction Change Over Baseline ONSITE Only	
	Daily	Quarterly		Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons	Daily, pounds	Quarterly, tons
	Pounds	Tier 1	Tier 2						
		tons	tons						
ROG + NO_x	137	2.5	6.3	141.38	3.59	-444	-22.6	-314	-15.5
Diesel Particulate Matter	7	0.13	0.32	1.28	0.04	-0.05	-0.02	0.9	0.03
Fugitive Dust Particulate Matter (PM_{10})	-	2.5	-	-	2.32	-	-4.06	-	1.58

Annual Project Emissions Summary - Other Districts

Table 1.4 Annual and Daily Project Emissions Summary - Other Air Districts Offsite

Air District	NOx	ROG	PM10	PM2.5	CO	SOx	NOx	ROG	PM10	PM2.5	CO	SOx
	ton/year						lb/day					
SBCAPCD	9.98	0.36	0.85	0.20	3.42	0.01	117.5	3.9	22.3	2.3	36.9	0.2
SCAQMD	10.09	0.37	0.39	0.21	3.58	0.01	108.8	3.9	7.3	2.2	37.9	0.1
SJVAPCD	0.32	0.00	0.36	0.00	0.02	0.00	5.9	0.1	6.6	0.1	0.4	0.0
VCAPCD	4.96	0.18	0.25	0.10	1.75	0.01	54.4	1.9	5.2	1.1	18.5	0.1
MDAQMD	16.84	0.62	0.36	0.35	6.06	0.02	177.3	6.6	3.8	3.7	63.8	0.2
Nevada	17.71	0.66	0.38	0.37	6.37	0.02	186.4	6.9	4.0	3.9	67.1	0.2
Utah	29.88	1.11	0.65	0.63	10.75	0.04	314.5	11.6	6.8	6.6	113.2	0.4

CEQA Guidelines for Criteria Pollutants

Table 1.5 Short-term/Construction CEQA Threshold of Significance of Criteria Pollutants

Air District	Units	NOx	ROG/VOC	PM10	PM2.5	CO	SOx
SBCAPCD	ton/year	25	25	-	-	-	-
SCAQMD	lb/day	100	75	150	55	550	150
SJVAPCD	ton/year	10	10	15	15	100	27
VCAPCD	lb/day	-	-	-	-	-	-
MDAQMD	ton/year	25	25	15	12	100	25

Notes:

"-" indicates no threshold for that pollutant.

1. SBCAPCD - Environmental Review Guidelines for the Santa Barbara County Air Pollution Control District, April 2015. Also, Scope and Content of Air Quality Sections in Environmental Documents, January 2022 Limit Update. Thresholds are for operational phase only and do not apply.
2. SCAQMD - South Coast AQMD Air Quality Significance Thresholds, April 2019
3. SJVAPCD - San Joaquin Valley Air Pollution Control District Air Quality Thresholds of Significance - Criteria Pollutants, March 2015
4. VCAPCD - Ventura County Air Quality Assessment Guidelines, October 2003. Thresholds are for project's operational expected emissions and do not apply.
5. MDAQMD - MDAQMD CEQA and Federal Conformity Guidelines, August 2016

Detailed Summary - Conservative Alternative

Table 1.6 Summary of Project Emissions in SLOC Unmitigated - Conservative Alternative

Activity	NOx	ROG	PM10	PM2.5	CO	SOx	DPM	NOx	ROG	PM10	PM2.5	CO	SOx	DPM
	ton/quarter							lb/day						
Demolition and Remediation														
Construction Equipment	3.62	0.33	0.11	0.10	2.36	0.04	0.11	111.00	10.30	3.40	3.11	72.70	0.24	3.40
Construction Fugitive Dust			17.71	1.79						547.00	54.90			
Total Onsite	3.62	0.33	17.82	1.89	2.36	0.04	0.11	111.00	10.30	550.40	58.01	72.70	0.24	3.40
Offsite Hauling														
Offsite Hauling: Trucks	0.53	0.01	0.01	0.01	0.03	0.00	0.003	46.07	0.61	0.99	0.49	2.61	0.09	0.27
Offsite Hauling: Trucks Fugitive Dust			0.61	0.15						52.62	12.92			
Offsite Hauling: Rail	0.09	0.00	0.00	0.00	0.03	0.00	0.00	3.96	0.15	0.09	0.08	1.43	0.01	0.09
Total Offsite	0.62	0.01	0.62	0.16	0.06	0.00	0.01	50.03	0.76	53.70	13.49	4.04	0.09	0.36
Overall Total	4.24	0.34	18.44	2.05	2.42	0.04	0.12	11.06	604.10	71.50	76.74	0.33	3.76	0.00
Peak Onsite, Nox+ROG	3.95							121.30						
Peak Offsite, NOX+ROG	0.63							50.79						
Peak NOX+ROG Total	4.58							172.09						
Peak Quarter Onsite Fugitive Dust	17.71													
Peak Quarter Total Fugitive Dust	18.32													

Table 1.7 Summary of Project Emissions in SLOC MITIGATED

Activity	NOx	ROG	PM10	PM2.5	CO	SOx	DPM	NOx	ROG	PM10	PM2.5	CO	SOx	DPM
	ton/quarter							lb/day						
Demolition and Remediation, projected tons/year rate														
Construction Equipment	2.82	0.14	0.03	0.03	4.27	0.05	0.03	86.10	4.49	0.92	0.87	131.00	0.26	0.92
Construction Fugitive Dust			1.70	0.19						52.20	5.50			
Total Onsite	2.82	0.14	1.73	0.22	4.27	0.05	0.03	86.10	4.49	53.12	6.37	131.00	0.26	0.92
Offsite Hauling, projected tons/year rate														
Offsite Hauling: Trucks	0.53	0.01	0.01	0.01	0.03	0.00	0.00	46.07	0.61	0.99	0.49	2.61	0.09	0.27
Offsite Hauling: Trucks Fugitive Dust			0.61	0.15						52.62	12.92			
Offsite Hauling: Rail	0.09	0.00	0.00	0.00	0.03	0.00	0.00	3.96	0.15	0.09	0.08	1.43	0.01	0.09
Total Offsite	0.62	0.01	0.62	0.16	0.06	0.00	0.01	50.03	0.76	53.70	13.49	4.04	0.09	0.36
Overall Total	3.44	0.15	2.35	0.38	4.33	0.05	0.04	5.25	106.82	19.86	135.04	0.35	1.28	0.00
Peak Onsite, Nox+ROG	2.96							90.59						
Peak Offsite, NOX+ROG	0.63							50.79						
Peak NOX+ROG Total	3.59							141.38						
Peak Quarter Onsite Fugitive Dust	1.70													
Peak Quarter Total Fugitive Dust	2.31													

Total GHG Emissions: Conservative Removal Alternative

Table 2.1 GHG Emissions by Project Year, within California - Conservative Alternative

Year	SLOAPCD		SBCAPCD	SJVAPCD	SCAQMD	VCAPCD	MDAQMD	Total
	SMR On-site Activities	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	Off-site Waste Transportation	
	Annual MT/yr							
2024	3,224	460	1,297	60	1,285	635	2,128	9,091
2025	3,224	460	1,297	60	1,285	635	2,128	9,091
2026	3,224	460	1,297	60	1,285	635	2,128	9,091
	MT Total							
Total GHG Emissions by Activity	9,672	1,380	3,891	181	3,856	1,906	6,385	27,272
Total GHG Emissions by Activity Amortized Over Project Life	387	55	156	7	154	76	255	1,091
Baseline Annual GHG emissions (MT/yr)								201,695
Net Change in GHG Emissions (MT/yr)								-200,604

Notes:

1. SMR on-site demolition and remediation emissions are based on peak quarter on-site activity assumed conservatively to occur over all quarters of the Project for project duration of 3 years.
2. Per SLOAPCD Handbook, GHG emission calculations are amortized over the length of the project life, which is prescribed as 25 years for industrial projects.
3. To present a conservative estimate, it has been assumed that the peak quarter emissions calculated for each air district will be emitted during th entire 3 year period
4. Baseline is based on five-year time period from 2017 to 2021 and includes onsite facility baseline GHG emissions and offsite hauling baseline GHG emissions within SLO County.

	Total	Amortized
Total within SLOC	11052	442

Project Fuel Use

Diesel efficiency, kg CO2e/gallon	8.43	as per MMR table 2-3
Onsite, gallons/year	382,607	
Onsite, gallons/day	1,048	
Offsite gallons/year, onsite and offsite, within CA	696,224	within CA
Total	1,078,831	within CA

On-Site Quarterly Emission Summary - Conservative Removal Alternative

Table 3.1 On-site Quarterly Emissions Summary - Conservative Alternative

Pollutant	Unmitigated Emissions	Mitigated Emissions
	ton/qtr	
ROG+NOx	3.95	2.96
Exhaust PM10	0.11	0.03
Fugitive PM10	17.71	1.70

CalEEMod Outputs

Table 3.2 CalEEMod Model Results Peak Quarter Emissions - Conservative Alternative

Scenario	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	CO2e
	tons/qtr										MT/qtr
Unmitigated	0.33	3.62	2.36	0.04	17.70	0.11	17.80	1.78	0.10	1.88	806.00
Mitigated	0.14	2.82	4.27	0.05	1.69	0.03	1.72	0.18	0.03	0.21	860.00
Percent Reduction	58%	22%	-81%	-25%	90%	73%	90%	90%	70%	89%	-7%

Notes:
1. This is based on CalEEMod Annual Outputs Section 2.1 Overall Construction. See CalEEMod Report. Only one quarter of emissions data was entered into CalEEMod; while table units in CalEEMod output are "ton/yr," emissions are actually representative of quarterly emissions based on the entered activity duration. Peak quarter inputs are based on 95 days, so tons/qtr emissions here are conservative (>90 days for one calendar quarter).
2. Mitigated emissions account for PM10 reduction measures based on prescribed % reductions, as described in CalEEMod User Manual Appendix A, Section 12.1 (SCAQMD Fugitive Dust http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/fugitive-dust).
3. The unmitigated assumes default Tier fleet mix built into CalEEMod.
4. This assumes default HP and load factor for equipment, except for the excavators and loaders as described in Table 3.6 below.
5. Peak quarter of on-site activity is based on assumed overlap of demolition and remediation (April - July 2024).
6. See other assumptions in CalEEMod inputs below.

Table 3.3 CalEEMod model Results Daily - Based on Peak Quarter - Conservative Alternative

Scenario	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	CO2e
	lb/day										
Unmitigated	10.3000	111.0000	72.7000	0.2400	547.0000	3.4000	550.0000	54.9000	3.1100	58.0000	27341
Mitigated	4.4900	86.1000	131.0000	0.2600	52.2000	0.9200	53.2000	5.5000	0.8700	6.3700	29176

Notes:
1. This is based on Summer CalEEMod run (peak quarter April - July), Section 2.1. See CalEEMod report

Fugitive Dust from Material Movement inputs to CalEEMod

Table 3.4 Dust from Material Movement - Conservative Alternative

Fugitive Emission Source	Quantity	Unit
Material loading and unloading [1]	26,443	CY of material
Building demolition [2]	8,901	tons
Remediation [3]	12,664	CY of material
Grading [4]	129,500	CY of material

Notes:

1. This assumes 26,443 cubic yards of aboveground and belowground demolition material and soil is loaded and unloaded during the peak quarter based on sum of materials in Project Description , excluding scrap metal and asbestos. This assumption also is the basis for CalEEMod input for 2,644 vehicles traveling maximum distance of 1 mile based on size of facility. This assumes 50% of roads are paved.

2. Building demolition material quantity is based on total project material quantities, including: aboveground concrete (4,350 tons), and belowground concrete (41,300 tons), asphalt (37,300 tons), and mixed debris (2,500 tons). Peak quarter demolition quantity calculated based on 3 year project duration and 25% safety factor. For CalEEMod demolition input, the debris tons are ratioed based on the number of days per period (ie 15 days over 85 days total duration for Demolition Period 1) to calculate a fraction of the total 8,901 tons for each period.

3. The Remediation period is the total volume of waste, divided into half a quarter and a 25% safety factor is added to account for a peak. This assumption is also the basis for the CalEEMod input for 1,266 vehicles traveling the maximum distance of 0.6 mile based on the size of the facility. This assumes 50% of roads are paved.

4. Grading assumes a target of 3,500 CY of material moved per day from stockpiles to reuse sites over a 37-day period. Because the material quantity per day is a maximum target, a safety factor is not applied. For material hauling, this period assumes 5 trucks per day making 8 trips per day back and forth between the stockpile and reuse site, over 37 days, for a total of 1,480 trucks during this period. Also assumes 50% of roads are paved.

5. Fugitive dust mitigation measures are as follows: Soil stabilizer PM10 reduction of 84% based on SCAQMD Table XI-D dust suppressant on unpaved parking areas and Table XI-A dust suppressant on disturbed areas. Replace cover of area disturbed PM10 reduction of 40% based on SCAQMD Table XI-E windblown dust from inactive areas. Clean paved road PM10 reduction of 26% from SCAQMD Table XI-C arterial/collector street sweeping.

6. Assumes mean vehicle speed for worker and hauling trips of 27.5 mph based on average of 40 mph for workers (CalEEMod default) and 15 mph for hauling.

Fugitive Dust from Material Crushing

Table 3.5 PM Emissions from Material Crushing - Conservative Alternative

Material	Debris Quantity[1]			Emission Factors[3]		Daily Emissions		Quarterly Emissions		Annual Emissions	
				PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
	tons/day	tons/qtr	tons/yr[2]	lb/ton	lb/ton	lb/day	lb/day	ton/qtr	ton/qtr	ton/yr	ton/yr
Concrete	86	4,755	15,217	0.0024	0.0024	0.21	0.21	0.006	0.006	0.018	0.018
Asphalt	71	3,885	12,433	0.0024	0.0024	0.17	0.17	0.005	0.005	0.015	0.015

Notes:

1. Debris quantity is based on total Project scaled to peak quarter from Project description (Tables 5 and 9 for Asphalt + Concrete tons)

Concrete			Asphalt		
Above grade concrete	4350	tons	Below grade asphalt	37300	tons
Below grade concrete	41300	tons	**Total Project asphalt**	37300	tons
Total Project concrete	**45650**	**tons**	Peak quarterly estimate*	3885	tons
Peak quarterly estimate*	4755	tons	Daily estimate**	71	tons
Daily estimate**	86	tons			

* Quarterly estimate assumes a Project duration of 3 years, 4 quarters/year, and 25% safety factor for peak quarter estimate.

** Daily estimate is based on peak quarterly estimate and 55 operating days/quarter for below grade demolition.

2. Tons/yr debris quantity is based on total Project quantity divided by three.

3. Emission factors from EPA AP-42, Table 11.19.2-2, for tertiary crushing. This assume the PM2.5 emission factor is the same as PM10 emission factor.

Equipment Use Comparisons and Peak Quarter Equipment Use Determination

Table 3.6 Equiment Values used for Peak Quarter in the EIR CalEEMod Runs - Conservative Alternative

	EIR Revised CalEEMod																
	Simultaneous Above and Below Ground Work: Peak Quarter				Abovegrnd ONLY (Pre BelowGrnd) Only, Duration of 3 months				Post Peak Post AboveGrnd Levels Only, Duration of 3 months				Post Above/Below Levels Remediation Only: Duration of 15 months			
Equipment	Number	Use Factor	Hp	Hours per day	Number	Use Factor	Hp	Hours per day	Number	Use Factor	Hp	Hours per day	Number	Use Factor	Hp	Hours per day
Aerial Lift	2	0.40	63	8	2	0.40	63	8		0.40	63			0.40	63	
Auger Drill Rig	1	0.38	221	2	1	0.38	221	2	1	0.38	221		1	0.38	221	1
Concrete Crusher & Asphalt Pulverizer	1	0.85	12	8		0.85	12		1	0.85	12			0.85	12	
Cranes	2	0.29	231	8	2	0.29	231	8		0.29	231			0.29	231	
Crawler tractor/grader 1	3	0.41	354	8		0.41	354		3	0.41	354		1	0.41	354	4
Crawler tractor/grader 2		0.43	104			0.43	104			0.43	104			0.43	104	
Excavators 1	2	0.38	344	6		0.38	344			0.38	344	6	2	0.38	344	4
Excavators 2	4	0.38	619	6	4	0.38	619		2	0.38	619			0.38	619	
Excavators 3		0.38	425			0.38	425		2	0.38	425			0.38	425	
Fork Lift	1	0.2	82	8	1	0.20	82	6		0.20	82			0.20	82	
Front End Loader/backhoe	2	0.37	243	6	1	0.37	243	6	1	0.37	243	6	2	0.37	243	4
Generator Set	4	0.74	84	8	4	0.74	84	8	4	0.74	84	6	2	0.74	84	8
Hydraulic Braker Ram		0.42	510			0.42	510			0.42	510			0.42	510	
Off-Highway Trucks 1		0.38	370			0.38	370			0.38	370			0.38	370	
Off-Highway Trucks 2	4	0.38	475	8	2	0.38	475	8	4	0.38	475	6	2	0.38	475	8
Off-Highway Trucks 3		0.38	402			0.38	402			0.38	402			0.38	402	
Rollers		0.38	134			0.38	134			0.38	134			0.38	134	
Skid Steer Loader		0.37	65			0.37	65			0.37	65			0.37	65	
Total #, HP or HP-hr	26		3083	21397			1925	7158			2384	6363			1156	6312
Percent Reduction from Peak Quarter levels					reduction -->		38%	67%	reduction -->		23%	70%	reduction -->		63%	71%

Notes: Reduction levels used in the HRA to estaimte 3 year average construction emissions based on peak emissions

Conservative Alternative Trucks Emission Summary

Table 4.1 Annual Truck Emissions: EMFAC Only (not on-road fugitive dust) - Conservative Alternative

Total Annual	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
	ton/year						MT/year
SLOAPCD	2.10E+00	2.75E-02	4.60E-02	2.28E-02	1.12E-01	4.11E-03	4.13E+02
SBCAPCD	6.02E-01	8.70E-03	1.21E-02	6.07E-03	4.23E-02	1.12E-03	1.12E+02
SJVAPCD	3.18E-01	4.43E-03	6.62E-03	3.30E-03	2.03E-02	6.02E-04	6.04E+01
VCAPCD	1.20E-01	1.56E-03	2.63E-03	1.30E-03	6.32E-03	2.35E-04	2.36E+01
SCAQMD	1.47E-01	1.89E-03	3.24E-03	1.61E-03	7.45E-03	2.89E-04	2.90E+01

Table 4.2 Daily Truck Emissions: EMFAC Only (not on-road fugitive dust) - Conservative Alternative

Total Daily	Daily Emissions						
	NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
	lb/day						
SLOAPCD	4.61E+01	6.15E-01	9.92E-01	4.92E-01	2.61E+00	8.92E-02	9.86E+03
SBCAPCD	1.87E+01	2.72E-01	3.75E-01	1.88E-01	1.33E+00	3.45E-02	3.82E+03
SJVAPCD	5.86E+00	8.16E-02	1.22E-01	6.08E-02	3.74E-01	1.11E-02	1.23E+03
VCAPCD	3.43E+00	4.46E-02	7.51E-02	3.72E-02	1.81E-01	6.72E-03	7.43E+02
SCAQMD	4.19E+00	5.39E-02	9.27E-02	4.59E-02	2.13E-01	8.26E-03	9.13E+02

Routes and Trip Counts

Table 4.3 Trip Counts - Conservative Alternative

Trip Number	Waste Type	Waste Route1	County	Number of Round Trips per Year1	Miles per Round Trip per Vehicle	Total Miles per Year	Number of Round Trips per Day2	Miles per Day
				trips/year	VMT/RT/Vehicle	VMT/year	trips/day	VMT/day
1	Concrete and Asphalt	Regional Facility	SLOAPCD	170	25.8	4386.0	7.00	180.60
1	Concrete and Asphalt	Regional Facility	SBCAPCD	170	19.4	3298.0	7.00	135.80
2	Mixed debris	Regional Facility	SLOAPCD	1556	25.8	40144.8	21.00	541.80
2	Mixed debris	Regional Facility	SBCAPCD	1556	19.4	30186.4	21.00	407.40
3	Soil	Kettleman City	SLOAPCD	760	216.0	164160.0	7.00	1512.00
3	Soil	Kettleman City	SJVAPCD	760	40.0	30400.0	7.00	280.00
5	Asbestos	Veolia	SLOAPCD	140	25.8	3612.0	2.00	51.60
5	Asbestos	Veolia	SBCAPCD	140	157.2	22008.0	2.00	314.40
5	Asbestos	Veolia	VCAPCD	140	86.8	12152.0	2.00	173.60
5	Asbestos	Veolia	SCAQMD	140	107.2	15008.0	2.00	214.40
						Max trips/day =	**37**	

Notes:

1. This assumes peak quarterly trips occur throughout the year (4 quarters) for conservative annual estimate.
2. Number of round trips per day is based on week during peak quarter with maximum number of shipments. This assumes 5 working days/week. This is rounded up to nearest whole trip for conservative estimate
3. Miles per year total 325,355
4. Trips per year 2,626

Emission Factors

Table 4.4 Total EFs (Diesel and Tire Wear Emission Factors)

Emission Factor	Emission Factor Description	Unit	NOx	ROG	PM10	DPM	PM2.5	CO	SO_2	CO_2e
EF1	Running exhaust, tire and brake wear particulate emissions	g/mile	8.4832	0.1032	0.1952	0.0519	0.0962	0.3577	0.0172	1901
EF2	Start exhaust tailpipe	g/trip	3.1133	--	--		--	--	--	--
EF3	Idle exhaust, diurnal evaporative HC emissions, resting evaporative losses	g/vehicle/day	34.3991	1.1608	0.0936	0.0936	0.0896	9.9083	0.0309	3416

Source: EMFAC2021 (v1.0.2) Emission Rates. Statewide (CA), Calendar Year 2024, Annual, T7 Public Utility. Aggregated speed and model years. Diesel fuel.

Greenhouse Gas Global Warming Potentials

Pollutant	GWP
CO2	1
CH4	25
N2O	298

PM Calcs	Project PM10
PM running	0.05192043
PM tire	0.03600001
PM brake	0.10731132
Total	0.1952
PM Idling/veh/day	0.093637931

Emission Calculations

Table 4.6 Annual Emission Calculations, EMFAC Only (not Fugitive Dust)

Trip Number	Classification	Final Destination	Air District	Annual Emissions						
				NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
				ton/year						MT/year
1	Concrete and Asphalt	Regional Facility	SLOAPCD	4.86E-02	7.16E-04	9.61E-04	4.82E-04	3.59E-03	8.89E-05	8.92E+00
1	Concrete and Asphalt	Regional Facility	SBCAPCD	3.85E-02	5.93E-04	7.27E-04	3.67E-04	3.16E-03	6.83E-05	6.85E+00
2	Mixed debris	Regional Facility	SLOAPCD	4.45E-01	6.56E-03	8.80E-03	4.41E-03	3.28E-02	8.14E-04	8.16E+01
2	Mixed debris	Regional Facility	SBCAPCD	3.52E-01	5.42E-03	6.66E-03	3.36E-03	2.89E-02	6.25E-04	6.27E+01
3	Soil	Kettleman City	SLOAPCD	1.57E+00	1.96E-02	3.54E-02	1.75E-02	7.30E-02	3.14E-03	3.15E+02
3	Soil	Kettleman City	SJVAPCD	3.18E-01	4.43E-03	6.62E-03	3.30E-03	2.03E-02	6.02E-04	6.04E+01
5	Asbestos	Veolia	SLOAPCD	4.00E-02	5.90E-04	7.92E-04	3.97E-04	2.95E-03	7.32E-05	7.34E+00
5	Asbestos	Veolia	SBCAPCD	2.12E-01	2.68E-03	4.75E-03	2.35E-03	1.02E-02	4.22E-04	4.23E+01
5	Asbestos	Veolia	VCAPCD	1.20E-01	1.56E-03	2.63E-03	1.30E-03	6.32E-03	2.35E-04	2.36E+01
5	Asbestos	Veolia	SCAQMD	1.47E-01	1.89E-03	3.24E-03	1.61E-03	7.45E-03	2.89E-04	2.90E+01

Table 4.7 Daily Emission Calculations: EMFAC Only (not on-road fugitive dust)

Trip Number	Classification	Final Destination	Air District	Daily Emissions						
				NOx	ROG	PM10	PM2.5	CO	SO2	CO2e
				lb/day						
1	Concrete and Asphalt	Regional Facility	SLOAPCD	4.00E+00	5.90E-02	7.92E-02	3.97E-02	2.95E-01	7.32E-03	8.10E+02
1	Concrete and Asphalt	Regional Facility	SBCAPCD	3.17E+00	4.88E-02	5.99E-02	3.02E-02	2.60E-01	5.62E-03	6.22E+02
2	Mixed debris	Regional Facility	SLOAPCD	1.20E+01	1.77E-01	2.38E-01	1.19E-01	8.86E-01	2.20E-02	2.43E+03
2	Mixed debris	Regional Facility	SBCAPCD	9.50E+00	1.46E-01	1.80E-01	9.06E-02	7.80E-01	1.69E-02	1.87E+03
3	Soil	Kettleman City	SLOAPCD	2.89E+01	3.62E-01	6.52E-01	3.22E-01	1.35E+00	5.78E-02	6.39E+03
3	Soil	Kettleman City	SJVAPCD	5.86E+00	8.16E-02	1.22E-01	6.08E-02	3.74E-01	1.11E-02	1.23E+03
5	Asbestos	Veolia	SLOAPCD	1.14E+00	1.69E-02	2.26E-02	1.13E-02	8.44E-02	2.09E-03	2.31E+02
5	Asbestos	Veolia	SBCAPCD	6.06E+00	7.67E-02	1.36E-01	6.71E-02	2.92E-01	1.21E-02	1.33E+03
5	Asbestos	Veolia	VCAPCD	3.43E+00	4.46E-02	7.51E-02	3.72E-02	1.81E-01	6.72E-03	7.43E+02
5	Asbestos	Veolia	SCAQMD	4.19E+00	5.39E-02	9.27E-02	4.59E-02	2.13E-01	8.26E-03	9.13E+02

Conversions for Emission Calculations

Annual Emission Factor Look-up for formulas		Annual	Daily
First sum	EF1	= miles/year * g/mile * tons/grams	= miles/day * g/mile * tons/grams
Second sum	EF2	= 2* trucks/year * g/trip * tons/grams (assumes truck starts twice in round trip)	= trips/day * g/trip * tons/grams
Third sum	EF3	= trips/year * g/vehicle/day * tons/grams	= trips/day * g/vehicle/day * tons/grams

Conversions

453.592	grams/lb
2000	lb/ton
907184	grams/ton
2204.62	lb/metric ton

DPM Emissions

Table 4.8 DPM Emissions Only

Trip Number	Classification	Final Destination	Air District	Annual Emissions DPM ton/year	Daily Emissions DPM lb/day
1	Concrete and Asphalt	Regional Facility	SLOAPCD	2.69E-04	2.21E-02
1	Concrete and Asphalt	Regional Facility	SBCAPCD	2.06E-04	1.70E-02
2	Mixed debris	Regional Facility	SLOAPCD	2.46E-03	6.64E-02
2	Mixed debris	Regional Facility	SBCAPCD	1.89E-03	5.10E-02
3	Soil	Kettleman City	SLOAPCD	9.47E-03	1.75E-01
3	Soil	Kettleman City	SJVAPCD	1.82E-03	3.35E-02
5	Asbestos	Veolia	SLOAPCD	2.21E-04	6.32E-03
5	Asbestos	Veolia	SBCAPCD	1.27E-03	3.64E-02
5	Asbestos	Veolia	VCAPCD	7.10E-04	2.03E-02
5	Asbestos	Veolia	SCAQMD	8.73E-04	2.50E-02

Fugitive Dust from Paved Roads

Table 4.9 Fugitive Dust from Paved Roads

Trip Number	Classification	Final Destination	Air District	Annual Emissions Fugitive PM10 ton/year	Daily Emissions Fugitive PM10 lb/day	Annual Emissions Fugitive PM2.5 ton/year	Daily Emissions Fugitive PM2.5 lb/day
1	Concrete and Asphalt	Regional Facility	SLOAPCD	0.1	4.2	0.0124	1.0204
1	Concrete and Asphalt	Regional Facility	SBCAPCD	0.0	3.1	0.0093	0.7673
2	Mixed debris	Regional Facility	SLOAPCD	0.5	12.5	0.1134	3.0611
2	Mixed debris	Regional Facility	SBCAPCD	0.3	9.4	0.0853	2.3018
3	Soil	Kettleman City	SLOAPCD	1.9	34.8	0.4637	8.5427
3	Soil	Kettleman City	SJVAPCD	0.3	6.4	0.0859	1.5820
5	Asbestos	Veolia	SLOAPCD	0.0	1.2	0.0102	0.2915
5	Asbestos	Veolia	SBCAPCD	0.3	7.2	0.0622	1.7763
5	Asbestos	Veolia	VCAPCD	0.1	4.0	0.0343	0.9808
5	Asbestos	Veolia	SCAQMD	0.2	4.9	0.0424	1.2114

Notes:

1. Calculated based on AP-42, 13.2.1 as shown below:

Equation 1 = $$E = k\,(sL)^{0.91} \times (W)^{1.02}$$

where:
E = particulate emission factor (having units matching the units of k)
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m2)
W = average weight (tons) of vehicles traveling the road

Constants		Unit	Source	
k	0.0022	lb/VMT PM10	Table 13.2.1-1	
k	0.00054	lb/VMT PM2.5	Table 13.2.1-1	
sL	0.2	g/m3	Table 13.2.1-2	assumes 5k-10k average daily traffic
W	42	tons	Max capacity of heavy haul truck	
Calculation of particulate emission factor				
E =	0.023	lb/VMT PM10		
E =	0.006	lb/VMT PM2.5		

Conservative Alternative Rail Emissions Summary

Table 5.1 Annual Locomotive Emissions

Total Annual1	Annual Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	ton/year						MT/year
SLOAPCD	3.77E-01	1.39E-02	8.14E-03	7.90E-03	1.35E-01	4.88E-04	4.76E+01
SBCAPCD	9.38E+00	3.47E-01	2.03E-01	1.97E-01	3.37E+00	1.22E-02	1.19E+03
VCAPCD	4.84E+00	1.79E-01	1.05E-01	1.02E-01	1.74E+00	6.28E-03	6.12E+02
SCAQMD	9.94E+00	3.68E-01	2.15E-01	2.08E-01	3.58E+00	1.29E-02	1.26E+03
MDAQMD	1.68E+01	6.23E-01	3.64E-01	3.53E-01	6.06E+00	2.18E-02	2.13E+03
Nevada	1.77E+01	6.55E-01	3.83E-01	3.71E-01	6.37E+00	2.30E-02	2.24E+03
Utah	2.99E+01	1.11E+00	6.46E-01	6.27E-01	1.08E+01	3.87E-02	3.78E+03

Table 5.2 Daily Locomotive Emissions

Total Daily1	Daily Emissions						
	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
	pounds/day						
SLOAPCD	3.96E+00	1.47E-01	8.57E-02	8.31E-02	1.43E+00	5.14E-03	5.52E+02
SBCAPCD	9.87E+01	3.65E+00	2.13E+00	2.07E+00	3.55E+01	1.28E-01	1.38E+04
VCAPCD	5.10E+01	1.89E+00	1.10E+00	1.07E+00	1.83E+01	6.61E-02	7.10E+03
SCAQMD	1.05E+02	3.87E+00	2.26E+00	2.19E+00	3.76E+01	1.36E-01	1.46E+04
MDAQMD	1.77E+02	6.56E+00	3.83E+00	3.72E+00	6.38E+01	2.30E-01	2.47E+04
Nevada	1.86E+02	6.90E+00	4.03E+00	3.91E+00	6.71E+01	2.42E-01	2.60E+04
Utah	3.15E+02	1.16E+01	6.80E+00	6.60E+00	1.13E+02	4.08E-01	4.38E+04

Trip Information

Table 5.3 Waste Shipment Information

			Quarterly			Daily		
Waste Type	Trip Number	Waste Route	Number Railcars	Number of Trains	Average Train Load4	Average Daily Number of Railcars during Maximum Week	Number of Trains	Daily Average Train Load4
			no. rail cars	no. trains	tons/train/RT	no. railcars/day	no. trains/day	tons/train/RT
Soil	4	Utah	380	48	1069	8	1	1080
Annual				192				

Notes:

1. The number of railcars is based on peak quarter (railcars/quarter). The number of daily rail cars is based on maximum week during peak quarter and assumes 5 working days/week.
2. The number of rail cars is based on capacity of railcar (100 cubic yards [cy]) and estimated density of soil (3 g/cm3 = 5000 lb/cy)
   250 tons/rail car
3. The number of rail cars per train is based on estimated locomotive tow capacity (tons/locomotive), assuming a 2,000 ton capacity and weight of rail car.
   8 rail cars/train
4. Train load calculation assumptions
   10 ton/car — Empty rail car — https://www.up.com/customers/all/equipment/descriptions/gondolas/index.htm
   average tons
   250 waste/rail car
   260 total tons/rail car — Loaded flat rail car
   135 tons/rail car — Average rail car load for one RT (assumes loaded on way there and unloaded on way back)

The average train load is based on the assumption that the train is fully loaded on the way to the waste disposal facility and unloaded (only empty rail cars) on the way back. The average weight of the train is used for the average round trip load.

Table 5.4 Rail Route Information

Waste Type	Trip Number	Air District	One-way Miles	Round Trip Miles	Total ton-miles	Total ton-mile/yr	Ton-mile/day
			VMT	VMT/RT	ton-miles/qtr	ton-mile/yr	ton-mile/day
Soil	4	SLOAPCD	4.5	9	461700	1846800	9720
Soil	4	SBCAPCD	112	224	11498706	45994825	242078
Soil	4	VCAPCD	58	116	5936598	23746392	124981
Soil	4	SCAQMD	119	238	12187000	48748001	256568
Soil	4	MDAQMD	201	403	20649529	82598116	434727
Soil	4	Nevada	212	423	21708108	86832432	457013
Soil	4	Utah	357	714	36632304	146529216	771206

Notes:
1. Total ton-miles/yr assumes peak quarter transportation occurs throughout the year (4 quarters).
2. Ton-miles/day is based on maximum week of railcars during peak quarter.

Emission Factors

Table 5.5 Locomotive Emission Factors

Engine Type	Unit	NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
Large line haul	g/gal	74.00	2.74	1.60	1.55	26.62	0.10	10307.48
Large line haul	g/ton-mile	0.19	0.01	0.00	0.00	0.07	0.00	25.77

Notes:

Large Line Haul Notes

1. NOx, PM10, ROG, and PM2.5 emission factors give the expected fleet average emission factors by calendar year. The year 2025 is used as the worst-case year for rail transportation emissions.
2. NOx and PM10 emission factors were taken from Tables 5 and 6 of EPA document EPA-420-F-09-025.

General Notes

1. Source of NOx, PM10, PM2.5, ROG, CO, and SO2 emission factors and derivations: EPA document Emission Factors for Locomotives (EPA-420-F-09-025; https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100500B.pdf)
2. ROG emission factors were calculated by multiplying the HC emission factors found in Table 7 of EPA-420-F-09-025 by a factor of 1.053 according to guidance in the document.
3. CO emission factors were calculated based on the CO emission factor in Tables 1 and 2 for large line and switching, respectively, and the conversion factors in Table 3 of EPA-420-F-09-025. The CO emission factor was developed in the context of adopting new emission standards, which, for CO, were intended to cap CO emissions at pre-control levels and resulted in a projection of CO emission factors remaining the same for all tiers of emission standards. Recent testing also suggests that emission controls designed to reduce PM and HC emissions are also reducing CO emissions, according to EPA-420-F-09-025. As such, the CO emission factor presents a conservative estimate to use for calculating CO emissions.

4. PM2.5 emission factors were calculated by multiplying PM10 emissions by a factor of 0.97, following guidance in EPA-420-F-09-025.
5. SO2 emission factors were calculated with the below conversions/assumptions (calculation method in EPA document, derived from NONROAD Technical Document NR-009c). The assumption of 100% conversion of sulfur in fuel to SO2 is a conservative estimate, as the actual fraction of fuel sulfur emitted as SO2 may be as low as 95 percent, according to EPA-420-F-09-025.

7.05	Fuel density (lb/gal)
453.592	g/lb
100%	sulfur in fuel to SO2 conversion
2	g SO2/ g S
15	sulfur content (ppm) - ultra low sulfur fuel

Equation: SO2 (g/gal) = (fuel density [lb/gal]) x (conversion factor [g/lb]) x (64 g SO2/32 g S) x (S content of fuel [ppm])

6. CO2, CH4, and N2O emission factors were derived from 2018 EPA Emission Factors for Greenhouse Gas Inventories (https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf)

CO2 from Table 2, Diesel Fuel	10210	g CO2/gallon fuel
CH4 from Table 5, Diesel Locomotives	0.8	g CO2/gallon fuel
N2O from Table 5, Diesel Locomotives	0.26	g CO2/gallon fuel

7. CO2e was calculated using global warming potentials (GWP) below, taken from IPCC Fifth Assessment Report 2014, Working Group 1 Climate Change 2013: The Physical Science Basis (Chapter 8)

CO2	1
CH4	25
N2O	298

8. The conversion from g/gal to g/ton-mile is 400 ton-miles/gal, as indicated in EPA-420-F-09-025.

Emission Calculations

Table 5.6 Annual Emissions

Waste Type	Trip Number	Air District/State1	Annual Emissions						
			NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
			ton/year						MT/year
Soil	4	SLOAPCD	3.77E-01	1.39E-02	8.14E-03	7.90E-03	1.35E-01	4.88E-04	4.76E+01
Soil	4	SBCAPCD	9.38E+00	3.47E-01	2.03E-01	1.97E-01	3.37E+00	1.22E-02	1.19E+03
Soil	4	VCAPCD	4.84E+00	1.79E-01	1.05E-01	1.02E-01	1.74E+00	6.28E-03	6.12E+02
Soil	4	SCAQMD	9.94E+00	3.68E-01	2.15E-01	2.08E-01	3.58E+00	1.29E-02	1.26E+03
Soil	4	MDAQMD	1.68E+01	6.23E-01	3.64E-01	3.53E-01	6.06E+00	2.18E-02	2.13E+03
Soil	4	Nevada	1.77E+01	6.55E-01	3.83E-01	3.71E-01	6.37E+00	2.30E-02	2.24E+03
Soil	4	Utah	2.99E+01	1.11E+00	6.46E-01	6.27E-01	1.08E+01	3.87E-02	3.78E+03

Notes:
1. Emissions summarized by air districts within California, and by state outside of California.

Annual Emission Calculation Assumptions

453.592	g/lb
2000	lb/ton
907184	g/ton
1000000	g/metric ton (MT)

Table 5.7 Daily Emissions

Waste Type	Trip Number	Air District	Daily Emissions						
			NOx	ROG	PM10	PM2.5	CO	SOx	CO2e
			pounds/day						
Soil	4	SLOAPCD	3.96E+00	1.47E-01	8.57E-02	8.31E-02	1.43E+00	5.14E-03	5.52E+02
Soil	4	SBCAPCD	9.87E+01	3.65E+00	2.13E+00	2.07E+00	3.55E+01	1.28E-01	1.38E+04
Soil	4	VCAPCD	5.10E+01	1.89E+00	1.10E+00	1.07E+00	1.83E+01	6.61E-02	7.10E+03
Soil	4	SCAQMD	1.05E+02	3.87E+00	2.26E+00	2.19E+00	3.76E+01	1.36E-01	1.46E+04
Soil	4	MDAQMD	1.77E+02	6.56E+00	3.83E+00	3.72E+00	6.38E+01	2.30E-01	2.47E+04
Soil	4	Nevada	1.86E+02	6.90E+00	4.03E+00	3.91E+00	6.71E+01	2.42E-01	2.60E+04
Soil	4	Utah	3.15E+02	1.16E+01	6.80E+00	6.60E+00	1.13E+02	4.08E-01	4.38E+04
Soil	4	Incremental Increase in SCAQMD over baseline	4.67E+01	1.73E+00	1.01E+00	9.79E-01	1.68E+01	6.05E-02	6.50E+03

Notes:
1. Emissions summarized by air districts within California, and by state outside of California.

Conservative Alternative

Table 6.1 Aboveground Demolition and Belowground Demolition and Remediation Waste Transport Amounts - Peak Quarter

Trip Number1	Waste Type	Mode	Waste Route Destination	Number of Round Trips2,3	Max Shipments per Week
1	Concrete and Asphalt	Truck	Regional Facility	42.5	19
2	Mixed debris	Truck	Regional Facility	389	60
3	Soil	Truck	Kettleman City	190	19
4	Soil	Rail	Utah	380	38
5	Asbestos	Truck	Veolia	35	5

Notes:

1. This is based on SMR AQ MODEL INPUTS_04-27-22.xlsx.

2 The number of trips for Concrete and Asphalt is based on the combined total project trips (210 for Concrete and 190 for Asphalt) divided over an assumed duration of 3 years, and 4 qtr/year.

3. This represents peak quarter of waste transport. For Concrete and Asphalt, a 25% safety factor was applied to estimate peak quarter.

4. Mixed debris quantity includes Mixed Metals, Trash/C&D, and Mixed Debris material types as noted in Tables 5 and 9 of the Project Description. Max shipments per week occurs during Week 24 (month 6).

5. Asbestos trucking assumed to occur prior to peak quarter (see Table 12.1) but is included for conservativeness. Number of round trips derived from Project Description, Table 4.

Offsite Waste Transport Assumptions

% of concrete and asphalt to off-site facility	50%

Peak Quarter Rail Transport Assumptions

Peak Qtr Week	Estimated Rail cars per Week
1	0
2	0
3	0
4	38
5	38
6	38
7	38
8	38
9	38
10	38
11	38
12	38
13	38

Assumptions:

100	cy per railcar
8	railcars per train
800	cy per train
4.75	trains per week
3800	cy per week max
200000	total soil
52.6	weeks

Table 10.1 HARP2 Assumptions Conservative Alternative - Unmitigated

Peak day fuel use, gal	1118	see GHG calcs for fuel use calcs
hours/day	8	
peak hour emissions used to calculate acute impacts.		
Annual emissions used for cancer and chronic and uses DPM only		
Peak Mitigated with Tier 4i	60.0	DPM pounds/qrtr
Peak Unmitigated	220.0	DPM pounds/qrtr
Peak duration	3	months
Prepeak Period, mo	3	the period of abovegrnd only
Post peak belowGnd period, mo	30	the period of below ground/remed only
Remediation only duration	0	the period of remed only
Fraction pre-peak reduction	0.670	taken from equipment tab in project calcs
Fraction post peak reduction	0.700	taken from equipment tab in project calcs
Fraction remediation only reduction	0.710	taken from equipment tab in project calcs
Rail DPM Annual Average	3.6	lbs/yr, assumes 1 mile onsite
Mitigated with Tier 4i, total 3 yr	271	total
Unmitigated, total 3 yr	963	total
Mitigated with Tier 4i, annual	90	DPM pounds/year 3 year average
Unmitigated, annual	321	DPM pounds/year 3 year average
Mitigated flag (1=mit, 0=unmit)	0	
DPM Value used in inputs	321	DPM, lbs/yr 3 yr avg
Fug Dust	51676	value used in inputs, pounds/year, 3 yr avg
Fug Dust	24.84	value used in inputs, pounds/hr

Table 10.2 Inputs - Unmitigated

Source	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual lbs/yr	PeakHr lbs/hr	MWAF	Notes
1	0	0	9901	DieselExhPM	1	321.2	0	1	DPM Only
1	0	0	1151	PAHsnonNapth	1	0	1.2E-03	1	DPM Only
1	0	0	50000	Formaldehyde	1	0	3.6E-02	1	DPM Only
1	0	0	71432	Benzene	1	0	3.9E-03	1	DPM Only
1	0	0	75070	Acetaldehyde	1	0	1.6E-02	1	DPM Only
1	0	0	91203	PAHsNapth	1	0	4.1E-04	1	DPM Only
1	0	0	100414	Ethylbenzene	1	0	2.3E-04	1	DPM Only
1	0	0	106990	13Butadiene	1	0	4.6E-03	1	DPM Only
1	0	0	107028	Acrolein	1	0	7.1E-04	1	DPM Only
1	0	0	108883	Toluene	1	0	2.2E-03	1	DPM Only
1	0	0	110543	Hexane	1	0	5.6E-04	1	DPM Only
1	0	0	1330207	Xylenes	1	0	8.9E-04	1	DPM Only
1	0	0	7439921	Lead	1	73	3.5E-02	1	DPM and dust
1	0	0	7439965	Manganese	1	0	6.5E-05	1	DPM Only
1	0	0	7439976	Mercury	1	0	4.2E-05	1	DPM Only
1	0	0	7440020	Nickel	1	6	2.7E-03	1	DPM and dust
1	0	0	7440382	Arsenic	1	1	6.0E-04	1	DPM and dust
1	0	0	7440439	Cadmium	1	2	9.3E-04	1	DPM and dust
1	0	0	7440508	Copper	1	0	8.6E-05	1	DPM Only
1	0	0	7647010	Hydrochloricacid	1	0	3.9E-03	1	DPM Only
1	0	0	7664417	Ammonia	1	0	4.1E-01	1	DPM Only
1	0	0	7782492	Selenium	1	0	4.6E-05	1	DPM Only
1	0	0	18540299	Hexchromium	1	0	2.1E-06	1	DPM Only
1	0	0	7429905	Aluminum	1	6820	3.4E+00	1	Dust Only
1	0	0	7440393	Barium	1	83	4.1E-02	1	Dust Only
1	0	0	7440417	Beryllium	1	0	4.2E-05	1	Dust Only
1	0	0	7440473	Chromiumtotal	1	21	1.0E-02	1	Dust Only
1	0	0	7440508	Copper	1	7	3.7E-03	1	Dust Only
1	0	0	7439965	Manganese	1	82	4.1E-02	1	Dust Only
1	0	0	7782492	Selenium	1	0	4.2E-05	1	Dust Only
1	0	0	1175	Silicacrystalline5	1	8472	4.2E+00	1	Dust Only
1	0	0	7440666	Zinc	1	51	2.5E-02	1	Dust Only

Table 10.1 HARP2 Assumptions Conservative Alternative - Mitigated

Peak day fuel use, gal	1118	see GHG calcs for fuel use calcs
hours/day	8	
peak hour emissions used to calculate acute impacts.		
Annual emissions used for cancer and chronic and uses DPM only		
Peak Mitigated with Tier 4i	60.0	DPM pounds/qrtr
Peak Unmitigated	220.0	DPM pounds/qrtr
Peak duration	3	months
Prepeak Period, mo	3	the period of abovegrnd only
Post peak belowGnd period, mo	30	the period of below ground/remed only
Remediation only duration	0	the period of remed only
Fraction pre-peak reduction	0.670	taken from equipment tab in project calcs
Fraction post peak reduction	0.700	taken from equipment tab in project calcs
Fraction remediation only reduction	0.710	taken from equipment tab in project calcs
Rail DPM Annual Average	3.6	lbs/yr, assumes 1 mile onsite
Mitigated with Tier 4i, total 3 yr	271	total
Unmitigated, total 3 yr	963	total
Mitigated with Tier 4i, annual	90	DPM pounds/year 3 year average
Unmitigated, annual	321	DPM pounds/year 3 year average
Mitigated flag (1=mit, 0=unmit)	1	
DPM Value used in inputs	90	DPM, lbs/yr 3 yr avg
Fug Dust	4934	value used in inputs, pounds/year, 3 yr avg
Fug Dust	2.37	value used in inputs, pounds/hr

Table 10.2 Inputs - Mitigated

Source	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual lbs/yr	PeakHr lbs/hr	MWAF	Notes
1	0	0	9901	DieselExhPM	1	90.2	0	1	DPM Only
1	0	0	1151	PAHsnonNapth	1	0	1.2E-03	1	DPM Only
1	0	0	50000	Formaldehyde	1	0	3.6E-02	1	DPM Only
1	0	0	71432	Benzene	1	0	3.9E-03	1	DPM Only
1	0	0	75070	Acetaldehyde	1	0	1.6E-02	1	DPM Only
1	0	0	91203	PAHsNapth	1	0	4.1E-04	1	DPM Only
1	0	0	100414	Ethylbenzene	1	0	2.3E-04	1	DPM Only
1	0	0	106990	13Butadiene	1	0	4.6E-03	1	DPM Only
1	0	0	107028	Acrolein	1	0	7.1E-04	1	DPM Only
1	0	0	108883	Toluene	1	0	2.2E-03	1	DPM Only
1	0	0	110543	Hexane	1	0	5.6E-04	1	DPM Only
1	0	0	1330207	Xylenes	1	0	8.9E-04	1	DPM Only
1	0	0	7439921	Lead	1	7	3.5E-03	1	DPM and dust
1	0	0	7439965	Manganese	1	0	6.5E-05	1	DPM Only
1	0	0	7439976	Mercury	1	0	4.2E-05	1	DPM Only
1	0	0	7440020	Nickel	1	1	3.3E-04	1	DPM and dust
1	0	0	7440382	Arsenic	1	0	8.8E-05	1	DPM and dust
1	0	0	7440439	Cadmium	1	0	1.2E-04	1	DPM and dust
1	0	0	7440508	Copper	1	0	8.6E-05	1	DPM Only
1	0	0	7647010	Hydrochloricacid	1	0	3.9E-03	1	DPM Only
1	0	0	7664417	Ammonia	1	0	4.1E-01	1	DPM Only
1	0	0	7782492	Selenium	1	0	4.6E-05	1	DPM Only
1	0	0	18540299	Hexchromium	1	0	2.1E-06	1	DPM Only
1	0	0	7429905	Aluminum	1	651	3.2E-01	1	Dust Only
1	0	0	7440393	Barium	1	8	3.9E-03	1	Dust Only
1	0	0	7440417	Beryllium	1	0	4.0E-06	1	Dust Only
1	0	0	7440473	Chromiumtotal	1	2	9.9E-04	1	Dust Only
1	0	0	7440508	Copper	1	1	3.5E-04	1	Dust Only
1	0	0	7439965	Manganese	1	8	3.9E-03	1	Dust Only
1	0	0	7782492	Selenium	1	0	4.0E-06	1	Dust Only
1	0	0	1175	Silicacrystalline5	1	809	4.0E-01	1	Dust Only
1	0	0	7440666	Zinc	1	5	2.4E-03	1	Dust Only

HARP Project Summary Report 11/20/2023 5:17:30 PM

PROJECT INFORMATION
HARP Version: 22118
Project Name: SMR_demo
Project Output Directory: C:\HARP2\Projects\SMR_demo
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):720000
Y (m):3880000
Zone:10
No. of Sources:1
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:32
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
1	0	0	9901	DieselExhPM	1	321.2	0	1
1	0	0	1151	PAHsnonNapth	1	0	0.00117180375	1
1	0	0	50000	Formaldehyde	1	0	0.03618337125	1
1	0	0	71432	Benzene	1	0	0.00390531375	1
1	0	0	75070	Acetaldehyde	1	0	0.01641992625	1
1	0	0	91203	PAHsNapth	1	0	0.00041296125	1
1	0	0	100414	Ethylbenzene	1	0	0.00022849125	1
1	0	0	106990	13Butadiene	1	0	0.0045572475	1
1	0	0	107028	Acrolein	1	0	0.00071062875	1
1	0	0	108883	Toluene	1	0	0.0022094475	1
1	0	0	110543	Hexane	1	0	0.00056389125	1
1	0	0	1330207	Xylenes	1	0	0.00088881	1
1	0	0	7439921	Lead	1	73.4	0.0354856167906148	1
1	0	0	7439965	Manganese	1	0	6.498375E-05	1
1	0	0	7439976	Mercury	1	0	4.1925E-05	1
1	0	0	7440020	Nickel	1	5.5	0.00272910764001149	1
1	0	0	7440382	Arsenic	1	1.2	0.00060373929938709	1
1	0	0	7440439	Cadmium	1	1.9	0.000927471220465428	1
1	0	0	7440508	Copper	1	0	8.594625E-05	1
1	0	0	7647010	Hydrochloricacid	1	0	0.00390531375	1
1	0	0	7664417	Ammonia	1	0	0.405275	1
1	0	0	7782492	Selenium	1	0	4.61175E-05	1
1	0	0	18540299	Hexchromium	1	0	2.09625E-06	1
1	0	0	7429905	Aluminum	1	6820.3	3.36733609795054	1
1	0	0	7440393	Barium	1	82.9	0.0409472486292661	1
1	0	0	7440417	Beryllium	1	0.1	4.18255859338775E-05	1
1	0	0	7440473	Chromiumtotal	1	21	0.0103727453116016	1
1	0	0	7440508	Copper	1	7.5	0.00368065156218122	1

1	0	0	7439965	Manganese	1	82.4	0.0406962951136628	1
1	0	0	7782492	Selenium	1	0.1	4.18255859338775E-05	1
1	0	0	1175	Silicacrystalline	5	1	8471.5	4.18255859338775 1
1	0	0	7440666	Zinc	1	51.3	0.0253044794899959	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1175MAXHR.txt
1175PER.txt
1330207MAXHR.txt
1330207PER.txt
18540299MAXHR.txt
18540299PER.txt
193395MAXHR.txt
193395PER.txt
205823MAXHR.txt
205823PER.txt
205992MAXHR.txt
205992PER.txt
218019MAXHR.txt
218019PER.txt
50000MAXHR.txt
50000PER.txt
50328MAXHR.txt
50328PER.txt
53703MAXHR.txt
53703PER.txt
56553MAXHR.txt
56553PER.txt
630080MAXHR.txt
630080PER.txt
71432MAXHR.txt
71432PER.txt
7429905MAXHR.txt
7429905PER.txt
7439921MAXHR.txt

7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440360MAXHR.txt
7440360PER.txt
7440382MAXHR.txt
7440382PER.txt
7440393MAXHR.txt
7440393PER.txt
7440417MAXHR.txt
7440417PER.txt
7440439MAXHR.txt
7440439PER.txt
7440473MAXHR.txt
7440473PER.txt
7440508MAXHR.txt
7440508PER.txt
7440622MAXHR.txt
7440622PER.txt
7440666MAXHR.txt
7440666PER.txt
7446095MAXHR.txt
7446095PER.txt
75070MAXHR.txt
75070PER.txt
7647010MAXHR.txt
7647010PER.txt
7664417MAXHR.txt
7664417PER.txt
7782492MAXHR.txt
7782492PER.txt
7782505MAXHR.txt
7782505PER.txt
7783064MAXHR.txt
7783064PER.txt
91203MAXHR.txt
91203PER.txt
9901MAXHR.txt
9901PER.txt
9960MAXHR.txt
9960PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH23118
Official: True

PolID PolAbbrev InhCancer OralCancer AcuteREL InhChronicREL OralChronicREL InhChronic8HRREL

9901	DieselExhPM	1.1			5		
1151	PAHs-w/o	3.9	12				
50000	Formaldehyde	0.021		55	9		9
71432	Benzene	0.1		27	3		3
75070	Acetaldehyde	0.01		470	140		300
91203	Naphthalene	0.12			9		
100414	Ethyl Benzene	0.0087			2000		
106990	1,3-Butadiene	0.6		660	2		9
107028	Acrolein			2.5	0.35		0.7
108883	Toluene			5000	420		830
110543	Hexane				7000		
1330207	Xylenes			22000	700		
7439921	Lead	0.042	0.0085				
7439965	Manganese				0.09		0.17
7439976	Mercury			0.6	0.03	0.00016	0.06
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
7440439	Cadmium	15			0.02	0.0005	
7440508	Copper			100			
7647010	HCl			2100	9		
7664417	NH3			3200	200		
7782492	Selenium				20	0.005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7429905	Aluminum						
7440393	Barium						
7440417	Beryllium	8.4			0.007	0.002	
7440473	Chromium						
1175	Silica, Crystln				3		
7440666	Zinc						

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274
AERPLOT: 13329

METEOROLOGICAL INFORMATION
Version:
Surface File: C:\HARP2\MET\SLO_Mesa1.SFC
Profile File: C:\HARP2\MET\SLO_Mesa1.PFL
Surface Station: 723940
Upper Station: 93214
On-Site Station: 92004
Start Date & Time: 8 1 1 1
End Date & Time: 12 12 31 24
Hours Processed: 43848
Calm Hours: 162
Missing Hours: 1408

LIST OF AIR DISPERSION FILES
AERMOD Input File: \SMR_demo_AERMOD.inp

AERMOD Output File: \SMR_demo_AERMOD.out
AERMOD Error File: \SMR_demo_AERMOD.ERR
Plotfile list

_____
MAX1HR1.PLT
MAX1HR10.PLT
MAX1HR11.PLT
MAX1HR12.PLT
MAX1HR13.PLT
MAX1HR14.PLT
MAX1HR15.PLT
MAX1HR16.PLT
MAX1HR18.PLT
MAX1HR19.PLT
MAX1HR2.PLT
MAX1HR20.PLT
MAX1HR21.PLT
MAX1HR22.PLT
MAX1HR25.PLT
MAX1HR26.PLT
MAX1HR27.PLT
MAX1HR28.PLT
MAX1HR29.PLT
MAX1HR3.PLT
MAX1HR30.PLT
MAX1HR31.PLT
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MAX1HR33.PLT
MAX1HR34.PLT
MAX1HR35.PLT
MAX1HR36.PLT
MAX1HR39.PLT
MAX1HR4.PLT
MAX1HR40.PLT
MAX1HR41.PLT
MAX1HR42.PLT
MAX1HR44.PLT
MAX1HR47.PLT
MAX1HR48.PLT
MAX1HR5.PLT
MAX1HR50.PLT
MAX1HR51.PLT
MAX1HR52.PLT
MAX1HR53.PLT
MAX1HR54.PLT
MAX1HR55.PLT
MAX1HR56.PLT
MAX1HR57.PLT
MAX1HR58.PLT
MAX1HR6.PLT
MAX1HR66.PLT
MAX1HR67.PLT
MAX1HR68.PLT
MAX1HR7.PLT

MAX1HR70.PLT
MAX1HR71.PLT
MAX1HR8.PLT
MAX1HR9.PLT
PERIOD1.PLT
PERIOD10.PLT
PERIOD11.PLT
PERIOD12.PLT
PERIOD13.PLT
PERIOD14.PLT
PERIOD15.PLT
PERIOD16.PLT
PERIOD18.PLT
PERIOD19.PLT
PERIOD2.PLT
PERIOD20.PLT
PERIOD21.PLT
PERIOD22.PLT
PERIOD25.PLT
PERIOD26.PLT
PERIOD27.PLT
PERIOD28.PLT
PERIOD29.PLT
PERIOD3.PLT
PERIOD30.PLT
PERIOD31.PLT
PERIOD32.PLT
PERIOD33.PLT
PERIOD34.PLT
PERIOD35.PLT
PERIOD36.PLT
PERIOD39.PLT
PERIOD4.PLT
PERIOD40.PLT
PERIOD41.PLT
PERIOD42.PLT
PERIOD44.PLT
PERIOD47.PLT
PERIOD48.PLT
PERIOD5.PLT
PERIOD50.PLT
PERIOD51.PLT
PERIOD52.PLT
PERIOD53.PLT
PERIOD54.PLT
PERIOD55.PLT
PERIOD56.PLT
PERIOD57.PLT
PERIOD58.PLT
PERIOD6.PLT
PERIOD66.PLT
PERIOD67.PLT
PERIOD68.PLT
PERIOD7.PLT

PERIOD70.PLT
PERIOD71.PLT
PERIOD8.PLT
PERIOD9.PLT

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

_____
CancerRisk.csv
CancerRiskSumByRec.csv
ConservAltCancerRisk.csv
ConservAltCancerRiskSumByRec.csv
ConservAltGLCList.csv
ConservAltHRAInput.hra
ConservAltNCAcuteRisk.csv
ConservAltNCAcuteRiskSumByRec.csv
ConservAltNCChronicRisk.csv
ConservAltNCChronicRiskSumByRec.csv
ConservAltOutput.txt
ConservAltPathwayRec.csv
ConservAltPolDB.csv
GLCList.csv
HRAInput.hra
MitigatedCancerRisk.csv
MitigatedCancerRiskSumByRec.csv
MitigatedGLCList.csv
MitigatedHRAInput.hra
MitigatedNCAcuteRisk.csv
MitigatedNCAcuteRiskSumByRec.csv
MitigatedNCChronicRisk.csv
MitigatedNCChronicRiskSumByRec.csv
MitigatedOutput.txt
MitigatedPathwayRec.csv
MitigatedPolDB.csv
NCAcuteRisk.csv
NCAcuteRiskSumByRec.csv
NCChronicRisk.csv
NCChronicRiskSumByRec.csv
Output.txt
PathwayRec.csv
PolDB.csv

Spatial averaging files (\sa\)
_____

HARP2 - HRACalc (dated 22118) 11/20/2023 5:22:52 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 3

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 1
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\HARP2\Projects\SMR_demo\hra\ConservAltCancerRisk.csv
Cancer risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\ConservAltCancerRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 22118) 11/20/2023 5:21:45 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCAcute
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to:

C:\HARP2\Projects\SMR_demo\hra\ConservAltNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\ConservAltNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 22118) 11/20/2023 5:24:29 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to:
C:\HARP2\Projects\SMR_demo\hra\ConservAltNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\HARP2\Projects\SMR_demo\hra\ConservAltNCChronicRiskSumByRec.csv
HRA ran successfully

Phillips66 SMR Demolition and Remediation Conservative Alternative Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Phillips66 SMR Demolition and Remediation Conservative Alternative
Construction Start Date	7/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.90
Precipitation (days)	1.60
Location	35.04025648015404, -120.59063649643826
County	San Luis Obispo
City	Unincorporated
Air District	San Luis Obispo County APCD
Air Basin	South Central Coast
TAZ	3322
EDFZ	6
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Southern California Gas
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Heavy Industry	9,496	1000sqft	218	9,496,000	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers
Construction	C-9	Use Dust Suppressants
Construction	C-10-B	Water Active Demolition Sites
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.3	111	72.7	0.24	3.40	547	550	3.11	54.9	58.0	26,970	1.51	1.09	27,341
Mit.	4.49	86.1	131	0.26	0.92	52.2	53.2	0.87	5.50	6.37	28,798	1.59	1.11	29,176
% Reduced	56%	22%	-81%	-7%	73%	90%	90%	72%	90%	89%	-7%	-5%	-1%	-7%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.83	19.8	12.9	0.04	0.61	96.9	97.5	0.55	9.73	10.3	4,801	0.27	0.19	4,866
Mit.	0.79	15.4	23.4	0.05	0.16	9.26	9.43	0.15	0.98	1.13	5,126	0.28	0.20	5,193
% Reduced	57%	22%	-81%	-7%	73%	90%	90%	72%	90%	89%	-7%	-5%	-1%	-7%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.33	3.62	2.36	0.01	0.11	17.7	17.8	0.10	1.78	1.88	795	0.04	0.03	806
Mit.	0.14	2.82	4.27	0.01	0.03	1.69	1.72	0.03	0.18	0.21	849	0.05	0.03	860

% Reduced	57%	22%	-81%	-7%	73%	90%	90%	72%	90%	89%	-7%	-5%	-1%	-7%

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	10.3	111	72.7	0.24	3.40	547	550	3.11	54.9	58.0	26,970	1.51	1.09	27,341
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.83	19.8	12.9	0.04	0.61	96.9	97.5	0.55	9.73	10.3	4,801	0.27	0.19	4,866
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.33	3.62	2.36	0.01	0.11	17.7	17.8	0.10	1.78	1.88	795	0.04	0.03	806

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.49	86.1	131	0.26	0.92	52.2	53.2	0.87	5.50	6.37	28,798	1.59	1.11	29,176
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2025	0.79	15.4	23.4	0.05	0.16	9.26	9.43	0.15	0.98	1.13	5,126	0.28	0.20	5,193
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.14	2.82	4.27	0.01	0.03	1.69	1.72	0.03	0.18	0.21	849	0.05	0.03	860

3. Construction Emissions Details

3.1. Demolition, Remediation and Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	9.19	84.7	55.0	0.19	3.34	—	3.34	3.08	—	3.08	20,791	0.84	0.17	20,863
Dust From Material Movement	—	—	—	—	—	0.67	0.67	—	0.07	0.07	—	—	—	—
Demolition	—	—	—	—	—	3.00	3.00	—	0.45	0.45	—	—	—	—
Onsite truck	0.99	26.0	15.0	0.05	0.06	542	542	0.04	54.2	54.2	5,532	0.65	0.90	5,823
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.64	15.1	9.79	0.03	0.60	—	0.60	0.55	—	0.55	3,703	0.15	0.03	3,715
Dust From Material Movement	—	—	—	—	—	0.12	0.12	—	0.01	0.01	—	—	—	—
Demolition	—	—	—	—	—	0.53	0.53	—	0.08	0.08	—	—	—	—

Onsite truck	0.17	4.72	2.71	0.01	0.01	96.2	96.2	0.01	9.61	9.62	987	0.12	0.16	1,038
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	2.75	1.79	0.01	0.11	—	0.11	0.10	—	0.10	613	0.02	< 0.005	615
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—
Demolition	—	—	—	—	—	0.10	0.10	—	0.01	0.01	—	—	—	—
Onsite truck	0.03	0.86	0.50	< 0.005	< 0.005	17.5	17.5	< 0.005	1.75	1.75	163	0.02	0.03	172
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.21	2.69	0.00	0.00	0.62	0.62	0.00	0.15	0.15	646	0.02	0.02	656
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.04	0.43	0.00	0.00	0.11	0.11	0.00	0.03	0.03	111	< 0.005	< 0.005	112
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	18.4	< 0.005	< 0.005	18.6
Vendor	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
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Demolition, Remediation and Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.39	59.9	114	0.21	0.87	—	0.87	0.83	—	0.83	22,619	0.92	0.18	22,697
Dust From Material Movement	—	—	—	—	—	0.67	0.67	—	0.07	0.07	—	—	—	—
Demolition	—	—	—	—	—	1.92	1.92	—	0.29	0.29	—	—	—	—
Onsite truck	0.99	26.0	15.0	0.05	0.06	49.0	49.1	0.04	4.99	5.03	5,532	0.65	0.90	5,823
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	10.7	20.2	0.04	0.15	—	0.15	0.15	—	0.15	4,028	0.16	0.03	4,042
Dust From Material Movement	—	—	—	—	—	0.12	0.12	—	0.01	0.01	—	—	—	—
Demolition	—	—	—	—	—	0.34	0.34	—	0.05	0.05	—	—	—	—
Onsite truck	0.17	4.72	2.71	0.01	0.01	8.69	8.70	0.01	0.88	0.89	987	0.12	0.16	1,038
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.95	3.69	0.01	0.03	—	0.03	0.03	—	0.03	667	0.03	0.01	669
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—
Demolition	—	—	—	—	—	0.06	0.06	—	0.01	0.01	—	—	—	—
Onsite truck	0.03	0.86	0.50	< 0.005	< 0.005	1.59	1.59	< 0.005	0.16	0.16	163	0.02	0.03	172

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.21	2.69	0.00	0.00	0.62	0.62	0.00	0.15	0.15	646	0.02	0.02	656
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.04	0.43	0.00	0.00	0.11	0.11	0.00	0.03	0.03	111	< 0.005	< 0.005	112
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	18.4	< 0.005	< 0.005	18.6
Vendor	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
Hauling	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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition, Remediation and Grading	Demolition	7/1/2025	9/29/2025	5.00	65.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition, Remediation and Grading	Aerial Lifts	Diesel	Average	2.00	8.00	63.0	0.40
Demolition, Remediation and Grading	Bore/Drill Rigs	Diesel	Average	1.00	2.00	221	0.38
Demolition, Remediation and Grading	Crushing/Proc. Equipment	Diesel	Average	1.00	8.00	12.0	0.85
Demolition, Remediation and Grading	Cranes	Diesel	Average	2.00	8.00	231	0.29
Demolition, Remediation and Grading	Other Material Handling Equipment	Diesel	Average	2.00	6.00	344	0.38
Demolition, Remediation and Grading	Excavators	Diesel	Average	4.00	6.00	619	0.38
Demolition, Remediation and Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	243	0.37
Demolition, Remediation and Grading	Off-Highway Trucks	Diesel	Average	4.00	8.00	475	0.38
Demolition, Remediation and Grading	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Demolition, Remediation and Grading	Graders	Diesel	Average	3.00	8.00	354	0.41
Demolition, Remediation and Grading	Generator Sets	Diesel	Average	4.00	8.00	84.0	0.74

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition, Remediation and Grading	Aerial Lifts	Diesel	Average	2.00	8.00	63.0	0.40
Demolition, Remediation and Grading	Bore/Drill Rigs	Diesel	Tier 4 Interim	1.00	2.00	221	0.38
Demolition, Remediation and Grading	Crushing/Proc. Equipment	Diesel	Average	1.00	8.00	12.0	0.85
Demolition, Remediation and Grading	Cranes	Diesel	Tier 4 Interim	2.00	8.00	231	0.29
Demolition, Remediation and Grading	Other Material Handling Equipment	Diesel	Tier 4 Interim	2.00	6.00	344	0.38
Demolition, Remediation and Grading	Excavators	Diesel	Tier 4 Interim	4.00	6.00	619	0.38
Demolition, Remediation and Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	2.00	6.00	243	0.37
Demolition, Remediation and Grading	Off-Highway Trucks	Diesel	Tier 4 Interim	4.00	8.00	475	0.38
Demolition, Remediation and Grading	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Demolition, Remediation and Grading	Graders	Diesel	Tier 4 Interim	3.00	8.00	354	0.41
Demolition, Remediation and Grading	Generator Sets	Diesel	Average	4.00	8.00	84.0	0.74

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition, Remediation and Grading	—	—	—	—
Demolition, Remediation and Grading	Worker	20.0	44.0	LDA,LDT1,LDT2
Demolition, Remediation and Grading	Vendor	—	0.00	HHDT,MHDT
Demolition, Remediation and Grading	Hauling	0.00	0.00	HHDT
Demolition, Remediation and Grading	Onsite truck	1,480	0.60	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition, Remediation and Grading	—	—	—	—
Demolition, Remediation and Grading	Worker	20.0	44.0	LDA,LDT1,LDT2
Demolition, Remediation and Grading	Vendor	—	0.00	HHDT,MHDT
Demolition, Remediation and Grading	Hauling	0.00	0.00	HHDT
Demolition, Remediation and Grading	Onsite truck	1,480	0.60	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)

Demolition, Remediation and Grading	129,500	0.00	150	8,901	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Single phase for all activities: demolition, remediation and grading occurring at the same time
Construction: Off-Road Equipment	Equipment list based on PD, noise report and Applicant Air Report, worst case quarter estimate
Construction: Off-Road Equipment EF	Enter generators manually from Appendix D of CalEEMod manual for 2025 generator sets 50-100hp. Other material handling equipment set as excavators 344 hp to allow for mitigation.
Construction: Dust From Material Movement	Based on Applicant material and areas graded. Material imported based on grading material movement onsite
Construction: On-Road Fugitive Dust	Based on Applicant submissions
Construction: Trips and VMT	Distances based on Applicant data
Land Use	Area based on Project Description