

# Appendix C

## Air Quality and Greenhouse Gas Emissions Supporting Documentation





# Criteria Pollutant Summary



Tiscornia Marsh Restoration Criteria Pollutant Summary

Parameter	Tons			
	ROG	NO <sub>x</sub>	Exhaust PM <sub>10</sub>	Exhaust PM <sub>2.5</sub>
Phase 1 On-site Construction and haul trucks	0.18	1.5	0.067	0.062
Phase 1 Marine Emissions (tug and work boat)	0.17	1.97	0.11	0.1
Phase 2 On-site Construction and haul trucks	0.25	2.55	0.096	0.089
Phase 2 Marine Emissions (tug and work boat)	0.02	0.22	0.01	0.01
Phase 3 On-site Construction and haul trucks	0.055	0.43	0.019	0.017
Phase 3 Marine Emissions (tug and work boat)	0.04	0.53	0.03	0.03
Total Tons	0.66	6.77	0.313	0.291
Total Work Days	275	275	275	275
Average pounds per day	4.80	49.24	2.28	2.12
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No



# GHG Emission Summary

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**Summary of project GHG Emissions - Tiscornia Marsh Restoration**

Parameter	GHG (MT)
Phase 1 On-site Construction and haul trucks	325
Phase 1 Marine Emissions (tug and work boat)	147
Phase 2 On-site Construction and haul trucks	679
Phase 2 Marine Emissions (tug and work boat)	136
Phase 3 On-site Construction and haul trucks	109
Phase 3 Marine Emissions (tug and work boat)	20
Total Metric Tons Tons	1307
Amortized over 30 year life of project	44



# Marine Emission Calculations

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## Construction Marine Emissions

Year = 2023 Site Preparation and new beach construction

Duration = 81 days

Total Phase 1 Work Days = 100 days

### Source Work Boat

Use = 8 hours/day

Total Useage during phase = 648 hours

**Emission Rate** Source: SMAQMD Harborcraft, Dredge and Barge Emission Factor Model

Running	ROG	NOx	PM10	PM2.5	CO2
lb/hr	0.510592	6.072689	0.349288	0.311031	429.51

Running Emissions =	ROG	NOx	PM10	PM2.5	CO2
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pounds =	330.86	3935.10	226.3386	201.5482	278325.5
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Tons =	0.17	1.97	0.11	0.10	139.16
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Duration = 9 days

### Source Tug with Barge

Year = 2025

Useage = 8 hour/ day

Total Useage phase = 72 hours

### Emission Factors

Running	ROG	NOx	PM10	PM2.5	CO2	Source: SMAQMD Harborcraft, Dredge and Barge Emission Factor Model
lbs/hour	0.738299	8.780906	0.505059	0.449741	621.06	

Running Emissions =	ROG	NOx	PM10	PM2.5	CO2
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Total Pounds =	53.16	632.23	36.36	32.38	4.47E+04
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Total Tons =	0.03	0.32	0.02	0.02	22.36
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### Total Year

#### 2023 Tons

#### (Work Boat

#### and Barge) =

0.19	2.28	0.13	0.12	161.52
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#### Total MT CO2e =

146.53

Year = 2024 Marsh Reconstruction

Duration = 87 days

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<b>Source</b>	<b>Work Boat</b>				
Use =	8 hours/day				
Total Useage during phase =	696 hours				
<b>Emission Rate</b>	Source: SMAQMD Harborcraft, Dredge and Barge Emission Factor Model				
Running lb/hr	ROG	NOx	PM10	PM2.5	CO2
	0.510592	6.072689	0.349288	0.311031	429.51
Running Emissions =	ROG	NOx	PM10	PM2.5	CO2
pounds =	355.37	4226.59	243.1044	216.4777	298942.2
<b>Total Year</b>					
<b>2024 Tons</b>					
<b>(Work Boat) =</b>	0.18	2.11	0.12	0.11	149.47
<b>Total MT CO2e =</b>					<b>135.60</b>

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Year = 2025 Beach Construction

Duration = 9 days

Source	Work Boat				
Use =	8 hours/day				
Total Useage during phase =	72 hours				
<b>Emission Rate</b>	Source: SMAQMD Harborcraft, Dredge and Barge Emission Factor Model				
Running lb/hr	ROG	NOx	PM10	PM2.5	CO2
	0.510592	6.072689	0.349288	0.311031	429.51
Running Emissions =	ROG	NOx	PM10	PM2.5	CO2
pounds =	36.76	437.23	25.14873	22.39424	30925.06

Duration = 9 days

Source	Tug with Barge				
Year =	2025				
Useage =	8 hour/ day				
Total Useage phase =	72 hours				
<b>Emission Factors</b>	Source: SMAQMD Harborcraft, Dredge and Barge Emission Factor Model				
Running lbs/hour	ROG	NOx	PM10	PM2.5	CO2
	0.738299	8.780906	0.505059	0.449741	621.06
Running Emissions =	ROG	NOx	PM10	PM2.5	CO2
Total Pounds =	53.16	632.23	36.36	32.38	44716.60
Total Tons =	0.03	0.32	0.02	0.02	22.36
<b>Total Year 2025 Tons (Work Boat and Barge) =</b>	<b>0.03</b>	<b>0.32</b>	<b>0.02</b>	<b>0.02</b>	<b>22.36</b>
<b>Total MT CO2e =</b>					<b>20.28</b>

Metric ton conversion 1 ton = 0.907185 Metric ton

# CalEEmod Output



Tiscroria Marsh Adaptation Project - Marin County, Annual

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

**Tiscroria Marsh Adaptation Project  
Marin County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	28.00	Acre	28.00	1,219,680.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	69
<b>Climate Zone</b>	5			<b>Operational Year</b>	2027
<b>Utility Company</b>	Pacific Gas and Electric Company				
<b>CO2 Intensity (lb/MWhr)</b>	203.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics - wind speed is default value

Land Use -

Construction Phase - Phasing adjusted to match RFI response

Off-road Equipment - Amphibious excavator and low pressure dozer.

Off-road Equipment - Other construction equipment is sheepsfoot compactor.

Off-road Equipment - Other handling equipment is a dragline.

Off-road Equipment - Other handling equipment is dragline.

Off-road Equipment - Other construction equipment is sheepsfoot compactor. Other handling equipment is dragline.

Off-road Equipment - Equipment hours calculated from equipment days. HP provided by contractor. Other equip is sheepsfoot compactor. Crane is pile driver.

Off-road Equipment - Other construction equipment is sheepsfoot compactor.

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

Grading - Excavation only no grading.

Vehicle Trips - No operational emissions

Landscape Equipment - No operational emissions

Water And Wastewater - No operational emissions.

Solid Waste - No operational emissions.

Construction Off-road Equipment Mitigation - Tier 4 equipment as potential mitigation, if necessary.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	16.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	45.00	77.00
tblConstructionPhase	NumDays	45.00	87.00
tblConstructionPhase	NumDays	45.00	60.00
tblConstructionPhase	NumDays	45.00	25.00
tblConstructionPhase	NumDays	45.00	9.00
tblConstructionPhase	NumDays	45.00	8.00

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

tblConstructionPhase	NumDays	20.00	23.00
tblFleetMix	HHD	0.00	3.7270e-003
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDT1	0.00	0.06
tblFleetMix	LDT2	0.00	0.20
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD2	0.00	5.6320e-003
tblFleetMix	MCY	0.00	0.03
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MH	0.00	2.7160e-003
tblFleetMix	MHD	0.00	6.9200e-003
tblFleetMix	OBUS	0.00	6.5600e-004
tblFleetMix	SBUS	0.00	7.2500e-004
tblFleetMix	UBUS	0.00	3.9000e-004
tblGrading	MaterialImported	0.00	18,000.00
tblOffRoadEquipment	HorsePower	231.00	1,311.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	475.00
tblOffRoadEquipment	HorsePower	172.00	157.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	97.00	241.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	402.00	320.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	300.00

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

tblOffRoadEquipment	HorsePower	172.00	157.00
tblOffRoadEquipment	HorsePower	168.00	400.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	97.00	241.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	402.00	320.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	172.00	157.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	168.00	400.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	231.00	1,311.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	172.00	157.00
tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	HorsePower	158.00	275.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	168.00	400.00

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

tblOffRoadEquipment	HorsePower	247.00	165.00
tblOffRoadEquipment	LoadFactor	0.42	0.40
tblProjectCharacteristics	PrecipitationFrequency	0	69
tblProjectCharacteristics	WindSpeed	0	2.2
tblSolidWaste	SolidWasteGenerationRate	2.41	0.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblWater	OutdoorWaterUseRate	33,361,477.79	0.00

**2.0 Emissions Summary**

**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1789	1.4992	1.1877	3.6700e-003	0.5295	0.0673	0.5967	0.2888	0.0619	0.3507	0.0000	322.5299	322.5299	0.1025	1.7000e-004	325.1443
2024	0.2499	2.5503	1.9230	7.2200e-003	0.9839	0.0964	1.0803	0.5169	0.0889	0.6057	0.0000	664.3454	664.3454	0.1431	0.0366	678.8223
2025	0.0554	0.4296	0.4858	1.2300e-003	0.1874	0.0190	0.2063	0.1018	0.0174	0.1192	0.0000	108.3546	108.3546	0.0341	8.0000e-005	109.2320
<b>Maximum</b>	<b>0.2499</b>	<b>2.5503</b>	<b>1.9230</b>	<b>7.2200e-003</b>	<b>0.9839</b>	<b>0.0964</b>	<b>1.0803</b>	<b>0.5169</b>	<b>0.0889</b>	<b>0.6057</b>	<b>0.0000</b>	<b>664.3454</b>	<b>664.3454</b>	<b>0.1431</b>	<b>0.0366</b>	<b>678.8223</b>

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

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0471	0.2249	1.8121	3.6700e-003	0.5295	6.0700e-003	0.5355	0.2888	6.0700e-003	0.2949	0.0000	322.5295	322.5295	0.1025	1.7000e-004	325.1439
2024	0.0751	0.8259	2.6890	7.2200e-003	0.9839	0.0112	0.9951	0.5169	0.0110	0.5279	0.0000	664.3449	664.3449	0.1431	0.0366	678.8219
2025	0.0161	0.0893	0.6813	1.2300e-003	0.1874	2.0800e-003	0.1895	0.1018	2.0800e-003	0.1038	0.0000	108.3545	108.3545	0.0341	8.0000e-005	109.2319
<b>Maximum</b>	<b>0.0751</b>	<b>0.8259</b>	<b>2.6890</b>	<b>7.2200e-003</b>	<b>0.9839</b>	<b>0.0112</b>	<b>0.9951</b>	<b>0.5169</b>	<b>0.0110</b>	<b>0.5279</b>	<b>0.0000</b>	<b>664.3449</b>	<b>664.3449</b>	<b>0.1431</b>	<b>0.0366</b>	<b>678.8219</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>71.46</b>	<b>74.55</b>	<b>-44.09</b>	<b>0.00</b>	<b>0.00</b>	<b>89.43</b>	<b>8.67</b>	<b>0.00</b>	<b>88.61</b>	<b>13.85</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2023	11-30-2023	1.3036	0.2206
2	12-1-2023	2-29-2024	0.4012	0.0567
5	9-1-2024	11-30-2024	2.0639	0.6702
6	12-1-2024	2-28-2025	0.7439	0.2356
9	9-1-2025	9-30-2025	0.2209	0.0361
		Highest	2.0639	0.6702

**2.2 Overall Operational**  
**Unmitigated Operational**



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

Water						0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0115</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

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

**3.0 Construction Detail**

**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/1/2023	10/2/2023	5	23	Phase 1A activities
2	Initial Beach Construction	Grading	9/14/2023	12/31/2023	5	77	
3	Levee excavation, placement and compaction	Grading	9/1/2024	12/31/2024	5	87	Phase 2 activities
4	Drying and Shaping	Grading	10/9/2024	12/31/2024	5	60	Phase 2B activities
5	Final Levee Lift and Diked Marsh Work	Grading	9/1/2025	10/3/2025	5	25	Phase 3A activities
6	Final Lift and Shape of Beach	Grading	10/4/2025	10/16/2025	5	9	Phase 3B activities
7	Site Restoration	Grading	10/17/2025	10/30/2025	5	8	Phase 3C activities

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –**

**OffRoad Equipment**



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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Cranes	1	1.70	1311	0.29
Site Preparation	Excavators	1	2.80	275	0.38
Site Preparation	Off-Highway Trucks	1	2.80	350	0.38
Site Preparation	Off-Highway Trucks	2	8.30	475	0.38
Site Preparation	Other Construction Equipment	1	3.50	157	0.42
Site Preparation	Rubber Tired Dozers	1	7.00	165	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	6.30	241	0.37
Levee excavation, placement and compaction	Cranes	0	7.00	231	0.29
Levee excavation, placement and compaction	Excavators	1	1.80	275	0.38
Levee excavation, placement and compaction	Excavators	2	8.00	275	0.38
Levee excavation, placement and compaction	Off-Highway Trucks	1	3.70	320	0.38
Levee excavation, placement and compaction	Off-Highway Trucks	1	7.60	350	0.38
Levee excavation, placement and compaction	Off-Highway Trucks	1	1.80	300	0.38
Levee excavation, placement and compaction	Other Construction Equipment	1	11.60	157	0.42
Levee excavation, placement and compaction	Other Material Handling Equipment	2	8.00	400	0.40
Levee excavation, placement and compaction	Rubber Tired Dozers	1	5.80	165	0.40
Levee excavation, placement and compaction	Rubber Tired Dozers	2	8.00	165	0.40
Levee excavation, placement and compaction	Tractors/Loaders/Backhoes	1	7.60	241	0.37
Drying and Shaping	Excavators	1	8.00	275	0.38
Drying and Shaping	Graders	0	8.00	187	0.41
Drying and Shaping	Pavers	0	8.00	130	0.42
Drying and Shaping	Paving Equipment	0	8.00	132	0.36
Drying and Shaping	Rollers	0	8.00	80	0.38
Drying and Shaping	Rubber Tired Dozers	1	8.00	165	0.40
Drying and Shaping	Scrapers	0	8.00	367	0.48
Drying and Shaping	Tractors/Loaders/Backhoes	0	8.00	97	0.37

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

Final Levee Lift and Diked Marsh Work	Air Compressors	0	6.00	78	0.48
Final Levee Lift and Diked Marsh Work	Excavators	1	2.20	275	0.38
Final Levee Lift and Diked Marsh Work	Excavators	1	2.20	275	0.38
Final Levee Lift and Diked Marsh Work	Graders	0	8.00	187	0.41
Final Levee Lift and Diked Marsh Work	Off-Highway Trucks	1	4.50	320	0.38
Final Levee Lift and Diked Marsh Work	Off-Highway Trucks	1	8.00	350	0.38
Final Levee Lift and Diked Marsh Work	Off-Highway Trucks	1	6.70	300	0.38
Final Levee Lift and Diked Marsh Work	Other Construction Equipment	1	7.00	157	0.42
Final Levee Lift and Diked Marsh Work	Rubber Tired Dozers	2	4.60	165	0.40
Final Levee Lift and Diked Marsh Work	Rubber Tired Dozers	1	2.20	165	0.40
Final Levee Lift and Diked Marsh Work	Scrapers	0	8.00	367	0.48
Final Levee Lift and Diked Marsh Work	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Final Lift and Shape of Beach	Excavators	2	8.40	275	0.38
Final Lift and Shape of Beach	Graders	0	8.00	187	0.41
Final Lift and Shape of Beach	Off-Highway Trucks	2	8.40	300	0.38
Final Lift and Shape of Beach	Other Material Handling Equipment	1	8.00	400	0.40
Final Lift and Shape of Beach	Rubber Tired Dozers	2	8.40	165	0.40
Final Lift and Shape of Beach	Scrapers	0	8.00	367	0.48
Final Lift and Shape of Beach	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Restoration	Cranes	1	3.00	1311	0.29
Site Restoration	Excavators	2	8.00	158	0.38
Site Restoration	Graders	0	8.00	187	0.41
Site Restoration	Off-Highway Trucks	1	5.00	350	0.38
Site Restoration	Off-Highway Trucks	2	5.00	300	0.38
Site Restoration	Other Construction Equipment	1	6.00	157	0.40
Site Restoration	Rubber Tired Dozers	1	5.00	165	0.40
Site Restoration	Scrapers	0	8.00	367	0.48

Tiscroria Marsh Adaptation Project - Marin County, Annual

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

Site Restoration	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Initial Beach Construction	Excavators	2	8.00	275	0.38
Initial Beach Construction	Graders	0	8.00	187	0.41
Initial Beach Construction	Off-Highway Trucks	2	8.00	300	0.38
Initial Beach Construction	Other Material Handling Equipment	2	8.00	400	0.40
Initial Beach Construction	Rubber Tired Dozers	2	8.00	165	0.40
Initial Beach Construction	Scrapers	0	8.00	367	0.48
Initial Beach Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Levee excavation, placement and Drying and Shaping	13	33.00	200.00	2,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Final Levee Lift and Diked Marsh Work	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Final Lift and Shape of Beach	11	28.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Restoration	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Initial Beach Construction	10	25.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Initial Beach Construction	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Use Cleaner Engines for Construction Equipment

**3.2 Site Preparation - 2023**

**Unmitigated Construction On-Site**

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0580	0.0000	0.0580	0.0319	0.0000	0.0319	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0299	0.2522	0.1986	6.6000e-004		0.0102	0.0102		9.4100e-003	9.4100e-003	0.0000	57.9500	57.9500	0.0187	0.0000	58.4186
<b>Total</b>	<b>0.0299</b>	<b>0.2522</b>	<b>0.1986</b>	<b>6.6000e-004</b>	<b>0.0580</b>	<b>0.0102</b>	<b>0.0682</b>	<b>0.0319</b>	<b>9.4100e-003</b>	<b>0.0413</b>	<b>0.0000</b>	<b>57.9500</b>	<b>57.9500</b>	<b>0.0187</b>	<b>0.0000</b>	<b>58.4186</b>

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.7500e-003	1.0000e-005	1.7300e-003	1.0000e-005	1.7400e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.3613	1.3613	4.0000e-005	4.0000e-005	1.3738
<b>Total</b>	<b>6.1000e-004</b>	<b>4.0000e-004</b>	<b>4.7500e-003</b>	<b>1.0000e-005</b>	<b>1.7300e-003</b>	<b>1.0000e-005</b>	<b>1.7400e-003</b>	<b>4.6000e-004</b>	<b>1.0000e-005</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>1.3613</b>	<b>1.3613</b>	<b>4.0000e-005</b>	<b>4.0000e-005</b>	<b>1.3738</b>

Mitigated Construction On-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0580	0.0000	0.0580	0.0319	0.0000	0.0319	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0900e-003	0.0661	0.3282	6.6000e-004		1.2000e-003	1.2000e-003		1.2000e-003	1.2000e-003	0.0000	57.9499	57.9499	0.0187	0.0000	58.4185
<b>Total</b>	<b>8.0900e-003</b>	<b>0.0661</b>	<b>0.3282</b>	<b>6.6000e-004</b>	<b>0.0580</b>	<b>1.2000e-003</b>	<b>0.0592</b>	<b>0.0319</b>	<b>1.2000e-003</b>	<b>0.0331</b>	<b>0.0000</b>	<b>57.9499</b>	<b>57.9499</b>	<b>0.0187</b>	<b>0.0000</b>	<b>58.4185</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.7500e-003	1.0000e-005	1.7300e-003	1.0000e-005	1.7400e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.3613	1.3613	4.0000e-005	4.0000e-005	1.3738
<b>Total</b>	<b>6.1000e-004</b>	<b>4.0000e-004</b>	<b>4.7500e-003</b>	<b>1.0000e-005</b>	<b>1.7300e-003</b>	<b>1.0000e-005</b>	<b>1.7400e-003</b>	<b>4.6000e-004</b>	<b>1.0000e-005</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>1.3613</b>	<b>1.3613</b>	<b>4.0000e-005</b>	<b>4.0000e-005</b>	<b>1.3738</b>

**3.3 Initial Beach Construction - 2023**

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

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4637	0.0000	0.4637	0.2549	0.0000	0.2549	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1463	1.2451	0.9677	2.9400e-003		0.0570	0.0570		0.0524	0.0524	0.0000	258.4539	258.4539	0.0836	0.0000	260.5436
<b>Total</b>	<b>0.1463</b>	<b>1.2451</b>	<b>0.9677</b>	<b>2.9400e-003</b>	<b>0.4637</b>	<b>0.0570</b>	<b>0.5207</b>	<b>0.2549</b>	<b>0.0524</b>	<b>0.3073</b>	<b>0.0000</b>	<b>258.4539</b>	<b>258.4539</b>	<b>0.0836</b>	<b>0.0000</b>	<b>260.5436</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1500e-003	1.4100e-003	0.0166	5.0000e-005	6.0700e-003	3.0000e-005	6.1000e-003	1.6100e-003	3.0000e-005	1.6400e-003	0.0000	4.7646	4.7646	1.4000e-004	1.3000e-004	4.8083
<b>Total</b>	<b>2.1500e-003</b>	<b>1.4100e-003</b>	<b>0.0166</b>	<b>5.0000e-005</b>	<b>6.0700e-003</b>	<b>3.0000e-005</b>	<b>6.1000e-003</b>	<b>1.6100e-003</b>	<b>3.0000e-005</b>	<b>1.6400e-003</b>	<b>0.0000</b>	<b>4.7646</b>	<b>4.7646</b>	<b>1.4000e-004</b>	<b>1.3000e-004</b>	<b>4.8083</b>

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

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4637	0.0000	0.4637	0.2549	0.0000	0.2549	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0362	0.1570	1.4625	2.9400e-003		4.8300e-003	4.8300e-003		4.8300e-003	4.8300e-003	0.0000	258.4536	258.4536	0.0836	0.0000	260.5433
<b>Total</b>	<b>0.0362</b>	<b>0.1570</b>	<b>1.4625</b>	<b>2.9400e-003</b>	<b>0.4637</b>	<b>4.8300e-003</b>	<b>0.4685</b>	<b>0.2549</b>	<b>4.8300e-003</b>	<b>0.2597</b>	<b>0.0000</b>	<b>258.4536</b>	<b>258.4536</b>	<b>0.0836</b>	<b>0.0000</b>	<b>260.5433</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1500e-003	1.4100e-003	0.0166	5.0000e-005	6.0700e-003	3.0000e-005	6.1000e-003	1.6100e-003	3.0000e-005	1.6400e-003	0.0000	4.7646	4.7646	1.4000e-004	1.3000e-004	4.8083
<b>Total</b>	<b>2.1500e-003</b>	<b>1.4100e-003</b>	<b>0.0166</b>	<b>5.0000e-005</b>	<b>6.0700e-003</b>	<b>3.0000e-005</b>	<b>6.1000e-003</b>	<b>1.6100e-003</b>	<b>3.0000e-005</b>	<b>1.6400e-003</b>	<b>0.0000</b>	<b>4.7646</b>	<b>4.7646</b>	<b>1.4000e-004</b>	<b>1.3000e-004</b>	<b>4.8083</b>

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

**3.4 Levee excavation, placement and compaction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7149	0.0000	0.7149	0.3925	0.0000	0.3925	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2066	1.7504	1.5065	4.1900e-003		0.0815	0.0815		0.0750	0.0750	0.0000	367.8582	367.8582	0.1190	0.0000	370.8326
<b>Total</b>	<b>0.2066</b>	<b>1.7504</b>	<b>1.5065</b>	<b>4.1900e-003</b>	<b>0.7149</b>	<b>0.0815</b>	<b>0.7964</b>	<b>0.3925</b>	<b>0.0750</b>	<b>0.4676</b>	<b>0.0000</b>	<b>367.8582</b>	<b>367.8582</b>	<b>0.1190</b>	<b>0.0000</b>	<b>370.8326</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-003	0.1671	0.0473	6.8000e-004	0.0190	1.2300e-003	0.0202	5.2200e-003	1.1800e-003	6.3900e-003	0.0000	69.4141	69.4141	4.4900e-003	0.0111	72.8257
Vendor	0.0114	0.4092	0.1500	1.8100e-003	0.0569	2.2700e-003	0.0592	0.0165	2.1700e-003	0.0186	0.0000	179.0156	179.0156	6.8900e-003	0.0253	186.7114
Worker	3.7500e-003	2.3400e-003	0.0289	9.0000e-005	0.0113	6.0000e-005	0.0114	3.0100e-003	5.0000e-005	3.0600e-003	0.0000	8.5974	8.5974	2.4000e-004	2.3000e-004	8.6730
<b>Total</b>	<b>0.0177</b>	<b>0.5786</b>	<b>0.2262</b>	<b>2.5800e-003</b>	<b>0.0872</b>	<b>3.5600e-003</b>	<b>0.0907</b>	<b>0.0247</b>	<b>3.4000e-003</b>	<b>0.0281</b>	<b>0.0000</b>	<b>257.0271</b>	<b>257.0271</b>	<b>0.0116</b>	<b>0.0366</b>	<b>268.2101</b>



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

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7149	0.0000	0.7149	0.3925	0.0000	0.3925	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0516	0.2236	2.2090	4.1900e-003		6.8800e-003	6.8800e-003		6.8800e-003	6.8800e-003	0.0000	367.8578	367.8578	0.1190	0.0000	370.8321
<b>Total</b>	<b>0.0516</b>	<b>0.2236</b>	<b>2.2090</b>	<b>4.1900e-003</b>	<b>0.7149</b>	<b>6.8800e-003</b>	<b>0.7217</b>	<b>0.3925</b>	<b>6.8800e-003</b>	<b>0.3994</b>	<b>0.0000</b>	<b>367.8578</b>	<b>367.8578</b>	<b>0.1190</b>	<b>0.0000</b>	<b>370.8321</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-003	0.1671	0.0473	6.8000e-004	0.0190	1.2300e-003	0.0202	5.2200e-003	1.1800e-003	6.3900e-003	0.0000	69.4141	69.4141	4.4900e-003	0.0111	72.8257
Vendor	0.0114	0.4092	0.1500	1.8100e-003	0.0569	2.2700e-003	0.0592	0.0165	2.1700e-003	0.0186	0.0000	179.0156	179.0156	6.8900e-003	0.0253	186.7114
Worker	3.7500e-003	2.3400e-003	0.0289	9.0000e-005	0.0113	6.0000e-005	0.0114	3.0100e-003	5.0000e-005	3.0600e-003	0.0000	8.5974	8.5974	2.4000e-004	2.3000e-004	8.6730





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Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.4000e-004	3.0200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.8984	0.8984	2.0000e-005	2.0000e-005	0.9063
<b>Total</b>	<b>3.9000e-004</b>	<b>2.4000e-004</b>	<b>3.0200e-003</b>	<b>1.0000e-005</b>	<b>1.1800e-003</b>	<b>1.0000e-005</b>	<b>1.1900e-003</b>	<b>3.1000e-004</b>	<b>1.0000e-005</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>0.8984</b>	<b>0.8984</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.9063</b>

**3.6 Final Levee Lift and Diked Marsh Work - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1073	0.0000	0.1073	0.0590	0.0000	0.0590	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0289	0.2275	0.2612	6.2000e-004		0.0104	0.0104		9.5400e-003	9.5400e-003	0.0000	54.7975	54.7975	0.0177	0.0000	55.2405
<b>Total</b>	<b>0.0289</b>	<b>0.2275</b>	<b>0.2612</b>	<b>6.2000e-004</b>	<b>0.1073</b>	<b>0.0104</b>	<b>0.1176</b>	<b>0.0590</b>	<b>9.5400e-003</b>	<b>0.0685</b>	<b>0.0000</b>	<b>54.7975</b>	<b>54.7975</b>	<b>0.0177</b>	<b>0.0000</b>	<b>55.2405</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	5.1000e-004	6.5900e-003	2.0000e-005	2.7600e-003	1.0000e-005	2.7700e-003	7.3000e-004	1.0000e-005	7.5000e-004	0.0000	2.0264	2.0264	5.0000e-005	5.0000e-005	2.0436
<b>Total</b>	<b>8.6000e-004</b>	<b>5.1000e-004</b>	<b>6.5900e-003</b>	<b>2.0000e-005</b>	<b>2.7600e-003</b>	<b>1.0000e-005</b>	<b>2.7700e-003</b>	<b>7.3000e-004</b>	<b>1.0000e-005</b>	<b>7.5000e-004</b>	<b>0.0000</b>	<b>2.0264</b>	<b>2.0264</b>	<b>5.0000e-005</b>	<b>5.0000e-005</b>	<b>2.0436</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1073	0.0000	0.1073	0.0590	0.0000	0.0590	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6400e-003	0.0331	0.3542	6.2000e-004		1.0200e-003	1.0200e-003		1.0200e-003	1.0200e-003	0.0000	54.7974	54.7974	0.0177	0.0000	55.2405
<b>Total</b>	<b>7.6400e-003</b>	<b>0.0331</b>	<b>0.3542</b>	<b>6.2000e-004</b>	<b>0.1073</b>	<b>1.0200e-003</b>	<b>0.1083</b>	<b>0.0590</b>	<b>1.0200e-003</b>	<b>0.0600</b>	<b>0.0000</b>	<b>54.7974</b>	<b>54.7974</b>	<b>0.0177</b>	<b>0.0000</b>	<b>55.2405</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Category	tons/yr										MT/yr					
	Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	5.1000e-004	6.5900e-003	2.0000e-005	2.7600e-003	1.0000e-005	2.7700e-003	7.3000e-004	1.0000e-005	7.5000e-004	0.0000	2.0264	2.0264	5.0000e-005	5.0000e-005	2.0436
<b>Total</b>	<b>8.6000e-004</b>	<b>5.1000e-004</b>	<b>6.5900e-003</b>	<b>2.0000e-005</b>	<b>2.7600e-003</b>	<b>1.0000e-005</b>	<b>2.7700e-003</b>	<b>7.3000e-004</b>	<b>1.0000e-005</b>	<b>7.5000e-004</b>	<b>0.0000</b>	<b>2.0264</b>	<b>2.0264</b>	<b>5.0000e-005</b>	<b>5.0000e-005</b>	<b>2.0436</b>

**3.7 Final Lift and Shape of Beach - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0569	0.0000	0.0569	0.0313	0.0000	0.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0130	0.0997	0.0965	2.9000e-004		4.5500e-003	4.5500e-003		4.1900e-003	4.1900e-003	0.0000	25.7667	25.7667	8.3300e-003	0.0000	25.9751
<b>Total</b>	<b>0.0130</b>	<b>0.0997</b>	<b>0.0965</b>	<b>2.9000e-004</b>	<b>0.0569</b>	<b>4.5500e-003</b>	<b>0.0615</b>	<b>0.0313</b>	<b>4.1900e-003</b>	<b>0.0355</b>	<b>0.0000</b>	<b>25.7667</b>	<b>25.7667</b>	<b>8.3300e-003</b>	<b>0.0000</b>	<b>25.9751</b>

**Unmitigated Construction Off-Site**

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.2000e-004	1.5300e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.4690	0.4690	1.0000e-005	1.0000e-005	0.4729
<b>Total</b>	<b>2.0000e-004</b>	<b>1.2000e-004</b>	<b>1.5300e-003</b>	<b>1.0000e-005</b>	<b>6.4000e-004</b>	<b>0.0000</b>	<b>6.4000e-004</b>	<b>1.7000e-004</b>	<b>0.0000</b>	<b>1.7000e-004</b>	<b>0.0000</b>	<b>0.4690</b>	<b>0.4690</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.4729</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0569	0.0000	0.0569	0.0313	0.0000	0.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6100e-003	0.0156	0.1488	2.9000e-004		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	25.7667	25.7667	8.3300e-003	0.0000	25.9751
<b>Total</b>	<b>3.6100e-003</b>	<b>0.0156</b>	<b>0.1488</b>	<b>2.9000e-004</b>	<b>0.0569</b>	<b>4.8000e-004</b>	<b>0.0574</b>	<b>0.0313</b>	<b>4.8000e-004</b>	<b>0.0318</b>	<b>0.0000</b>	<b>25.7667</b>	<b>25.7667</b>	<b>8.3300e-003</b>	<b>0.0000</b>	<b>25.9751</b>

**Mitigated Construction Off-Site**

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.2000e-004	1.5300e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.4690	0.4690	1.0000e-005	1.0000e-005	0.4729
<b>Total</b>	<b>2.0000e-004</b>	<b>1.2000e-004</b>	<b>1.5300e-003</b>	<b>1.0000e-005</b>	<b>6.4000e-004</b>	<b>0.0000</b>	<b>6.4000e-004</b>	<b>1.7000e-004</b>	<b>0.0000</b>	<b>1.7000e-004</b>	<b>0.0000</b>	<b>0.4690</b>	<b>0.4690</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.4729</b>

**3.8 Site Restoration - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0188	0.0000	0.0188	0.0103	0.0000	0.0103	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0121	0.1016	0.1176	2.8000e-004		4.0200e-003	4.0200e-003		3.7000e-003	3.7000e-003	0.0000	24.5714	24.5714	7.9500e-003	0.0000	24.7701
<b>Total</b>	<b>0.0121</b>	<b>0.1016</b>	<b>0.1176</b>	<b>2.8000e-004</b>	<b>0.0188</b>	<b>4.0200e-003</b>	<b>0.0228</b>	<b>0.0103</b>	<b>3.7000e-003</b>	<b>0.0140</b>	<b>0.0000</b>	<b>24.5714</b>	<b>24.5714</b>	<b>7.9500e-003</b>	<b>0.0000</b>	<b>24.7701</b>



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

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	1.8000e-004	2.3500e-003	1.0000e-005	9.8000e-004	0.0000	9.9000e-004	2.6000e-004	0.0000	2.7000e-004	0.0000	0.7237	0.7237	2.0000e-005	2.0000e-005	0.7298
<b>Total</b>	<b>3.1000e-004</b>	<b>1.8000e-004</b>	<b>2.3500e-003</b>	<b>1.0000e-005</b>	<b>9.8000e-004</b>	<b>0.0000</b>	<b>9.9000e-004</b>	<b>2.6000e-004</b>	<b>0.0000</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>0.7237</b>	<b>0.7237</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.7298</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0188	0.0000	0.0188	0.0103	0.0000	0.0103	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4300e-003	0.0398	0.1679	2.8000e-004		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	24.5714	24.5714	7.9500e-003	0.0000	24.7701
<b>Total</b>	<b>3.4300e-003</b>	<b>0.0398</b>	<b>0.1679</b>	<b>2.8000e-004</b>	<b>0.0188</b>	<b>5.6000e-004</b>	<b>0.0194</b>	<b>0.0103</b>	<b>5.6000e-004</b>	<b>0.0109</b>	<b>0.0000</b>	<b>24.5714</b>	<b>24.5714</b>	<b>7.9500e-003</b>	<b>0.0000</b>	<b>24.7701</b>



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

Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.544281	0.061644	0.199793	0.122945	0.023341	0.005632	0.006920	0.003727	0.000656	0.000390	0.027229	0.000725	0.0027

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Category	tons/yr								MT/yr							
Electricity Mitigated						0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

**5.2 Energy by Land Use - NaturalGas**

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**5.3 Energy by Land Use - Electricity**

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000



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

Consumer Products	0.0115					0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0115</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>			<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0115					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0115</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**



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

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

**8.1 Mitigation Measures Waste**

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**8.2 Waste by Land Use**

Unmitigated

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

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment**

Tiscroria Marsh Adaptation Project - Marin County, Annual

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

**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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