Malibu Creek Ecosystem Restoration Study

Los Angeles and Ventura Counties, California

Appendix L

Air Quality and Air Quality Supplement

U.S. Army Corps of Engineers
Los Angeles District

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Supplemental Air Quality Analysis

Introduction

The initial air quality analyses for this study, as shown in the main volume of Appendix L, were based on a preliminary array of alternatives. During the initial air quality analyses, measures to reduce emissions were incorporated as mitigation measures. Therefore, the results of the initial air quality analyses display emissions for both an array of unmitigated and mitigated alternatives. In addition, during the development of the initial air quality analyses, the construction schedule was projected to begin in 2016 and therefore emissions in Appendix L display years starting in 2016.

As the study progressed, the initial emissions-reducing measures incorporated in the mitigated alternatives were transferred from mitigation measures to project features. This resulted in the mitigated alternatives becoming the base unmitigated alternatives, and this in turn made the unmitigated alternatives obsolete. This is discussed briefly in Section 5.12.1 of the IFR. Restructuring of the initial air quality analyses to rename mitigated alternatives and remove the unmitigated alternatives would have resulted in significant impacts to the project schedule and budget. As a result, Appendix L was retained in its original form and this Supplemental Air Quality Analysis was added to describe the processes that were used to update the data derived from the original Appendix L.

Similarly, the cost and time associated with re-running air quality analyses to change the start date of construction would have impacted schedule and budget without altering the actual output of air quality analyses. Therefore Appendix L still refers to the original construction schedule. However, tables in the Supplemental Air Quality Analysis and Section 5.12 of the IFR simply refer to Construction Year instead of calendar year in an attempt to reduce confusion when comparing to Appendix L. Outputs in Appendix L in 2016 are equivalent to Construction Year 1 (CY1) outputs shown in the IFR and Supplemental Air Quality Analyses.

The alternatives referred to as mitigated alternatives in the main Appendix L are equivalent to the base unmitigated alternatives described in the IFR due to incorporation of the following measures, previously considered mitigation, as project features:

1) All vehicles are assumed to have Tier 3 or higher engines based on CARB/EPA guidelines due to the estimated start date of construction.
2) Any construction activities occurring beyond the year 2027 will require the use of model year 2023 or newer vehicles.

Following public review of the draft EIS, the USEPA requested the addition of several measures to further reduce emissions. These measures have also been adopted as part of the project, and are incorporated into the project description in Section 4 of the IFR as follows:

1. Minimize use and trips of heavy equipment to the maximum extent practicable. Limit unnecessary idling of heavy equipment to five minutes.
2. Maintain and tune engines per manufacturer's specifications to perform to EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies.
3. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications.

4. Prohibit tampering with engines and require continuing adherence to manufacturer's recommendations.
5. A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization for each applicable unit of equipment.
6. Prior to construction, facility surveys shall be performed in compliance with SCAQMD Rule 1403 – Asbestos Demolition/Renovation Activities. During construction, all applicable requirements contained in SCAQMD Rule 1403, to include training, reporting, handling, and disposal requirements, will be implemented during construction.

NO_2 vs. NO_x

The General Conformity Rule makes a distinction between NO_x as an O_3 precursor and NO_2 for reporting purposes. EMFAC2011, the EPA's inventory of emissions factors utilized in this study, does not make this distinction and provides emissions factors for NO_x but not for NO_2. Because NO_2, a form of NO_x, forms the majority of NO_x emission from internal combustion engines, estimated emissions of NO_x are used as a surrogate for NO_2 emissions.

Description of Supplemental Analyses

After completion of the initial air quality analyses, the array of alternatives was modified to include additional options for each alternative. While this did not invalidate the previous air quality analyses, it resulted in the need to revisit the air quality analyses to ensure that the emissions outputs were still consistent with the revised array of alternatives. This process is described below, with the updated emissions outputs and calculations contained in the Supplemental Air Quality Analysis that follows. These modifications are also discussed briefly in the IFR in Section 5.12.1 On-Road Vehicles.

1) The beaches proposed for placement of sand associated with Alternatives 2 and 4 in the initial array of alternatives included 3 sites in the vicinity of Malibu. The initial air quality analyses contained in Appendix L utilized mileage to these 3 beaches, Surfrider, Topanga, and Zuma, to estimate emissions. The revised array of alternatives utilizes only Surfrider beach adjacent to Malibu Pier for placement of sands. Surfrider Beach is the closest of the original array of beaches. The original analyses slightly overestimate emissions due to a portion of beach-deposited material traveling to the more distant Zuma and Topanga beaches. However, the differences in emissions associated with this increased distance did not significantly influence the overall outcome of air quality analyses, and therefore the initial emissions estimates associated with the original array of alternatives were retained unchanged.
2) A new option to transport sand to an offshore location, using truck traffic to Ventura Harbor and barges to Malibu, was added as an alternative (all 2x2 and 4x2 alternatives). Emissions associated with this truck route were not included in the initial emission analyses. The supplemental emissions analysis that follows contains calculations of potential emissions from this new alternative component. This additional quantity of emissions was added to the existing emissions outputs of the appropriate alternatives, as shown in Section 5.12 of the IFR.
3) The haul route to Ventura Harbor crosses from the South Coast Air Basin to the South Central Coast Air Basin at the Ventura County line. As a result, emissions resulting from alternatives including this option needed to have their emissions partitioned across air basins. In order to do this, each truck trip was split into two components, the portion in Los

Angeles County and the portion in Ventura County, as is displayed in the tabular summary of analyses below.

4) The hauling option to Ventura Harbor also requires the use of barges from Ventura Harbor to Malibu. Emissions associated with these barges was not included in the original air quality analyses. Support vessels producing emissions associated with barging, such as tug boats and crew vessels were evaluated and included in the emissions calculations as shown in Update 2 and described in Section 5.12 of the IFR. Similarly to the truck haul route, the emissions associated with support vessels was partitioned into the two air basins at the county line.
5) The original array of alternatives assumed that both the dam and spillway features of Rindge Dam would be removed. In the updated array of alternatives, removal of the spillway was added as a stand-alone feature. As a result, the updated array includes alternatives that remove both the dam and spillway, as well as alternative that remove the dam alone and leave the spillway intact. Removal of the spillway alone is considered a minor contributing factor to emissions. Previous emissions calculations of removing both the dam and spillway slightly overestimate emissions over alternatives only removing the dam, but are generally still consistent with the updated array of alternatives. Therefore, all alternatives assumed the same maximum emissions from removing both structures, and no updates to emissions as a result of this change were implemented.

Supplemental Analyses

The following supplemental analysis utilizes outputs from the original array of alternatives contained in Appendix L as a starting point, adding to them the emissions associated with the truck and haul route for barging sediments.

Update 1

The updated array of alternatives removed several beach placement sites and added an option to truck sediment to Ventura Harbor and barge this sediment to Malibu Pier. In order to capture these changes, the emissions from the original beach placement sites must be removed, and the emissions resulting from trucking to Ventura Harbor must be added. Since the haul route from Rindge Dam to Ventura Harbor crosses from the South Coast Air Basin to the South Central Coast Air Basin at the Ventura County line, projected emissions from the sediment hauling was split across these air basins.

Update 1 shows how emissions were calculated to account for this change. The mileages used for each original beach location are shown, as well as the number of trips. The mileage and number of trips to the newly proposed Ventura Harbor site are also shown.

The difference in mileage between these two options was calculated for each construction year, as highlighted in the green cells. As can be seen, the overall mileage within Los Angeles County, and therefore the overall emissions, has in some cases been reduced. Because Ventura County was not previously within the project area, all emissions within Ventura County are new.

CEQA analyses discussed in the IFR are for the maximum potential daily emissions, while NEPA analyses are based on annual emissions. To update these emissions estimates, the increase in mileage per construction year was multiplied by the previously utilized emissions factors for the trucking of sediment, resulting in an increase in emissions broken down by pollutant for both daily and annual emissions. This process was utilized to update variations of both Alternative 2 and

Alternative 4. Since Alternative 3 does not utilize any mechanical transport of sediments, no emissions updates were required.

Annual emissions outputs or reductions were calculated by multiplying the mileage by the emissions factors for the pertinent year. Outputs were then converted from grams to tons by dividing the results by the number of grams per ton (907185), or from grams to pounds by dividing the results by the number of grams per pound (453.59). Finally, only 2 significant digits were shown in the outputs, matching the significant digits available for the emissions factors. Abbreviations LA and VE are used in some columns to indicate emissions from Los Angeles and Ventura County respectively.

Alternative 2 Updates

The top section in each of the following three tables contains the original beaches and associated mileages that must be removed. The lower section in each of the three following tables contains the updated mileages within Los Angeles and Ventura Counties that must be added. For Los Angeles County, the old mileage from beach placement was subtracted from the new mileage from hauling to determine the overall change (increase or decrease) in mileage within the county.

	Construction Year 2			
	Trips	**Miles/Trip**	**Total Miles**	**Daily Trips**
Surfrider	1632	8	13056	136
Topanga	4725	20	94500	105
LA Haul	2467	26	64142	70
LA Change			-43414	
Ventura Haul	2467	56	138152	70

	Construction Year 3			
	Trips	**Miles/Trip**	**Total Miles**	**Daily Trips**
Topanga	371	20	7420	53
Zuma	6413	20	128260	53
LA Haul	4864	26	126464	35
LA Change			-9216	
Ventura Haul	4864	56	272384	35

	Construction Year 4			
	Trips	**Miles/Trip**	**Total Miles**	**Daily Trips**
Zuma	1007	20	20140	53
LA Haul	4864	26	126464	70
LA Change			106324	
Ventura Haul	4864	56	272384	70

This table summarizes the overall change in mileage from each of the construction year tables above. For daily miles, the peak daily trips was multiplied by the miles per trip.

				Peak Daily Change
CY2	-43414	138152	-280	3920
CY3	-9216	272384	820	3920
CY4	106234	272384	760	3920

This table summarizes the emission factors used in the original air quality analysis, which were again applied in this supplement by multiplying the mileages by the emission factor for each pollutant.

	Emissions Factors (grams per mile)					
year	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
CY2	0.14	0.69	6.86	0.16	0.1	0.02
CY3	0.14	0.71	6.18	0.16	0.1	0.02
CY4	0.14	0.74	4.65	0.16	0.1	0.02

The next two tables summarize the results of multiplying the annual change and daily change, respectively, in mileage within both Los Angeles (LA) and Ventura (VE) County by the emissions factors in the above table. This is the overall change in emissions that will be added to the original air quality analyses to account for the change in projected truck use for sediment hauling.

		Annual Emissions (Tons Per Year)					
Year	**Miles**	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
CY2 LA	-43414	-0.01	-0.01	-0.33	-0.01	0.00	0.00
CY2 VE	138152	0.02	0.11	1.04	0.02	0.02	0.00
CY3 LA	-9216	0.00	-0.01	-0.06	0.00	0.00	0.00
CY3 VE	272384	0.04	0.21	1.86	0.05	0.03	0.01
CY4 LA	106234	0.02	0.09	0.54	0.02	0.01	0.00
CY4 VE	272384	0.04	0.22	1.40	0.05	0.03	0.01

		Daily Emissions (LBS/Day)					
Year	**Miles**	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
CY2	-280	-0.09	-0.44	-4.41	-0.10	-0.06	-0.01
CY2	3920	1.26	6.21	61.74	1.44	0.90	0.18
CY3	820	0.26	1.34	11.63	0.30	0.19	0.04
CY3	3920	1.26	6.39	55.62	1.44	0.90	0.18
CY4	760	0.24	1.29	8.11	0.28	0.17	0.03
CY4	3920	1.26	6.66	41.85	1.44	0.90	0.18

Alternative 4 Updates

This section mirrors the Alternative 2 section above with regards to methods and display out outputs.

	Construction Year 1			
	Trips	**Miles/Trip**	**Total Miles**	**Daily Trips**
Surfrider	1632	8	13056	136
Topanga	3465	20	69300	105
LA Haul	2467	26	64142	70
LA Change			-18214	
Ventura Haul	2467	56	138152	70

	Construction Year 2			
	Trips	**Miles/Trip**	**Total Miles**	**Daily Trips**
Topanga	371	20	7420	53
Zuma	5517	20	110340	53
LA Haul	4864	26	126464	35
LA Change			8704	
Ventura Haul	4864	56	272384	35

	Construction Year 3			
	Trips	**Miles/Trip**	**Total Miles**	**Daily Trips**
Zuma	1007	20	20140	53
LA Haul	4864	26	126464	35
LA Change			106324	
Ventura Haul	4864	56	272384	35

	Annual Change LA	**Annual Change Ventura**	**Peak Daily Mile Change LA**	**Peak Daily Mile Change Ventura**
CY2	-18214	138152	-280	3920
CY3	8704	272384	-150	1960
CY4	106234	272384	-150	1960

	Emissions Factors (grams per mile)					
year	VOC	CO	NOX	PM10	PM2.5	SO2
CY2	0.14	0.69	6.86	0.16	0.1	0.02
CY3	0.14	0.71	6.18	0.16	0.1	0.02
CY4	0.14	0.74	4.65	0.16	0.1	0.02

		Annual Emissions (Tons Per Year)					
Year	Miles	VOC	CO	NOX	PM10	PM2.5	SO2
CY2 LA	-18214	0.00	0.00	-0.14	0.00	0.00	0.00
CY2 VE	138152	0.02	0.11	1.04	0.02	0.02	0.00
CY3 LA	8704	0.00	0.01	0.06	0.00	0.00	0.00
CY3 VE	272384	0.04	0.21	1.86	0.05	0.03	0.01
CY4 LA	106234	0.02	0.09	0.54	0.02	0.01	0.00
CY4 VE	272384	0.04	0.22	1.40	0.05	0.03	0.01

		Daily Emissions (LBS/Day)					
Year	Miles	VOC	CO	NOX	PM10	PM2.5	SO2
CY2	-280	-0.09	-0.44	-4.41	-0.10	-0.06	-0.01
CY2	3920	1.26	6.21	61.74	1.44	0.90	0.18
CY3	-150	-0.05	-0.24	-2.13	-0.06	-0.03	-0.01
CY3	1960	0.63	3.19	27.81	0.72	0.45	0.09
CY4	-150	-0.05	-0.25	-1.60	-0.06	-0.03	-0.01
CY4	3920	1.26	6.66	41.85	1.44	0.90	0.18

Update 2

Emissions for support vehicles associated with barging sediment from Ventura Harbor to Malibu were calculated in order to update daily emissions outputs for CEQA compliance and annual emissions outputs for NEPA compliance. The following assumptions were utilized in calculating these emissions:

1) Emissions factors were utilized as shown in Evaluating Emissions Benefits of a Hybrid Tug Boat. CARB, 2010. Table 3-5.
2) Emissions factors from this source are for a single propulsion engine. Tug boats were assumed to require two such motors for this analysis.
3) Motors were assumed to be 870 hp (64p kW). Conversion rates of 1 kW = 1.34 hp.
4) Based on estimate barge size and number of daily truck trips, the number of barge trips per year were estimated at 76 (CY2), 76 (CY3), and 35 (CY4) respectively.
5) A conversion factor of 453 grams per pound was used.
6) Metric tons of greenhouse gas emissions were estimated per the EPA website available at: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
7) Barge operations were assumed at 12 hours per day.

DAILY EMISSIONS (LBS/DAY)	KW-HR per	PM2.5	NOX	CO	CO2
Equipment	Day	(g/kW-hr)	(g/kW-hr)	(g/kW-hr)	(g/kW-hr)
		0.097	7.1	1.1	701
2 Tug Boat Propulsion Engines	7788	755.44	55294.80	8566.80	5459388.00
Daily Emissions (lbs/day)		**1.67**	**122.06**	**18.91**	**12051.63**

ANNUAL EMISSIONS (TONS/YEAR)	Operating Days	PM2.5	NOX	CO	CO2	GHG (Metric Ton)
2nd Year	76	0.06	4.64	0.72	457.96	415.57
3rd Year	76	0.06	4.64	0.72	457.96	415.57
4th Year	35	0.03	2.14	0.33	210.90	191.38

The annual emissions outputs from support vessels shown above were next split across the two air basins, since barge traffic would originate in Ventura County but transition to Los Angeles County during the trip. However, daily emissions outputs were retained without separation of air basins, as we envisioned any given day a support vessel may operate solely within one basin, even if the overall emissions are split across basins. Approximately 26 of the 43 miles of the barge route are within Ventura County. As a result, the support vessel emissions were partitioned by percentages (60/40), resulting in the following outputs by county. Note only the highest year of emissions is utilized in the following analysis, as a representation of the worst-case scenario.

ANNUAL EMISSIONS (TONS/YEAR)	Operating Days	PM2.5	NOX	CO	CO2	GHG (Metric Ton)
Ventura County	76	0.04	2.78	0.43	274.78	249.34
Los Angeles County	76	0.02	1.86	0.29	183.18	166.23

The methods utilized to estimate barge emissions did not produce PM_{10}, SO_x, or VOC emissions. However, given that the existing projections of emissions for these pollutants is very low, and the large difference between the significance thresholds for these 3 pollutants and the existing emissions estimates, this information would not have changed the decisions the study arrived at in their absence and would not have resulted in a potential exceedance of either NEPA or CEQA significance thresholds.

Update 3

Updates 1 and 2 show how the increased emissions resulting from using the proposed trucking and barging routes were calculated. These emissions were then added to the initial emissions estimates, the derivation of which is contained in Appendix L.

The original unmitigated and mitigated emissions in the following tables correspond to the original air quality appendix and associated analyses. The updated column is derived by taking the initial estimated mitigated emissions and adding the increased emissions calculated in Updates 1 and 2 above. The analyses in the IFR are based on this updated column corresponding to the final base alternative, which includes the previous mitigation measures as project features. The labels

unmitigated and mitigated are used in this supplement for tracking and to show how the calculations in Appendix L were utilized to obtain the data shown in the IFR.

No updates were made to variations of Alternative 3, which does not include any mechanical transport and therefore remained unchanged from the original analyses. Since the emissions associated with removing the spillway are considered negligible, calculating the spillway related emissions and removing them would not result in significant changes to existing analyses. Therefore, the analyses for a2 and b2 variations both rely on the original estimates that include removing both.

Alternative 2 Updated Daily Emissions (CEQA). Note that CEQA thresholds are only listed for this pollutants in non-attainment or maintenance status.

Alternative 2a2 & 2c2 Maximum Daily Emissions (pounds per day)				
Pollutant	Original			CEQA Threshold
	Unmitigated	Mitigated		
Los Angeles County				
Carbon Monoxide, CO	109	96	116	
Volatile Organic Compounds, VOC	20	19	19	75
Nitrogen Oxides, NO_x	224	126	260	100
Sulfur Dioxide, SO_2	0	0	0	
Inhalable Particulate Matter, PM_{10}	17	13	13	150
Fine Particulate Matter, $PM_{2.5}$	8	4	7	55
Ventura County				
Carbon Monoxide, CO			25	
Volatile Organic Compounds, VOC			1	25
Nitrogen Oxides, NO_x			178	25
Sulfur Dioxide, SO_2			0	
Inhalable Particulate Matter, PM_{10}			1	
Fine Particulate Matter, $PM_{2.5}$			3	
Alternative 2b2 and 2d2 Maximum Annual Emissions (tons per year)				
Los Angeles County				
Carbon Monoxide, CO	165	152	172	550
Volatile Organic Compounds, VOC	20	14	14	75
Nitrogen Oxides, NO_x	269	172	306	100
Sulfur Dioxide, SO_2	1	1	1	150
Inhalable Particulate Matter, PM_{10}	20	14	14	150
Fine Particulate Matter, $PM_{2.5}$	10	5	8	55
Ventura County				
Carbon Monoxide, CO			25	
Volatile Organic Compounds, VOC			1	25
Nitrogen Oxides, NO_x			178	25
Sulfur Dioxide, SO_2			0	
Inhalable Particulate Matter, PM_{10}			1	
Fine Particulate Matter, $PM_{2.5}$			3	

Alternative 2 Updated Annual Emissions (NEPA). Note that NEPA thresholds are only listed for pollutants in non-attainment or maintenance status.

Alternative 2a2 and 2c2 Maximum Annual Emissions (tons per year)				
Pollutant	**Original**		**Updated**	NEPA Threshold
	Unmitigated	Mitigated		
Los Angeles County				
Carbon Monoxide, CO	5.78	5.08	5.46	100
Volatile Organic Compounds, VOC	0.82	0.49	0.51	10
Nitrogen Oxides, NO_x	11.91	6.77	9.17	10
Nitrogen Dioxide, NO_2	11.91	6.77	9.17	100
Sulfur Dioxide, SO_2	0.02	0.02	0.02	
Inhalable Particulate Matter, PM_{10}	1.08	0.79	0.81	100
Fine Particulate Matter, $PM_{2.5}$	0.47	0.20	0.23	70
Ventura County				
Carbon Monoxide, CO			0.65	
Volatile Organic Compounds, VOC			0.04	50
Nitrogen Oxides, NO_x			4.18	50
Nitrogen Dioxide, NO_2			4.18	
Sulfur Dioxide, SO_2			0.01	
Inhalable Particulate Matter, PM_{10}			0.05	
Fine Particulate Matter, $PM_{2.5}$			0.07	
Alternative 2b2 and 2d2 Maximum Annual Emissions (tons per year)				
Pollutant	**Original**		**Updated**	NEPA Threshold
	Unmitigated	Mitigated		
Los Angeles County				
Carbon Monoxide, CO	6.15	5.46	5.84	100
Volatile Organic Compounds, VOC	0.86	0.54	0.56	10
Nitrogen Oxides, NO_x	12.27	7.13	9.53	10
Nitrogen Dioxide, NO_2	12.27	7.13	9.53	100
Sulfur Dioxide, SO_2	0.02	0.02	0.02	
Inhalable Particulate Matter, PM_{10}	1.11	0.82	0.84	100
Fine Particulate Matter, $PM_{2.5}$	0.49	0.22	0.25	70
Ventura County				
Carbon Monoxide, CO			0.65	
Volatile Organic Compounds, VOC			0.04	50
Nitrogen Oxides, NO_x			4.18	50
Nitrogen Dioxide, NO_2			4.18	
Sulfur Dioxide, SO_2			0.01	
Inhalable Particulate Matter, PM_{10}			0.05	
Fine Particulate Matter, $PM_{2.5}$			0.07	

Alternative 4 Updated Daily Emissions (CEQA). Note that CEQA thresholds are only listed for pollutants in non-attainment or maintenance status.

Alternative 4a2 and 4c2 Maximum Daily Emissions (pounds per day)				
Pollutant	Original			CEQA Thresholds
	Unmitigated	Mitigated		
Los Angeles County				
Carbon Monoxide, CO	510	412	431	550
Volatile Organic Compounds, VOC	75	53	53	75
Nitrogen Oxides, NO_x	1096	486	606	100
Sulfur Dioxide, SO_2	2	2	2	150
Inhalable Particulate Matter, PM_{10}	49	17	17	150
Fine Particulate Matter, $PM_{2.5}$	38	7	9	55
Ventura County				
Carbon Monoxide, CO			26	
Volatile Organic Compounds, VOC			1	25
Nitrogen Oxides, NO_x			164	25
Sulfur Dioxide, SO_2			0	
Inhalable Particulate Matter, PM_{10}			1	
Fine Particulate Matter, $PM_{2.5}$			3	
Alternative 4b2 and 4d2 Maximum Annual Emissions (pounds per day)				
Los Angeles County				
Carbon Monoxide, CO	566	532	551	550
Volatile Organic Compounds, VOC	82	53	53	75
Nitrogen Oxides, NO_x	1141	532	652	100
Sulfur Dioxide, SO_2	2	2	2	150
Inhalable Particulate Matter, PM_{10}	52	18	18	150
Fine Particulate Matter, $PM_{2.5}$	40	8	10	55
Ventura County				
Carbon Monoxide, CO			26	
Volatile Organic Compounds, VOC			1	25
Nitrogen Oxides, NO_x			164	25
Sulfur Dioxide, SO_2			0	
Inhalable Particulate Matter, PM_{10}			1	
Fine Particulate Matter, $PM_{2.5}$			3	

Alternative 4 Updated Annual Emissions (NEPA). Note that NEPA thresholds are only listed for pollutants in non-attainment or maintenance status.

Alternative 4a2 and 4c2 Maximum Annual Emissions (tons per year)				
Pollutant	**Original**		**Updated**	NEPA Threshold
	Unmitigated	Mitigated		
Los Angeles County				
Carbon Monoxide, CO	5.78	5.09	5.47	100
Volatile Organic Compounds, VOC	0.81	0.49	0.51	10
Nitrogen Oxides, NO_x	11.75	6.57	8.97	10
Nitrogen Dioxide, NO_2	11.75	6.57	8.97	100
Sulfur Dioxide, SO_2	0.02	0.02	0.02	
Inhalable Particulate Matter, PM_{10}	1.08	0.85	0.87	100
Fine Particulate Matter, $PM_{2.5}$	0.47	0.19	0.22	70
Ventura County				
Carbon Monoxide, CO			0.64	
Volatile Organic Compounds, VOC			0.04	50
Nitrogen Oxides, NO_x			4.18	50
Nitrogen Dioxide, NO_2			4.18	
Sulfur Dioxide, SO_2			0.01	
Inhalable Particulate Matter, PM_{10}			0.05	
Fine Particulate Matter, $PM_{2.5}$			0.07	
Alternative 4b2 and 4d2 Maximum Annual Emissions (tons per year)				
Los Angeles County				
Carbon Monoxide, CO	6.16	5.46	5.84	100
Volatile Organic Compounds, VOC	0.86	0.53	0.55	10
Nitrogen Oxides, NO_x	12.13	6.95	9.35	10
Nitrogen Dioxide, NO_2	12.13	6.95	9.35	100
Sulfur Dioxide, SO_2	0.02	0.02	0.02	
Inhalable Particulate Matter, PM_{10}	1.11	0.85	0.87	100
Fine Particulate Matter, $PM_{2.5}$	0.49	0.19	0.22	70
Ventura County				
Carbon Monoxide, CO			0.64	
Volatile Organic Compounds, VOC			0.04	50
Nitrogen Oxides, NO_x			4.18	50
Nitrogen Dioxide, NO_2			4.18	
Sulfur Dioxide, SO_2			0.01	
Inhalable Particulate Matter, PM_{10}			0.05	
Fine Particulate Matter, $PM_{2.5}$			0.07	

Update 4

The greenhouse gas emissions estimates contained in Section 5.12.4 of the IFR required updating to capture the updated emission from the truck haul routes to Ventura Harbor for Alternatives 2 and 4 and to include the support vessel emissions associated with barging. VCAPCD does not have any specific thresholds for greenhouse gas emissions, so this analysis focuses on the SCAQMD thresholds. To adjust the CO_2 emissions estimates from truck hauling, the mileage differences in Los Angeles County summarized in Update 1 were utilized, along with the original CO_2 emissions factors, as summarized in the table below. A conversion factor of 1,000,000 grams per metric ton was utilized for the conversion.

	1607.1529	0.0051	0.0048
	1574.5434	0.0051	0.0048
	1536.6175	0.0051	0.0048

Additional greenhouse gas emissions resulting from trucking are summarized in the table below.

Annual Emissions (Tons Per Year)				
Year	**Miles**	**CO2**	**CH4**	**N2O**
	Alternative 2			
CY2 LA	-43414	-69.77	0.00	0.00
CY3 LA	-9216	-145.11	0.00	0.00
CY4 LA	106234	163.24	0.00	0.01
	Alternative 4			
	-18214	-29.27	0.00	0.00
	8704	13.70	0.00	0.00
	106234	163.24	0.00	0.01

The maximum emissions from a given trucking year from Update 4 were added to the maximum emissions from barge emissions provided above in Update 2, and this number was used to adjust the original greenhouse gas emissions. Since versions of Alternative 3 did not change significantly since the original air quality analyses, no updates to greenhouse gas emissions for Alternative 3 were necessary. This information is summarized in the table below.

Original Alternative	Updated Alternative	Original CO2 Emissions	Updated CO2 Emissions	CEQA Significance Threshold
2a	2a2 & 2c2	244	573	10,000
2b	2b2 & 2d2	252	581	
3a	3a & 3c	270	270	
3b	3b & 3d	275	275	
4a	4a2 and 4c2	248	577	
4b	4b2 and 4d2	257	586	

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Emissions Comparison by Alternative

Unmitigated Annual Emissions Comparison

	Maximum Annual Emissions (tons per year)						Metric Tons
	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
Alt 2a	0.8	11.9	5.8	0.02	1.1	0.5	244
Alt 2b	0.9	12.3	6.1	0.02	1.1	0.5	252
Alt 3a	0.4	4.7	3.2	0.01	0.8	0.3	269
Alt 3b	0.4	4.7	3.2	0.01	0.8	0.3	278
Alt 4a	0.8	11.7	5.8	0.02	1.1	0.5	248
Alt 4b	0.9	12.1	6.2	0.02	1.1	0.5	256
Maximum	**0.9**	**12.3**	**6.2**	**0.02**	**1.1**	**0.5**	**n/a**
NEPA Significance Threshold	**10**	**10**	**100**	**100**	**70**	**100**	**n/a**
CEQA Significance Threshold	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**10,000**

Note:
CO2e emissions amortized over the lifetime of the project (assumed to be 30 years).

Mitigated Annual Emissions Comparison

	Maximum Annual Emissions (tons per year)						Metric Tons
	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
Alt 2a	0.5	6.8	5.1	0.0	0.9	0.2	244
Alt 2b	0.5	7.1	5.5	0.0	0.9	0.2	252
Alt 3a	0.2	2.3	2.9	0.0	0.7	0.1	269.7
Alt 3b	0.2	2.3	2.9	0.0	0.7	0.1	278.0
Alt 4a	0.5	6.6	5.1	0.0	0.9	0.2	248
Alt 4b	0.5	7.0	5.5	0.0	0.9	0.2	256
Maximum	**0.5**	**7.1**	**5.5**	**0.02**	**0.9**	**0.2**	**n/a**
NEPA Significance Threshold	**10**	**10**	**100**	**100**	**70**	**100**	**n/a**
CEQA Significance Threshold	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**10,000**

Note:
CO2e emissions amortized over the lifetime of the project (assumed to be 30 years).

Unmitigated Daily Emissions Comparison

	Maximum Daily Emissions (pounds per day)					
	VOC	NOx	CO	SO2	PM10	PM2.5
Alt 2a	20	224	109	0	17	8
Alt 2b	22	269	165	1	20	10
Alt 3a	25	120	170	1	14	6
Alt 3b	25	155	170	1	14	7
Alt 4a	75	1,096	510	2	49	38
Alt 4b	82	1,141	566	2	52	40
Maximum	**82**	**1,141**	**566**	**2**	**52**	**40**
CEQA Significance Threshold	**75**	**100**	**550**	**150**	**150**	**55**

Mitigated Daily Emissions Comparison

	Maximum Daily Emissions (pounds per day)					
	VOC	NOx	CO	SO2	PM10	PM2.5
Alt 2a	19	126	96	0	13	4
Alt 2b	19	172	152	1	14	5
Alt 3a	21	59	179	1	10	3
Alt 3b	21.0	103.7	179.3	0.7	11.6	4.5
Alt 4a	53	486	412	2	17	7
Alt 4b	53	532	468	2	18	8
Maximum	**53**	**532**	**468**	**2**	**18**	**8**
CEQA Significance Threshold	**75**	**100**	**550**	**150**	**150**	**55**

Emissions Summary
Alternative 2a - Dam Removal with Mechanical Transport

Emissions Summary by Year - Annual

	Unmitigated Annual Emissions (tons per year)						Mitigated Annual Emissions (tons per year)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	0.02	0.53	0.18	0.00	0.06	0.02	0.02	0.41	0.16	0.00	0.05	0.01
2017	0.42	5.45	3.01	0.01	0.81	0.28	0.18	2.29	2.39	0.01	0.65	0.13
2018	0.82	11.91	5.78	0.02	1.08	0.47	0.49	6.77	5.08	0.02	0.79	0.20
2019	0.56	7.61	4.47	0.02	0.90	0.33	0.35	4.45	4.10	0.02	0.72	0.17
2020	0.45	5.72	3.72	0.01	0.84	0.27	0.32	3.68	3.57	0.01	0.72	0.16
2021	0.55	5.62	4.29	0.02	0.97	0.30	0.47	4.05	4.27	0.02	0.86	0.20
Maximum	**0.82**	**11.91**	**5.78**	**0.02**	**1.08**	**0.47**	**0.49**	**6.77**	**5.08**	**0.02**	**0.86**	**0.20**
					Percent Change		**-40%**	**-43%**	**-12%**	**-2%**	**-21%**	**-58%**

Detailed Emissions Summary - Annual

	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
Source	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2016														
Offroad Construction Equipment	0.02	0.25	0.12	0.00	0.01	0.01	40	0.01	0.13	0.09	0.00	0.00	0.00	40
Onroad Vehicles	0.01	0.28	0.06	0.00	0.02	0.01	59	0.01	0.28	0.06	0.00	0.02	0.01	59
Fugitive Dust Emissions	--	--	--	--	0.02	0.00	--	--	--	--	--	0.02	0.00	--
2016 Total Emissions	**0.02**	**0.53**	**0.18**	**0.00**	**0.06**	**0.02**	**99**	**0.02**	**0.41**	**0.16**	**0.00**	**0.05**	**0.01**	**100**
2017														
Offroad Construction Equipment	0.41	5.40	2.81	0.01	0.23	0.21	752	0.17	2.24	2.19	0.01	0.07	0.06	733
Onroad Vehicles	0.01	0.05	0.21	0.00	0.05	0.02	58	0.01	0.05	0.21	0.00	0.05	0.02	58
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2017 Total Emissions	**0.42**	**5.45**	**3.01**	**0.01**	**0.81**	**0.28**	**809**	**0.18**	**2.29**	**2.39**	**0.01**	**0.65**	**0.13**	**791**
2018														
Offroad Construction Equipment	0.77	10.04	5.43	0.02	0.39	0.36	1,713	0.45	4.90	4.73	0.02	0.10	0.08	1,679
Onroad Vehicles	0.04	1.87	0.35	0.01	0.17	0.06	439	0.04	1.87	0.35	0.01	0.17	0.06	439
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2018 Total Emissions	**0.82**	**11.91**	**5.78**	**0.02**	**1.08**	**0.47**	**2,152**	**0.49**	**6.77**	**5.08**	**0.02**	**0.79**	**0.20**	**2,118**
2019														
Offroad Construction Equipment	0.53	6.65	4.23	0.01	0.27	0.24	1,226	0.33	3.49	3.86	0.01	0.08	0.07	1,257
Onroad Vehicles	0.02	0.96	0.24	0.00	0.11	0.04	257	0.02	0.96	0.24	0.00	0.11	0.04	257
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2019 Total Emissions	**0.56**	**7.61**	**4.47**	**0.02**	**0.90**	**0.33**	**1,483**	**0.35**	**4.45**	**4.10**	**0.02**	**0.72**	**0.17**	**1,514**
2020														
Offroad Construction Equipment	0.42	4.97	3.49	0.01	0.20	0.18	996	0.30	2.93	3.34	0.01	0.08	0.07	999
Onroad Vehicles	0.03	0.75	0.23	0.00	0.11	0.04	256	0.03	0.75	0.23	0.00	0.11	0.04	256
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2020 Total Emissions	**0.45**	**5.72**	**3.72**	**0.01**	**0.84**	**0.27**	**1,252**	**0.32**	**3.68**	**3.57**	**0.01**	**0.72**	**0.16**	**1,256**
2021														
Offroad Construction Equipment	0.47	5.12	4.02	0.01	0.21	0.19	1,245	0.39	3.55	4.00	0.01	0.09	0.08	1,241
Onroad Vehicles	0.03	0.50	0.27	0.00	0.12	0.04	284	0.03	0.50	0.27	0.00	0.12	0.04	284
Fugitive Dust Emissions	--	--	--	--	0.64	0.07	--	--	--	--	--	0.64	0.07	--
Fugitive VOC Emissions	0.05	--	--	--	--	--	--	0.05	--	--	--	--	--	--
2021 Total Emissions	**0.55**	**5.62**	**4.29**	**0.02**	**0.97**	**0.30**	**1,528**	**0.47**	**4.05**	**4.27**	**0.02**	**0.86**	**0.20**	**1,525**
Maximum Emissions	**0.82**	**11.91**	**5.78**	**0.02**	**1.08**	**0.47**	**n/a**	**0.49**	**6.77**	**5.08**	**0.02**	**0.86**	**0.20**	**n/a**
NEPA Significance Thresholds	10	10	100	100	70	100	n/a	10	10	100	100	70	100	n/a
Exceed Threshold?	No	Yes	No	No	No	No	n/a	No	No	No	No	No	No	n/a
Total GHG Emissions (metric tons CO2e per project)							7,325	Total GHG Emissions (metric tons CO2e per project)						7,325
Amortized Emissions (metric tons CO2e per year)							244	Amortized Emissions (metric tons CO2e per year)						244
CEQA Significance Threshold (metric tons CO2e per year)							10,000	CEQA Significance Threshold (metric tons CO2e per year)						10,000
Significant Impacts?							No	Significant Impacts?						No

Sources: 40 CFR 93.153(b) (de minimis thresholds); 40 CFR 81.305 (attainment designations)
Note:
Totals may not add exactly due to rounding.

Projec Lifetime 30 years

Emissions Summary
Alternative 2b - Dam Removal with Mechanical Transport and Upstream Barrier Removal

Emissions Summary by Year - Annual

	Unmitigated Annual Emissions (tons per year)						Mitigated Annual Emissions (tons per year)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	0.02	0.53	0.18	0.00	0.06	0.02	0.02	0.41	0.16	0.00	0.05	0.01
2017	0.42	5.45	3.01	0.01	0.81	0.28	0.18	2.29	2.39	0.01	0.65	0.13
2018	0.86	12.27	6.15	0.02	1.11	0.49	0.54	7.13	5.46	0.02	0.82	0.22
2019	0.59	8.02	4.76	0.02	0.93	0.35	0.39	4.85	4.38	0.02	0.75	0.19
2020	0.48	6.13	3.99	0.01	0.87	0.29	0.35	4.09	3.84	0.01	0.75	0.18
2021	0.55	5.62	4.29	0.02	0.97	0.30	0.47	4.05	4.27	0.02	0.86	0.20
Maximum	**0.86**	**12.27**	**6.15**	**0.02**	**1.11**	**0.49**	**0.54**	**7.13**	**5.46**	**0.02**	**0.86**	**0.22**
						Percent Change	**-38%**	**-42%**	**-11%**	**-2%**	**-23%**	**-56%**

Detailed Emissions Summary - Annual

	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
Source	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2016														
Offroad Construction Equipment	0.02	0.25	0.12	0.00	0.01	0.01	40	0.01	0.13	0.09	0.00	0.00	0.00	40
Onroad Vehicles	0.01	0.28	0.06	0.00	0.02	0.01	59	0.01	0.28	0.06	0.00	0.02	0.01	59
Fugitive Dust Emissions	--	--	--	--	0.02	0.00	--	--	--	--	--	0.02	0.00	--
2016 Total Emissions	**0.02**	**0.53**	**0.18**	**0.00**	**0.06**	**0.02**	**99**	**0.02**	**0.41**	**0.16**	**0.00**	**0.05**	**0.01**	**100**
2017														
Offroad Construction Equipment	0.41	5.40	2.81	0.01	0.23	0.21	752	0.17	2.24	2.19	0.01	0.07	0.06	733
Onroad Vehicles	0.01	0.05	0.21	0.00	0.05	0.02	58	0.01	0.05	0.21	0.00	0.05	0.02	58
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2017 Total Emissions	**0.42**	**5.45**	**3.01**	**0.01**	**0.81**	**0.28**	**809**	**0.18**	**2.29**	**2.39**	**0.01**	**0.65**	**0.13**	**791**
2018														
Offroad Construction Equipment	0.82	10.41	5.75	0.02	0.41	0.37	1,771	0.50	5.27	5.06	0.02	0.11	0.10	1,737
Onroad Vehicles	0.04	1.86	0.40	0.01	0.18	0.06	449	0.04	1.86	0.40	0.01	0.18	0.06	449
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2018 Total Emissions	**0.86**	**12.27**	**6.15**	**0.02**	**1.11**	**0.49**	**2,220**	**0.54**	**7.13**	**5.46**	**0.02**	**0.82**	**0.22**	**2,186**
2019														
Offroad Construction Equipment	0.57	7.05	4.48	0.01	0.28	0.26	1,299	0.36	3.88	4.11	0.01	0.10	0.09	1,329
Onroad Vehicles	0.03	0.97	0.28	0.00	0.12	0.04	270	0.03	0.97	0.28	0.00	0.12	0.04	270
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2019 Total Emissions	**0.59**	**8.02**	**4.76**	**0.02**	**0.93**	**0.35**	**1,569**	**0.39**	**4.85**	**4.38**	**0.02**	**0.75**	**0.19**	**1,599**
2020														
Offroad Construction Equipment	0.46	5.37	3.72	0.01	0.22	0.20	1,076	0.33	3.33	3.57	0.01	0.10	0.08	1,079
Onroad Vehicles	0.03	0.76	0.27	0.00	0.12	0.04	269	0.03	0.76	0.27	0.00	0.12	0.04	269
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2020 Total Emissions	**0.48**	**6.13**	**3.99**	**0.01**	**0.87**	**0.29**	**1,345**	**0.35**	**4.09**	**3.84**	**0.01**	**0.75**	**0.18**	**1,348**
2021														
Offroad Construction Equipment	0.47	5.12	4.02	0.01	0.21	0.19	1,245	0.39	3.55	4.00	0.01	0.09	0.08	1,241
Onroad Vehicles	0.03	0.50	0.27	0.00	0.12	0.04	284	0.03	0.50	0.27	0.00	0.12	0.04	284
Fugitive Dust Emissions	--	--	--	--	0.64	0.07	--	--	--	--	--	0.64	0.07	--
Fugitive VOC Emissions	0.05	--	--	--	--	--	--	0.05	--	--	--	--	--	--
2021 Total Emissions	**0.55**	**5.62**	**4.29**	**0.02**	**0.97**	**0.30**	**1,528**	**0.47**	**4.05**	**4.27**	**0.02**	**0.86**	**0.20**	**1,525**
Maximum Emissions	**0.86**	**12.27**	**6.15**	**0.02**	**1.11**	**0.49**	**n/a**	**0.54**	**7.13**	**5.46**	**0.02**	**0.86**	**0.22**	**n/a**
NEPA Significance Thresholds	10	10	100	100	70	100	n/a	10	10	100	100	70	100	n/a
Exceed Threshold?	No	Yes	No	No	No	No	n/a	No	No	No	No	No	No	n/a
Total GHG Emissions (metric tons CO2e per project)							7,571	Total GHG Emissions (metric tons CO2e per project)						7,571
Amortized Emissions (metric tons CO2e per year)							252	Amortized Emissions (metric tons CO2e per year)						252
CEQA Significance Threshold (metric tons CO2e per year)							10,000	CEQA Significance Threshold (metric tons CO2e per year)						10,000
Significant Impacts?							No	Significant Impacts?						No

Sources: 40 CFR 93.153(b) (de minimis thresholds); 40 CFR 81.305 (attainment designations)
Note:
Totals may not add exactly due to rounding.

Projec Lifetime 30 years

Emissions Summary
Alternative 3a - Dam Removal with Natural Transport

Emissions Summary by Year - Annual

	Unmitigated Annual Emissions (tons per year)						Mitigated Annual Emissions (tons per year)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	0.02	0.52	0.15	0.00	0.05	0.02	0.01	0.40	0.13	0.00	0.05	0.01
2017	0.40	4.74	3.23	0.01	0.80	0.26	0.18	2.32	2.90	0.01	0.67	0.14
2019	0.17	1.72	1.35	0.00	0.63	0.14	0.10	1.23	1.29	0.00	0.61	0.12
2021	0.15	1.45	1.49	0.00	0.63	0.13	0.11	1.16	1.48	0.00	0.62	0.12
2023	0.13	1.13	1.46	0.00	0.61	0.11	0.11	1.11	1.51	0.00	0.62	0.12
2025	0.11	0.97	1.44	0.00	0.60	0.10	0.12	1.12	1.51	0.00	0.63	0.12
2027	0.10	0.85	1.42	0.00	0.59	0.09	0.06	0.49	1.32	0.00	0.57	0.07
2029	0.09	0.77	1.41	0.00	0.59	0.09	0.07	0.49	1.35	0.00	0.57	0.07
2031	0.09	0.73	1.40	0.00	0.58	0.08	0.07	0.50	1.39	0.00	0.57	0.07
2033	0.09	0.71	1.39	0.00	0.58	0.08	0.08	0.50	1.41	0.00	0.57	0.07
2035	0.09	0.69	1.39	0.00	0.58	0.08	0.08	0.50	1.45	0.00	0.57	0.07
2037	0.08	0.68	1.38	0.00	0.58	0.08	0.08	0.51	1.47	0.00	0.57	0.07
2039 - 2063	0.08	0.68	1.38	0.00	0.58	0.08	0.09	0.51	1.52	0.00	0.57	0.07
2066	0.21	1.27	2.13	0.01	0.64	0.11	0.20	0.83	2.30	0.01	0.62	0.10
Maximum	**0.40**	**4.74**	**3.23**	**0.01**	**0.80**	**0.26**	**0.20**	**2.32**	**2.90**	**0.01**	**0.67**	**0.14**
						Percent Change	**-50%**	**-51%**	**-10%**	**-1%**	**-16%**	**-46%**

Detailed Emissions Summary - Annual

	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
Source	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2016														
Offroad Construction Equipment	0.02	0.25	0.10	0.00	0.01	0.01	33	0.01	0.12	0.07	0.00	0.00	0.00	33
Onroad Vehicles	0.01	0.28	0.06	0.00	0.02	0.01	58	0.01	0.28	0.06	0.00	0.02	0.01	58
Fugitive Dust Emissions	--	--	--	--	0.02	0.00	--	--	--	--	--	0.02	0.00	--
2016 Total Emissions	**0.02**	**0.52**	**0.15**	**0.00**	**0.05**	**0.02**	**91**	**0.01**	**0.40**	**0.13**	**0.00**	**0.05**	**0.01**	**91**
2017														
Offroad Construction Equipment	0.39	4.64	2.98	0.01	0.21	0.19	671	0.18	2.22	2.66	0.01	0.07	0.07	663
Onroad Vehicles	0.01	0.10	0.25	0.00	0.07	0.02	76	0.01	0.10	0.25	0.00	0.07	0.02	76
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2017 Total Emissions	**0.40**	**4.74**	**3.23**	**0.01**	**0.80**	**0.26**	**747**	**0.18**	**2.32**	**2.90**	**0.01**	**0.67**	**0.14**	**739**
2019														
Offroad Construction Equipment	0.17	1.70	1.28	0.00	0.08	0.07	294	0.10	1.22	1.22	0.00	0.06	0.05	297
Onroad Vehicles	0.00	0.01	0.07	0.00	0.02	0.01	22	0.00	0.01	0.07	0.00	0.02	0.01	22
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2019 Total Emissions	**0.17**	**1.72**	**1.35**	**0.00**	**0.63**	**0.14**	**316**	**0.10**	**1.23**	**1.29**	**0.00**	**0.61**	**0.12**	**319**
2021														
Offroad Construction Equipment	0.15	1.44	1.40	0.00	0.07	0.06	310	0.11	1.15	1.39	0.00	0.06	0.06	308
Onroad Vehicles	0.00	0.01	0.09	0.00	0.03	0.01	29	0.00	0.01	0.09	0.00	0.03	0.01	29
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2021 Total Emissions	**0.15**	**1.45**	**1.49**	**0.00**	**0.63**	**0.13**	**339**	**0.11**	**1.16**	**1.48**	**0.00**	**0.62**	**0.12**	**337**
2023														
Offroad Construction Equipment	0.13	1.12	1.37	0.00	0.05	0.05	310	0.11	1.10	1.42	0.00	0.06	0.06	315
Onroad Vehicles	0.00	0.01	0.08	0.00	0.03	0.01	28	0.00	0.01	0.08	0.00	0.03	0.01	28
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2023 Total Emissions	**0.13**	**1.13**	**1.46**	**0.00**	**0.61**	**0.11**	**338**	**0.11**	**1.11**	**1.51**	**0.00**	**0.62**	**0.12**	**343**

Detailed Emissions Summary - Annual

Source	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2025														
Offroad Construction Equipment	0.11	0.97	1.36	0.00	0.04	0.04	310	0.12	1.11	1.44	0.00	0.07	0.06	309
Onroad Vehicles	0.00	0.01	0.08	0.00	0.03	0.01	28	0.00	0.01	0.08	0.00	0.03	0.01	28
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2025 Total Emissions	**0.11**	**0.97**	**1.44**	**0.00**	**0.60**	**0.10**	**337**	**0.12**	**1.12**	**1.51**	**0.00**	**0.63**	**0.12**	**337**
2027														
Offroad Construction Equipment	0.10	0.84	1.35	0.00	0.03	0.03	310	0.06	0.48	1.25	0.00	0.01	0.01	312
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	27	0.00	0.01	0.07	0.00	0.03	0.01	27
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2027 Total Emissions	**0.10**	**0.85**	**1.42**	**0.00**	**0.59**	**0.09**	**337**	**0.06**	**0.49**	**1.32**	**0.00**	**0.57**	**0.07**	**339**
2029														
Offroad Construction Equipment	0.09	0.76	1.34	0.00	0.03	0.02	310	0.07	0.49	1.28	0.00	0.01	0.01	307
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	27	0.00	0.01	0.07	0.00	0.03	0.01	27
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2029 Total Emissions	**0.09**	**0.77**	**1.41**	**0.00**	**0.59**	**0.09**	**336**	**0.07**	**0.49**	**1.35**	**0.00**	**0.57**	**0.07**	**334**
2031														
Offroad Construction Equipment	0.09	0.72	1.33	0.00	0.02	0.02	310	0.07	0.49	1.33	0.00	0.01	0.01	311
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	27	0.00	0.01	0.07	0.00	0.03	0.01	27
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2031 Total Emissions	**0.09**	**0.73**	**1.40**	**0.00**	**0.58**	**0.08**	**336**	**0.07**	**0.50**	**1.39**	**0.00**	**0.57**	**0.07**	**338**
2033														
Offroad Construction Equipment	0.09	0.70	1.33	0.00	0.02	0.02	310	0.07	0.49	1.35	0.00	0.01	0.01	306
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	26	0.00	0.01	0.07	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2033 Total Emissions	**0.09**	**0.71**	**1.39**	**0.00**	**0.58**	**0.08**	**336**	**0.08**	**0.50**	**1.41**	**0.00**	**0.57**	**0.07**	**333**
2035														
Offroad Construction Equipment	0.08	0.69	1.32	0.00	0.02	0.02	310	0.08	0.50	1.39	0.00	0.01	0.01	311
Onroad Vehicles	0.00	0.01	0.06	0.00	0.03	0.01	26	0.00	0.01	0.06	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2035 Total Emissions	**0.09**	**0.69**	**1.39**	**0.00**	**0.58**	**0.08**	**336**	**0.08**	**0.50**	**1.45**	**0.00**	**0.57**	**0.07**	**337**
2037														
Offroad Construction Equipment	0.08	0.68	1.32	0.00	0.02	0.01	310	0.08	0.50	1.41	0.00	0.01	0.01	311
Onroad Vehicles	0.00	0.01	0.06	0.00	0.03	0.01	26	0.00	0.01	0.06	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2037 Total Emissions	**0.08**	**0.68**	**1.38**	**0.00**	**0.58**	**0.08**	**336**	**0.08**	**0.51**	**1.47**	**0.00**	**0.57**	**0.07**	**337**
2039 - 2063														
Offroad Construction Equipment	0.08	0.67	1.32	0.00	0.02	0.01	3,096	0.09	0.50	1.46	0.00	0.01	0.01	3,108
Onroad Vehicles	0.00	0.01	0.06	0.00	0.03	0.01	26	0.00	0.01	0.06	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2039 - 2063 Total Emissions	**0.08**	**0.68**	**1.38**	**0.00**	**0.58**	**0.08**	**3,122**	**0.09**	**0.51**	**1.52**	**0.00**	**0.57**	**0.07**	**3,134**
2066														
Offroad Construction Equipment	0.14	1.12	1.97	0.01	0.03	0.03	606	0.13	0.68	2.15	0.01	0.02	0.01	609
Onroad Vehicles	0.02	0.15	0.15	0.00	0.08	0.03	164	0.02	0.15	0.15	0.00	0.08	0.03	164
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
Fugitive VOC Emissions	0.05	--	--	--	--	--	--	0.05	--	--	--	--	--	--
2066 Total Emissions	**0.21**	**1.27**	**2.13**	**0.01**	**0.64**	**0.11**	**770**	**0.20**	**0.83**	**2.30**	**0.01**	**0.62**	**0.10**	**773**
Maximum Emissions	**0.40**	**4.74**	**3.23**	**0.01**	**0.80**	**0.26**	**n/a**	**0.20**	**2.32**	**2.90**	**0.01**	**0.67**	**0.14**	**n/a**
NEPA Significance Thresholds	10	10	100	100	70	100	n/a	10	10	100	100	70	100	n/a
Exceed Threshold?	No	No	No	No	No	No	n/a	No	No	No	No	No	No	n/a
Total GHG Emissions (metric tons CO2e per project)							8,078	Total GHG Emissions (metric tons CO2e per project)						8,092
Amortized Emissions (metric tons CO2e per year)							269	Amortized Emissions (metric tons CO2e per year)						270
CEQA Significance Threshold (metric tons CO2e per year)							10,000	CEQA Significance Threshold (metric tons CO2e per year)						10,000
Significant Impacts?							No	Significant Impacts?						No

Sources: 40 CFR 93.153(b) (de minimis thresholds); 40 CFR 81.305 (attainment designations)

Note:

Totals may not add exactly due to rounding.

Projec Lifetime 30 years

Alternative 3b - Dam Removal with Natural Transport and Upstream Barrier Removal

Emissions Summary by Year - Annual

	Unmitigated Annual Emissions (tons per year)						Mitigated Annual Emissions (tons per year)					
Year	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016	0.02	0.52	0.15	0.00	0.05	0.02	0.01	0.40	0.13	0.00	0.05	0.01
2017	0.40	4.74	3.23	0.01	0.80	0.26	0.18	2.32	2.90	0.01	0.67	0.14
2019	0.22	2.07	1.72	0.00	0.66	0.15	0.14	1.58	1.66	0.00	0.64	0.13
2021	0.20	1.79	1.84	0.00	0.65	0.14	0.15	1.51	1.83	0.00	0.65	0.14
2023	0.17	1.47	1.81	0.00	0.64	0.13	0.16	1.45	1.86	0.00	0.65	0.14
2025	0.11	0.97	1.44	0.00	0.60	0.10	0.12	1.12	1.51	0.00	0.63	0.12
2027	0.10	0.85	1.42	0.00	0.59	0.09	0.06	0.49	1.32	0.00	0.57	0.07
2029	0.09	0.77	1.41	0.00	0.59	0.09	0.07	0.49	1.35	0.00	0.57	0.07
2031	0.09	0.73	1.40	0.00	0.58	0.08	0.07	0.50	1.39	0.00	0.57	0.07
2033	0.09	0.71	1.39	0.00	0.58	0.08	0.08	0.50	1.41	0.00	0.57	0.07
2035	0.09	0.69	1.39	0.00	0.58	0.08	0.08	0.50	1.45	0.00	0.57	0.07
2037	0.08	0.68	1.38	0.00	0.58	0.08	0.08	0.51	1.47	0.00	0.57	0.07
2039 - 2063	0.08	0.68	1.38	0.00	0.58	0.08	0.09	0.51	1.52	0.00	0.57	0.07
2066	0.21	1.27	2.13	0.01	0.64	0.11	0.20	0.83	2.30	0.01	0.62	0.10
Maximum	**0.40**	**4.74**	**3.23**	**0.01**	**0.80**	**0.26**	**0.20**	**2.32**	**2.90**	**0.01**	**0.67**	**0.14**
					Percent Change		**-50%**	**-51%**	**-10%**	**-1%**	**-16%**	**-46%**

Detailed Emissions Summary - Annual

	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
Source	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e/yr**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e/yr**
2016														
Offroad Construction Equipment	0.02	0.25	0.10	0.00	0.01	0.01	33	0.01	0.12	0.07	0.00	0.00	0.00	33
Onroad Vehicles	0.01	0.28	0.06	0.00	0.02	0.01	58	0.01	0.28	0.06	0.00	0.02	0.01	58
Fugitive Dust Emissions	--	--	--	--	0.02	0.00	--	--	--	--	--	0.02	0.00	--
2016 Total Emissions	**0.02**	**0.52**	**0.15**	**0.00**	**0.05**	**0.02**	**91**	**0.01**	**0.40**	**0.13**	**0.00**	**0.05**	**0.01**	**91**
2017														
Offroad Construction Equipment	0.39	4.64	2.98	0.01	0.21	0.19	671	0.18	2.22	2.66	0.01	0.07	0.07	663
Onroad Vehicles	0.01	0.10	0.25	0.00	0.07	0.02	76	0.01	0.10	0.25	0.00	0.07	0.02	76
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2017 Total Emissions	**0.40**	**4.74**	**3.23**	**0.01**	**0.80**	**0.26**	**747**	**0.18**	**2.32**	**2.90**	**0.01**	**0.67**	**0.14**	**739**
2019														
Offroad Construction Equipment	0.21	2.04	1.60	0.00	0.10	0.09	352	0.14	1.56	1.55	0.00	0.08	0.07	356
Onroad Vehicles	0.00	0.03	0.12	0.00	0.04	0.01	37	0.00	0.03	0.12	0.00	0.04	0.01	37
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2019 Total Emissions	**0.22**	**2.07**	**1.72**	**0.00**	**0.66**	**0.15**	**390**	**0.14**	**1.58**	**1.66**	**0.00**	**0.64**	**0.13**	**393**
2021														
Offroad Construction Equipment	0.19	1.77	1.72	0.00	0.08	0.07	382	0.15	1.49	1.71	0.00	0.08	0.07	380
Onroad Vehicles	0.00	0.02	0.12	0.00	0.04	0.01	41	0.00	0.02	0.12	0.00	0.04	0.01	41
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2021 Total Emissions	**0.20**	**1.79**	**1.84**	**0.00**	**0.65**	**0.14**	**424**	**0.15**	**1.51**	**1.83**	**0.00**	**0.65**	**0.14**	**422**
2023														
Offroad Construction Equipment	0.17	1.45	1.70	0.00	0.07	0.06	389	0.16	1.44	1.75	0.00	0.08	0.07	395
Onroad Vehicles	0.00	0.01	0.12	0.00	0.05	0.01	39	0.00	0.01	0.12	0.00	0.05	0.01	39
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2023 Total Emissions	**0.17**	**1.47**	**1.81**	**0.00**	**0.64**	**0.13**	**429**	**0.16**	**1.45**	**1.86**	**0.00**	**0.65**	**0.14**	**434**
2025														
Offroad Construction Equipment	0.11	0.97	1.36	0.00	0.04	0.04	310	0.12	1.11	1.44	0.00	0.07	0.06	309
Onroad Vehicles	0.00	0.01	0.08	0.00	0.03	0.01	28	0.00	0.01	0.08	0.00	0.03	0.01	28
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2025 Total Emissions	**0.11**	**0.97**	**1.44**	**0.00**	**0.60**	**0.10**	**337**	**0.12**	**1.12**	**1.51**	**0.00**	**0.63**	**0.12**	**337**

Detailed Emissions Summary - Annual

Source	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2027														
Offroad Construction Equipment	0.10	0.84	1.35	0.00	0.03	0.03	310	0.06	0.48	1.25	0.00	0.01	0.01	312
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	27	0.00	0.01	0.07	0.00	0.03	0.01	27
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2027 Total Emissions	**0.10**	**0.85**	**1.42**	**0.00**	**0.59**	**0.09**	**337**	**0.06**	**0.49**	**1.32**	**0.00**	**0.57**	**0.07**	**339**
2029														
Offroad Construction Equipment	0.09	0.76	1.34	0.00	0.03	0.02	310	0.07	0.49	1.28	0.00	0.01	0.01	307
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	27	0.00	0.01	0.07	0.00	0.03	0.01	27
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2029 Total Emissions	**0.09**	**0.77**	**1.41**	**0.00**	**0.59**	**0.09**	**336**	**0.07**	**0.49**	**1.35**	**0.00**	**0.57**	**0.07**	**334**
2031														
Offroad Construction Equipment	0.09	0.72	1.33	0.00	0.02	0.02	310	0.07	0.49	1.33	0.00	0.01	0.01	311
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	27	0.00	0.01	0.07	0.00	0.03	0.01	27
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2031 Total Emissions	**0.09**	**0.73**	**1.40**	**0.00**	**0.58**	**0.08**	**336**	**0.07**	**0.50**	**1.39**	**0.00**	**0.57**	**0.07**	**338**
2033														
Offroad Construction Equipment	0.09	0.70	1.33	0.00	0.02	0.02	310	0.07	0.49	1.35	0.00	0.01	0.01	306
Onroad Vehicles	0.00	0.01	0.07	0.00	0.03	0.01	26	0.00	0.01	0.07	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2033 Total Emissions	**0.09**	**0.71**	**1.39**	**0.00**	**0.58**	**0.08**	**336**	**0.08**	**0.50**	**1.41**	**0.00**	**0.57**	**0.07**	**333**
2035														
Offroad Construction Equipment	0.08	0.69	1.32	0.00	0.02	0.02	310	0.08	0.50	1.39	0.00	0.01	0.01	311
Onroad Vehicles	0.00	0.01	0.06	0.00	0.03	0.01	26	0.00	0.01	0.06	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2035 Total Emissions	**0.09**	**0.69**	**1.39**	**0.00**	**0.58**	**0.08**	**336**	**0.08**	**0.50**	**1.45**	**0.00**	**0.57**	**0.07**	**337**
2037														
Offroad Construction Equipment	0.08	0.68	1.32	0.00	0.02	0.01	310	0.08	0.50	1.41	0.00	0.01	0.01	311
Onroad Vehicles	0.00	0.01	0.06	0.00	0.03	0.01	26	0.00	0.01	0.06	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2037 Total Emissions	**0.08**	**0.68**	**1.38**	**0.00**	**0.58**	**0.08**	**336**	**0.08**	**0.51**	**1.47**	**0.00**	**0.57**	**0.07**	**337**
2039 - 2063														
Offroad Construction Equipment	0.08	0.67	1.32	0.00	0.02	0.01	3,096	0.09	0.50	1.46	0.00	0.01	0.01	3,108
Onroad Vehicles	0.00	0.01	0.06	0.00	0.03	0.01	26	0.00	0.01	0.06	0.00	0.03	0.01	26
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2039 - 2063 Total Emissions	**0.08**	**0.68**	**1.38**	**0.00**	**0.58**	**0.08**	**3,122**	**0.09**	**0.51**	**1.52**	**0.00**	**0.57**	**0.07**	**3,134**
2066														
Offroad Construction Equipment	0.14	1.12	1.97	0.01	0.03	0.03	606	0.13	0.68	2.15	0.01	0.02	0.01	609
Onroad Vehicles	0.02	0.15	0.15	0.00	0.08	0.03	164	0.02	0.15	0.15	0.00	0.08	0.03	164
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
Fugitive VOC Emissions	0.05	--	--	--	--	--	--	0.05	--	--	--	--	--	--
2066 Total Emissions	**0.21**	**1.27**	**2.13**	**0.01**	**0.64**	**0.11**	**770**	**0.20**	**0.83**	**2.30**	**0.01**	**0.62**	**0.10**	**773**
Maximum Emissions	**0.40**	**4.74**	**3.23**	**0.01**	**0.80**	**0.26**	**n/a**	**0.20**	**2.32**	**2.90**	**0.01**	**0.67**	**0.14**	**n/a**
NEPA Significance Thresholds	10	10	100	100	70	100	n/a	10	10	100	100	70	100	n/a
Exceed Threshold?	No	No	No	No	No	No	n/a	No	No	No	No	No	No	n/a
Total GHG Emissions (metric tons CO2e per project)							8,327	Total GHG Emissions (metric tons CO2e per project)						8,341
Amortized Emissions (metric tons CO2e per year)							278	Amortized Emissions (metric tons CO2e per year)						278
CEQA Significance Threshold (metric tons CO2e per year)							10,000	CEQA Significance Threshold (metric tons CO2e per year)						10,000
Significant Impacts?							No	Significant Impacts?						No

Sources: 40 CFR 93.153(b) (de minimis thresholds); 40 CFR 81.305 (attainment designations)

Note:

Totals may not add exactly due to rounding.

Projec Lifetime 30 years

Emissions Summary
Alternative 4a - Dam Removal with Hybrid Mechanical and Natural Transport

Emissions Summary by Year - Annual

	Unmitigated Annual Emissions (tons per year)						Mitigated Annual Emissions (tons per year)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	0.02	0.53	0.16	0.00	0.05	0.02	0.01	0.40	0.13	0.00	0.05	0.01
2017	0.49	6.47	3.69	0.01	0.87	0.32	0.22	2.79	3.06	0.01	0.68	0.14
2018	0.81	11.75	5.78	0.02	1.08	0.47	0.49	6.57	5.09	0.02	0.78	0.19
2019	0.57	7.65	4.51	0.02	0.90	0.34	0.36	4.45	4.13	0.02	0.72	0.17
2020	0.46	5.78	3.76	0.01	0.84	0.28	0.33	3.72	3.61	0.01	0.71	0.16
2021	0.54	5.49	4.21	0.02	0.97	0.30	0.46	3.98	4.19	0.02	0.85	0.19
Maximum	**0.81**	**11.75**	**5.78**	**0.02**	**1.08**	**0.47**	**0.49**	**6.57**	**5.09**	**0.02**	**0.85**	**0.19**
					Percent Change		**-40%**	**-44%**	**-12%**	**-2%**	**-21%**	**-59%**

Detailed Emissions Summary - Annual

	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
Source	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2016														
Offroad Construction Equipment	0.02	0.25	0.10	0.00	0.01	0.01	34	0.01	0.13	0.07	0.00	0.00	0.00	34
Onroad Vehicles	0.01	0.28	0.06	0.00	0.02	0.01	58	0.01	0.28	0.06	0.00	0.02	0.01	58
Fugitive Dust Emissions	--	--	--	--	0.02	0.00	--	--	--	--	--	0.02	0.00	--
2016 Total Emissions	**0.02**	**0.53**	**0.16**	**0.00**	**0.05**	**0.02**	**92**	**0.01**	**0.40**	**0.13**	**0.00**	**0.05**	**0.01**	**92**
2017														
Offroad Construction Equipment	0.48	6.35	3.42	0.01	0.27	0.24	905	0.21	2.67	2.79	0.01	0.07	0.06	886
Onroad Vehicles	0.01	0.12	0.27	0.00	0.07	0.02	84	0.01	0.12	0.27	0.00	0.07	0.02	84
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2017 Total Emissions	**0.49**	**6.47**	**3.69**	**0.01**	**0.87**	**0.32**	**988**	**0.22**	**2.79**	**3.06**	**0.01**	**0.68**	**0.14**	**970**
2018														
Offroad Construction Equipment	0.78	10.05	5.45	0.02	0.39	0.36	1,713	0.45	4.87	4.75	0.02	0.10	0.08	1,678
Onroad Vehicles	0.04	1.69	0.33	0.00	0.15	0.05	402	0.04	1.69	0.33	0.00	0.15	0.05	402
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2018 Total Emissions	**0.81**	**11.75**	**5.78**	**0.02**	**1.08**	**0.47**	**2,115**	**0.49**	**6.57**	**5.09**	**0.02**	**0.78**	**0.19**	**2,080**
2019														
Offroad Construction Equipment	0.54	6.83	4.27	0.01	0.27	0.24	1,259	0.34	3.63	3.90	0.01	0.09	0.08	1,290
Onroad Vehicles	0.02	0.82	0.23	0.00	0.10	0.03	228	0.02	0.82	0.23	0.00	0.10	0.03	228
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2019 Total Emissions	**0.57**	**7.65**	**4.51**	**0.02**	**0.90**	**0.34**	**1,487**	**0.36**	**4.45**	**4.13**	**0.02**	**0.72**	**0.17**	**1,518**
2020														
Offroad Construction Equipment	0.44	5.12	3.53	0.01	0.21	0.18	1,028	0.31	3.05	3.38	0.01	0.08	0.07	1,032
Onroad Vehicles	0.02	0.67	0.23	0.00	0.10	0.03	233	0.02	0.67	0.23	0.00	0.10	0.03	233
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2020 Total Emissions	**0.46**	**5.78**	**3.76**	**0.01**	**0.84**	**0.28**	**1,261**	**0.33**	**3.72**	**3.61**	**0.01**	**0.71**	**0.16**	**1,265**
2021														
Offroad Construction Equipment	0.46	4.99	3.95	0.01	0.20	0.18	1,216	0.38	3.48	3.93	0.01	0.09	0.08	1,212
Onroad Vehicles	0.03	0.50	0.26	0.00	0.12	0.04	281	0.03	0.50	0.26	0.00	0.12	0.04	281
Fugitive Dust Emissions	--	--	--	--	0.64	0.07	--	--	--	--	--	0.64	0.07	--
Fugitive VOC Emissions	0.05	--	--	--	--	--	--	0.05	--	--	--	--	--	--
2021 Total Emissions	**0.54**	**5.49**	**4.21**	**0.02**	**0.97**	**0.30**	**1,497**	**0.46**	**3.98**	**4.19**	**0.02**	**0.85**	**0.19**	**1,493**
Maximum Emissions	**0.81**	**11.75**	**5.78**	**0.02**	**1.08**	**0.47**	**n/a**	**0.49**	**6.57**	**5.09**	**0.02**	**0.85**	**0.19**	**n/a**
NEPA Significance Thresholds	10	10	100	100	70	100	n/a	10	10	100	100	70	100	n/a
Exceed Threshold?	No	Yes	No	No	No	No	n/a	No	No	No	No	No	No	n/a
Total GHG Emissions (metric tons CO2e per project)							7,441	Total GHG Emissions (metric tons CO2e per project)						7,441
Amortized Emissions (metric tons CO2e per year)							248	Amortized Emissions (metric tons CO2e per year)						248
CEQA Significance Threshold (metric tons CO2e per year)							10,000	CEQA Significance Threshold (metric tons CO2e per year)						10,000
Significant Impacts?							No	Significant Impacts?						No

Sources: 40 CFR 93.153(b) (de minimis thresholds); 40 CFR 81.305 (attainment designations)
Note:
Totals may not add exactly due to rounding.

Projec Lifetime 30 years

Emissions Summary

Alternative 4b - Dam Removal with Hybrid Mechanical and Natural Transport and Upstream Barrier Removal

Emissions Summary by Year - Annual

	Unmitigated Annual Emissions (tons per year)						Mitigated Annual Emissions (tons per year)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	0.02	0.53	0.16	0.00	0.05	0.02	0.01	0.40	0.13	0.00	0.05	0.01
2017	0.49	6.47	3.69	0.01	0.87	0.32	0.22	2.79	3.06	0.01	0.68	0.14
2018	0.86	12.13	6.16	0.02	1.11	0.49	0.53	6.95	5.46	0.02	0.81	0.21
2019	0.60	8.05	4.79	0.02	0.93	0.35	0.40	4.85	4.42	0.02	0.75	0.18
2020	0.49	6.19	4.03	0.01	0.87	0.29	0.36	4.12	3.88	0.01	0.74	0.18
2021	0.54	5.49	4.21	0.02	0.97	0.30	0.46	3.98	4.19	0.02	0.85	0.19
Maximum	**0.86**	**12.13**	**6.16**	**0.02**	**1.11**	**0.49**	**0.53**	**6.95**	**5.46**	**0.02**	**0.85**	**0.21**

Detailed Emissions Summary - Annual

	Unmitigated Annual Emissions (tons per year)						Metric Tons	Mitigated Annual Emissions (tons per year)						Metric Tons
Source	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2e/yr
2016														
Offroad Construction Equipment	0.02	0.25	0.10	0.00	0.01	0.01	34	0.01	0.13	0.07	0.00	0.00	0.00	34
Onroad Vehicles	0.01	0.28	0.06	0.00	0.02	0.01	58	0.01	0.28	0.06	0.00	0.02	0.01	58
Fugitive Dust Emissions	--	--	--	--	0.02	0.00	--	--	--	--	--	0.02	0.00	--
2016 Total Emissions	**0.02**	**0.53**	**0.16**	**0.00**	**0.05**	**0.02**	**92**	**0.01**	**0.40**	**0.13**	**0.00**	**0.05**	**0.01**	**92**
2017														
Offroad Construction Equipment	0.48	6.35	3.42	0.01	0.27	0.24	905	0.21	2.67	2.79	0.01	0.07	0.06	886
Onroad Vehicles	0.01	0.12	0.27	0.00	0.07	0.02	84	0.01	0.12	0.27	0.00	0.07	0.02	84
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2017 Total Emissions	**0.49**	**6.47**	**3.69**	**0.01**	**0.87**	**0.32**	**988**	**0.22**	**2.79**	**3.06**	**0.01**	**0.68**	**0.14**	**970**
2018														
Offroad Construction Equipment	0.82	10.42	5.78	0.02	0.41	0.37	1,771	0.50	5.24	5.08	0.02	0.11	0.10	1,737
Onroad Vehicles	0.04	1.71	0.38	0.00	0.17	0.06	418	0.04	1.71	0.38	0.00	0.17	0.06	418
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2018 Total Emissions	**0.86**	**12.13**	**6.16**	**0.02**	**1.11**	**0.49**	**2,189**	**0.53**	**6.95**	**5.46**	**0.02**	**0.81**	**0.21**	**2,154**
2019														
Offroad Construction Equipment	0.58	7.22	4.52	0.01	0.29	0.26	1,332	0.38	4.02	4.15	0.01	0.10	0.09	1,362
Onroad Vehicles	0.02	0.83	0.27	0.00	0.11	0.04	239	0.02	0.83	0.27	0.00	0.11	0.04	239
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2019 Total Emissions	**0.60**	**8.05**	**4.79**	**0.02**	**0.93**	**0.35**	**1,570**	**0.40**	**4.85**	**4.42**	**0.02**	**0.75**	**0.18**	**1,601**
2020														
Offroad Construction Equipment	0.47	5.52	3.76	0.01	0.22	0.20	1,108	0.34	3.45	3.61	0.01	0.10	0.09	1,112
Onroad Vehicles	0.02	0.67	0.26	0.00	0.12	0.04	244	0.02	0.67	0.26	0.00	0.12	0.04	244
Fugitive Dust Emissions	--	--	--	--	0.53	0.06	--	--	--	--	--	0.53	0.06	--
2020 Total Emissions	**0.49**	**6.19**	**4.03**	**0.01**	**0.87**	**0.29**	**1,353**	**0.36**	**4.12**	**3.88**	**0.01**	**0.74**	**0.18**	**1,356**
2021														
Offroad Construction Equipment	0.46	4.99	3.95	0.01	0.20	0.18	1,216	0.38	3.48	3.93	0.01	0.09	0.08	1,212
Onroad Vehicles	0.03	0.50	0.26	0.00	0.12	0.04	281	0.03	0.50	0.26	0.00	0.12	0.04	281
Fugitive Dust Emissions	--	--	--	--	0.64	0.07	--	--	--	--	--	0.64	0.07	--
Fugitive VOC Emissions	0.05	--	--	--	--	--	--	0.05	--	--	--	--	--	--
2021 Total Emissions	**0.54**	**5.49**	**4.21**	**0.02**	**0.97**	**0.30**	**1,497**	**0.46**	**3.98**	**4.19**	**0.02**	**0.85**	**0.19**	**1,493**
Maximum Emissions	**0.86**	**12.13**	**6.16**	**0.02**	**1.11**	**0.49**	**n/a**	**0.53**	**6.95**	**5.46**	**0.02**	**0.85**	**0.21**	**n/a**
NEPA Significance Thresholds	10	10	100	100	70	100	n/a	10	10	100	100	70	100	n/a
Exceed Threshold?	No	Yes	No	No	No	No	n/a	No	No	No	No	No	No	n/a
Total GHG Emissions (metric tons CO2e per project)							7,690	Total GHG Emissions (metric tons CO2e per project)						7,690
Amortized Emissions (metric tons CO2e per year)							256	Amortized Emissions (metric tons CO2e per year)						256
CEQA Significance Threshold (metric tons CO2e per year)							10,000	CEQA Significance Threshold (metric tons CO2e per year)						10,000
Significant Impacts?							No	Significant Impacts?						No

Sources: 40 CFR 93.153(b) (de minimis thresholds); 40 CFR 81.305 (attainment designations)

Note:

Totals may not add exactly due to rounding.

Projec Lifetime 30 years

Emissions Summary
Alternative 2a - Dam Removal with Mechanical Transport

Emissions Summary by Year - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	2	33	12	0	5	1	1	23	10	0	4	1
2017	10	134	69	0	14	6	4	58	55	0	10	2
2018	15	224	109	0	17	8	9	126	96	0	11	3
2019	11	142	85	0	13	6	7	82	78	0	10	3
2020	8	106	71	0	12	5	6	67	68	0	10	3
2021	20	111	83	0	16	6	19	81	82	0	13	4
Maximum	**20**	**224**	**109**	**0**	**17**	**8**	**19**	**126**	**96**	**0**	**13**	**4**

Detailed Emissions Summary - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Source	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016												
Offroad Construction Equipment	1	19	9	0	1	1	1	10	7	0	0	0
Onroad Vehicles	0	13	3	0	1	0	0	13	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	3	0	--	--	--	--	3	0
2016 Total Emissions	**2**	**33**	**12**	**0**	**5**	**1**	**1**	**23**	**10**	**0**	**4**	**1**
2017												
Offroad Construction Equipment	10	127	65	0	5	5	4	50	51	0	1	1
Onroad Vehicles	0	8	4	0	1	0	0	8	4	0	1	0
Fugitive Dust Emissions	--	--	--	--	7	1	--	--	--	--	7	1
2017 Total Emissions	**10**	**134**	**69**	**0**	**14**	**6**	**4**	**58**	**55**	**0**	**10**	**2**
2018												
Offroad Construction Equipment	15	191	103	0	7	7	9	93	90	0	2	2
Onroad Vehicles	1	32	6	0	3	1	1	32	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2018 Total Emissions	**15**	**224**	**109**	**0**	**17**	**8**	**9**	**126**	**96**	**0**	**11**	**3**
2019												
Offroad Construction Equipment	10	127	81	0	5	5	6	67	74	0	2	1
Onroad Vehicles	0	15	4	0	2	1	0	15	4	0	2	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2019 Total Emissions	**11**	**142**	**85**	**0**	**13**	**6**	**7**	**82**	**78**	**0**	**10**	**3**
2020												
Offroad Construction Equipment	8	95	67	0	4	3	6	56	64	0	2	1
Onroad Vehicles	0	11	4	0	2	1	0	11	4	0	2	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2020 Total Emissions	**8**	**106**	**71**	**0**	**12**	**5**	**6**	**67**	**68**	**0**	**10**	**3**
2021												
Offroad Construction Equipment	9	98	77	0	4	4	7	68	76	0	2	2
Onroad Vehicles	1	14	6	0	3	1	1	14	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	9	1	--	--	--	--	9	1
Fugitive VOC Emissions	10	--	--	--	--	--	10	--	--	--	--	--
2021 Total Emissions	**20**	**111**	**83**	**0**	**16**	**6**	**19**	**81**	**82**	**0**	**13**	**4**
Maximum Emissions	**20**	**224**	**109**	**0**	**17**	**8**	**19**	**126**	**96**	**0**	**13**	**4**
CEQA Significance Thresholds (SCAQMD)	75	100	550	150	150	55	75	100	550	150	150	55
Significant Impact?	No	Yes	No	No	No	No	No	Yes	No	No	No	No

Source: SCAQMD Air Quality Significance Thresholds (March 2011). Available online at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf [Accessed on April 20, 2013].
Note:
Totals may not add exactly due to rounding.

Emissions Summary
Alternative 2b - Dam Removal with Mechanical Transport and Upstream Barrier Removal

Emissions Summary by Year - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Year	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016	2	33	12	0	5	1	1	23	10	0	4	1
2017	10	134	69	0	14	6	4	58	55	0	10	2
2018	22	269	165	1	20	10	16	172	152	1	14	5
2019	16	199	122	0	16	8	12	138	115	0	13	5
2020	11	136	89	0	14	6	9	97	86	0	11	4
2021	20	111	83	0	16	6	19	81	82	0	13	4
Maximum	**22**	**269**	**165**	**1**	**20**	**10**	**19**	**172**	**152**	**1**	**14**	**5**

Detailed Emissions Summary - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Source	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016												
Offroad Construction Equipment	1	19	9	0	1	1	1	10	7	0	0	0
Onroad Vehicles	0	13	3	0	1	0	0	13	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	3	0	--	--	--	--	3	0
2016 Total Emissions	**2**	**33**	**12**	**0**	**5**	**1**	**1**	**23**	**10**	**0**	**4**	**1**
2017												
Offroad Construction Equipment	10	127	65	0	5	5	4	50	51	0	1	1
Onroad Vehicles	0	8	4	0	1	0	0	8	4	0	1	0
Fugitive Dust Emissions	--	--	--	--	7	1	--	--	--	--	7	1
2017 Total Emissions	**10**	**134**	**69**	**0**	**14**	**6**	**4**	**58**	**55**	**0**	**10**	**2**
2018												
Offroad Construction Equipment	21	237	157	0	9	8	15	139	144	0	4	3
Onroad Vehicles	1	33	9	0	4	1	1	33	9	0	4	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2018 Total Emissions	**22**	**269**	**165**	**1**	**20**	**10**	**16**	**172**	**152**	**1**	**14**	**5**
2019												
Offroad Construction Equipment	15	183	116	0	7	7	12	122	109	0	4	3
Onroad Vehicles	0	16	6	0	3	1	0	16	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2019 Total Emissions	**16**	**199**	**122**	**0**	**16**	**8**	**12**	**138**	**115**	**0**	**13**	**5**
2020												
Offroad Construction Equipment	11	125	84	0	5	5	8	86	81	0	3	2
Onroad Vehicles	0	11	5	0	2	1	0	11	5	0	2	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2020 Total Emissions	**11**	**136**	**89**	**0**	**14**	**6**	**9**	**97**	**86**	**0**	**11**	**4**
2021												
Offroad Construction Equipment	9	98	77	0	4	4	7	68	76	0	2	2
Onroad Vehicles	1	14	6	0	3	1	1	14	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	9	1	--	--	--	--	9	1
Fugitive VOC Emissions	10	--	--	--	--	--	10	--	--	--	--	--
2021 Total Emissions	**20**	**111**	**83**	**0**	**16**	**6**	**19**	**81**	**82**	**0**	**13**	**4**
Maximum Emissions	**22**	**269**	**165**	**1**	**20**	**10**	**19**	**172**	**152**	**1**	**14**	**5**
CEQA Significance Thresholds (SCAQMD)	75	100	550	150	150	55	75	100	550	150	150	55
Significant Impact?	No	Yes	No	No	No	No	No	Yes	No	No	No	No

Source: SCAQMD Air Quality Significance Thresholds (March 2011). Available online at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf [Accessed on April 20, 2013].

Note:

Totals may not add exactly due to rounding.

Emissions Summary
Alternative 3a - Dam Removal with Natural Transport

Emissions Summary by Year - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Year	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016	1	32	10	0	5	1	1	23	8	0	4	1
2017	9	120	73	0	14	6	4	59	66	0	10	3
2019	9	113	74	0	12	5	5	58	67	0	9	3
2021	8	100	76	0	11	5	6	58	71	0	9	3
2023	7	72	74	0	10	4	6	57	74	0	9	3
2025	6	60	72	0	10	3	6	57	71	0	9	3
2027	5	50	71	0	9	3	3	16	65	0	8	1
2029	5	45	70	0	9	3	3	16	65	0	8	1
2031	5	45	69	0	9	2	3	16	69	0	8	1
2033	5	44	68	0	9	2	3	16	67	0	8	1
2035	5	44	67	0	9	2	3	16	70	0	8	1
2037	5	44	67	0	9	2	3	16	68	0	8	1
2039 - 2063	5	44	67	0	9	2	3	16	72	0	8	1
2066	25	119	170	1	7	5	21	51	179	1	4	2
Maximum	**25**	**120**	**170**	**1**	**14**	**6**	**21**	**59**	**179**	**1**	**10**	**3**
						Percent Change	**-16%**	**-51%**	**5%**	**-1%**	**-24%**	**-53%**

Detailed Emissions Summary - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Source	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016												
Offroad Construction Equipment	1	19	7	0	1	1	1	10	5	0	0	0
Onroad Vehicles	0	13	3	0	1	0	0	13	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	3	0	--	--	--	--	3	0
2016 Total Emissions	**1**	**32**	**10**	**0**	**5**	**1**	**1**	**23**	**8**	**0**	**4**	**1**
2017												
Offroad Construction Equipment	9	109	68	0	5	4	4	48	60	0	2	1
Onroad Vehicles	0	11	6	0	2	1	0	11	6	0	2	1
Fugitive Dust Emissions	--	--	--	--	7	1	--	--	--	--	7	1
2017 Total Emissions	**9**	**120**	**73**	**0**	**14**	**6**	**4**	**59**	**66**	**0**	**10**	**3**
2019												
Offroad Construction Equipment	9	111	71	0	5	4	5	56	65	0	2	2
Onroad Vehicles	0	3	2	0	1	0	0	3	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2019 Total Emissions	**9**	**113**	**74**	**0**	**12**	**5**	**5**	**58**	**67**	**0**	**9**	**3**
2021												
Offroad Construction Equipment	8	99	74	0	4	4	5	57	68	0	2	2
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2021 Total Emissions	**8**	**100**	**76**	**0**	**11**	**5**	**6**	**58**	**71**	**0**	**9**	**3**
2023												
Offroad Construction Equipment	7	72	72	0	3	3	6	56	72	0	2	2
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2023 Total Emissions	**7**	**72**	**74**	**0**	**10**	**4**	**6**	**57**	**74**	**0**	**9**	**3**

Detailed Emissions Summary - Daily

Source	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2025												
Offroad Construction Equipment	6	59	70	0	2	2	6	56	69	0	2	2
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2025 Total Emissions	**6**	**60**	**72**	**0**	**10**	**3**	**6**	**57**	**71**	**0**	**9**	**3**
2027												
Offroad Construction Equipment	5	50	69	0	2	2	3	15	63	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2027 Total Emissions	**5**	**50**	**71**	**0**	**9**	**3**	**3**	**16**	**65**	**0**	**8**	**1**
2029												
Offroad Construction Equipment	5	45	68	0	2	2	3	16	64	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2029 Total Emissions	**5**	**45**	**70**	**0**	**9**	**3**	**3**	**16**	**65**	**0**	**8**	**1**
2031												
Offroad Construction Equipment	5	44	67	0	2	2	3	16	67	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2031 Total Emissions	**5**	**45**	**69**	**0**	**9**	**2**	**3**	**16**	**69**	**0**	**8**	**1**
2033												
Offroad Construction Equipment	5	44	66	0	2	2	3	16	66	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2033 Total Emissions	**5**	**44**	**68**	**0**	**9**	**2**	**3**	**16**	**67**	**0**	**8**	**1**
2035												
Offroad Construction Equipment	5	43	66	0	2	1	3	16	69	0	1	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2035 Total Emissions	**5**	**44**	**67**	**0**	**9**	**2**	**3**	**16**	**70**	**0**	**8**	**1**
2037												
Offroad Construction Equipment	5	43	65	0	2	1	3	16	67	0	1	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2037 Total Emissions	**5**	**44**	**67**	**0**	**9**	**2**	**3**	**16**	**68**	**0**	**8**	**1**
2039 - 2063												
Offroad Construction Equipment	5	43	65	0	2	1	3	16	70	0	1	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2039 - 2063 Total Emissions	**5**	**44**	**67**	**0**	**9**	**2**	**3**	**16**	**72**	**0**	**8**	**1**
2066												
Offroad Construction Equipment	14	112	165	1	4	4	10	44	174	1	1	1
Onroad Vehicles	1	7	5	0	3	1	1	7	5	0	3	1
Fugitive Dust Emissions	--	--	--	--			--	--	--	--		
Fugitive VOC Emissions	10	--	--	--	--	--	10	--	--	--	--	--
2066 Total Emissions	**25**	**119**	**170**	**1**	**7**	**5**	**21**	**51**	**179**	**1**	**4**	**2**
Maximum Emissions	**25**	**120**	**170**	**1**	**14**	**6**	**21**	**59**	**179**	**1**	**10**	**3**
CEQA Significance Thresholds (SCAQMD)	75	100	550	150	150	55	75	100	550	150	150	55
Significant Impact?	No	Yes	No	No	No	No	No	No	No	No	No	No

Source: SCAQMD Air Quality Significance Thresholds (March 2011). Available online at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf [Accessed on April 20, 2013].

Note:

Totals may not add exactly due to rounding.

Emissions Summary
Alternative 3b - Dam Removal with Natural Transport and Upstream Barrier Removal

Emissions Summary by Year - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Year	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016	1	32	10	0	5	1	1	23	8	0	4	1
2017	9	120	73	0	14	6	4	59	66	0	10	3
2019	15	155	128	0	14	7	11	100	122	0	11	4
2021	13	146	112	0	14	7	10	104	106	0	12	4
2023	9	91	91	0	12	5	8	76	91	0	10	3
2025	6	60	72	0	10	3	6	57	71	0	9	3
2027	5	50	71	0	9	3	3	16	65	0	8	1
2029	5	45	70	0	9	3	3	16	65	0	8	1
2031	5	45	69	0	9	2	3	16	69	0	8	1
2033	5	44	68	0	9	2	3	16	67	0	8	1
2035	5	44	67	0	9	2	3	16	70	0	8	1
2037	5	44	67	0	9	2	3	16	68	0	8	1
2039 - 2063	5	44	67	0	9	2	3	16	72	0	8	1
2066	25	119	170	1	13	5	21	51	179	1	11	3
Maximum	**25**	**155**	**170**	**1**	**14**	**7**	**21**	**104**	**179**	**1**	**12**	**4**
					Percent Change		**-16%**	**-33%**	**5%**	**-1%**	**-19%**	**-36%**

Detailed Emissions Summary - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Source	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016												
Offroad Construction Equipment	1	19	7	0	1	1	1	10	5	0	0	0
Onroad Vehicles	0	13	3	0	1	0	0	13	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	3	0	--	--	--	--	3	0
2016 Total Emissions	**1**	**32**	**10**	**0**	**5**	**1**	**1**	**23**	**8**	**0**	**4**	**1**
2017												
Offroad Construction Equipment	9	109	68	0	5	4	4	48	60	0	2	1
Onroad Vehicles	0	11	6	0	2	1	0	11	6	0	2	1
Fugitive Dust Emissions	--	--	--	--	7	1	--	--	--	--	7	1
2017 Total Emissions	**9**	**120**	**73**	**0**	**14**	**6**	**4**	**59**	**66**	**0**	**10**	**3**
2019												
Offroad Construction Equipment	15	153	124	0	6	6	11	98	118	0	4	3
Onroad Vehicles	0	3	4	0	1	0	0	3	4	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2019 Total Emissions	**15**	**155**	**128**	**0**	**14**	**7**	**11**	**100**	**122**	**0**	**11**	**4**
2021												
Offroad Construction Equipment	13	145	108	0	6	6	10	102	103	0	4	3
Onroad Vehicles	0	1	4	0	1	0	0	1	4	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2021 Total Emissions	**13**	**146**	**112**	**0**	**14**	**7**	**10**	**104**	**106**	**0**	**12**	**4**
2023												
Offroad Construction Equipment	9	91	88	0	4	4	8	75	88	0	3	2
Onroad Vehicles	0	1	3	0	1	0	0	1	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2023 Total Emissions	**9**	**91**	**91**	**0**	**12**	**5**	**8**	**76**	**91**	**0**	**10**	**3**

Detailed Emissions Summary - Daily

Source	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
2016												
2025												
Offroad Construction Equipment	6	59	70	0	2	2	6	56	69	0	2	2
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2025 Total Emissions	**6**	**60**	**72**	**0**	**10**	**3**	**6**	**57**	**71**	**0**	**9**	**3**
2027												
Offroad Construction Equipment	5	50	69	0	2	2	3	15	63	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2027 Total Emissions	**5**	**50**	**71**	**0**	**9**	**3**	**3**	**16**	**65**	**0**	**8**	**1**
2029												
Offroad Construction Equipment	5	45	68	0	2	2	3	16	64	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2029 Total Emissions	**5**	**45**	**70**	**0**	**9**	**3**	**3**	**16**	**65**	**0**	**8**	**1**
2031												
Offroad Construction Equipment	5	44	67	0	2	2	3	16	67	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2031 Total Emissions	**5**	**45**	**69**	**0**	**9**	**2**	**3**	**16**	**69**	**0**	**8**	**1**
2033												
Offroad Construction Equipment	5	44	66	0	2	2	3	16	66	0	0	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2033 Total Emissions	**5**	**44**	**68**	**0**	**9**	**2**	**3**	**16**	**67**	**0**	**8**	**1**
2035												
Offroad Construction Equipment	5	43	66	0	2	1	3	16	69	0	1	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2035 Total Emissions	**5**	**44**	**67**	**0**	**9**	**2**	**3**	**16**	**70**	**0**	**8**	**1**
2037												
Offroad Construction Equipment	5	43	65	0	2	1	3	16	67	0	1	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2037 Total Emissions	**5**	**44**	**67**	**0**	**9**	**2**	**3**	**16**	**68**	**0**	**8**	**1**
2039 - 2063												
Offroad Construction Equipment	5	43	65	0	2	1	3	16	70	0	1	0
Onroad Vehicles	0	1	2	0	1	0	0	1	2	0	1	0
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2039 - 2063 Total Emissions	**5**	**44**	**67**	**0**	**9**	**2**	**3**	**16**	**72**	**0**	**8**	**1**
2066												
Offroad Construction Equipment	14	112	165	1	4	4	10	44	174	1	1	1
Onroad Vehicles	1	7	5	0	3	1	1	7	5	0	3	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
Fugitive VOC Emissions	10	--	--	--	--	--	10	--	--	--	--	--
2066 Total Emissions	**25**	**119**	**170**	**1**	**13**	**5**	**21**	**51**	**179**	**1**	**11**	**3**
Maximum Emissions	**25**	**155**	**170**	**1**	**14**	**7**	**21**	**104**	**179**	**1**	**12**	**4**
CEQA Significance Thresholds (SCAQMD)	75	100	550	150	150	55	75	100	550	150	150	55
Significant Impact?	No	Yes	No	No	No	No	No	Yes	No	No	No	No

Source: SCAQMD Air Quality Significance Thresholds (March 2011). Available online at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf [Accessed on April 20, 2013].

Note:

Totals may not add exactly due to rounding.

Emissions Summary
Alternative 4a - Dam Removal with Hybrid Mechanical and Natural Transport

Emissions Summary by Year - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Year	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016	2	33	11	0	5	1	1	23	9	0	4	1
2017	12	168	88	0	15	7	5	75	74	0	10	3
2018	75	1,096	510	2	49	38	43	486	412	2	15	6
2019	41	581	305	1	30	21	25	276	264	1	12	5
2020	42	567	311	1	29	21	27	285	272	1	12	5
2021	61	606	396	2	35	23	53	394	374	2	17	7
Maximum	**75**	**1,096**	**510**	**2**	**49**	**38**	**53**	**486**	**412**	**2**	**17**	**7**

Detailed Emissions Summary - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Source	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016												
Offroad Construction Equipment	1	19	8	0	1	1	1	10	6	0	0	0
Onroad Vehicles	0	13	3	0	1	0	0	13	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	3	0	--	--	--	--	3	0
2016 Total Emissions	**2**	**33**	**11**	**0**	**5**	**1**	**1**	**23**	**9**	**0**	**4**	**1**
2017												
Offroad Construction Equipment	12	155	82	0	6	6	5	62	68	0	2	1
Onroad Vehicles	0	13	6	0	2	1	0	13	6	0	2	1
Fugitive Dust Emissions	--	--	--	--	7	1	--	--	--	--	7	1
2017 Total Emissions	**12**	**168**	**88**	**0**	**15**	**7**	**5**	**75**	**74**	**0**	**10**	**3**
2018												
Offroad Construction Equipment	75	1,063	504	2	40	36	42	454	406	2	5	5
Onroad Vehicles	1	32	6	0	3	1	1	32	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2018 Total Emissions	**75**	**1,096**	**510**	**2**	**49**	**38**	**43**	**486**	**412**	**2**	**15**	**6**
2019												
Offroad Construction Equipment	41	566	301	1	22	20	24	261	260	1	4	3
Onroad Vehicles	0	15	4	0	2	1	0	15	4	0	2	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2019 Total Emissions	**41**	**581**	**305**	**1**	**30**	**21**	**25**	**276**	**264**	**1**	**12**	**5**
2020												
Offroad Construction Equipment	41	556	307	1	21	19	27	274	268	1	4	3
Onroad Vehicles	0	11	4	0	2	1	0	11	4	0	2	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2020 Total Emissions	**42**	**567**	**311**	**1**	**29**	**21**	**27**	**285**	**272**	**1**	**12**	**5**
2021												
Offroad Construction Equipment	50	593	390	1	23	21	41	380	368	1	6	5
Onroad Vehicles	1	14	6	0	3	1	1	14	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	9	1	--	--	--	--	9	1
Fugitive VOC Emissions	10	--	--	--	--	--	10	--	--	--	--	--
2021 Total Emissions	**61**	**606**	**396**	**2**	**35**	**23**	**53**	**394**	**374**	**2**	**17**	**7**
Maximum Emissions	**75**	**1,096**	**510**	**2**	**49**	**38**	**53**	**486**	**412**	**2**	**17**	**7**
CEQA Significance Thresholds (SCAQMD)	75	100	550	150	150	55	75	100	550	150	150	55
Significant Impact?	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No

Source: SCAQMD Air Quality Significance Thresholds (March 2011). Available online at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf [Accessed on April 20, 2013].

Note:

Totals may not add exactly due to rounding.

Emissions Summary

Alternative 4b - Dam Removal with Hybrid Mechanical and Natural Transport and Upstream Barrier Removal

Emissions Summary by Year - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Year	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016	2	33	11	0	5	1	1	23	9	0	4	1
2017	12	168	88	0	15	7	5	75	74	0	10	3
2018	82	1,141	566	2	52	40	49	532	468	2	17	8
2019	47	637	342	1	33	23	30	332	301	1	15	7
2020	44	597	328	1	31	22	30	315	290	1	14	6
2021	61	610	397	2	35	23	53	397	375	2	18	7
Maximum	**82**	**1,141**	**566**	**2**	**52**	**40**	**53**	**532**	**468**	**2**	**18**	**8**

Detailed Emissions Summary - Daily

	Unmitigated Daily Emissions (pounds per day)						Mitigated Daily Emissions (pounds per day)					
Source	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
2016												
Offroad Construction Equipment	1	19	8	0	1	1	1	10	6	0	0	0
Onroad Vehicles	0	13	3	0	1	0	0	13	3	0	1	0
Fugitive Dust Emissions	--	--	--	--	3	0	--	--	--	--	3	0
2016 Total Emissions	**2**	**33**	**11**	**0**	**5**	**1**	**1**	**23**	**9**	**0**	**4**	**1**
2017												
Offroad Construction Equipment	12	155	82	0	6	6	5	62	68	0	2	1
Onroad Vehicles	0	13	6	0	2	1	0	13	6	0	2	1
Fugitive Dust Emissions	--	--	--	--	7	1	--	--	--	--	7	1
2017 Total Emissions	**12**	**168**	**88**	**0**	**15**	**7**	**5**	**75**	**74**	**0**	**10**	**3**
2018												
Offroad Construction Equipment	81	1,109	558	2	42	38	48	499	460	2	7	6
Onroad Vehicles	1	33	8	0	4	1	1	33	8	0	4	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2018 Total Emissions	**82**	**1,141**	**566**	**2**	**52**	**40**	**49**	**532**	**468**	**2**	**17**	**8**
2019												
Offroad Construction Equipment	46	622	336	1	24	22	30	317	295	1	6	5
Onroad Vehicles	0	16	6	0	3	1	0	16	6	0	3	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2019 Total Emissions	**47**	**637**	**342**	**1**	**33**	**23**	**30**	**332**	**301**	**1**	**15**	**7**
2020												
Offroad Construction Equipment	44	586	323	1	22	20	29	303	285	1	5	5
Onroad Vehicles	0	11	5	0	2	1	0	11	5	0	2	1
Fugitive Dust Emissions	--	--	--	--	6	1	--	--	--	--	6	1
2020 Total Emissions	**44**	**597**	**328**	**1**	**31**	**22**	**30**	**315**	**290**	**1**	**14**	**6**
2021												
Offroad Construction Equipment	50	593	390	1	23	21	41	380	368	1	6	5
Onroad Vehicles	1	17	7	0	4	1	1	17	7	0	4	1
Fugitive Dust Emissions	--	--	--	--	9	1	--	--	--	--	9	1
Fugitive VOC Emissions	10	--	--	--	--	--	10	--	--	--	--	--
2021 Total Emissions	**61**	**610**	**397**	**2**	**35**	**23**	**53**	**397**	**375**	**2**	**18**	**7**
Maximum Emissions	**82**	**1,141**	**566**	**2**	**52**	**40**	**53**	**532**	**468**	**2**	**18**	**8**
CEQA Significance Thresholds (SCAQMD)	75	100	550	150	150	55	75	100	550	150	150	55
Significant Impact?	Yes	Yes	Yes	No	No	No	No	Yes	No	No	No	No

Source: SCAQMD Air Quality Significance Thresholds (March 2011). Available online at: http://www.aqmd.gov/ceqa/handbook/signthres.pdf [Accessed on April 20, 2013].

Note:

Totals may not add exactly due to rounding.

Emissions Summary
Alternative 2a - Dam Removal with Mechanical Transport

Daily Onsite Emissions Summary
Rindge Dam

Year	NOx	CO	PM10	PM2.5
2016	19	9	4	1
2017	127	65	12	6
2018	148	83	12	6
2019	86	59	10	4
2020	83	60	10	4
2021	96	76	12	5
Maximum	**148**	**83**	**12**	**6**
Localized significance Thresholds	312	10467	174	95
Significant Impact?	No	No	No	No

Surfrider Beach

Year	NOx	CO	PM10	PM2.5
2016	0	0	0	0
2017	0	0	0	0
2018	9	4	0	0
2019	0	0	0	0
2020	0	0	0	0
2021	0	0	0	0
Maximum	**9**	**4**	**0**	**0**
Localized significance Thresholds	150.8	1502.2	28	8
Significant Impact?	No	No	No	No

Topanga Beach

Year	NOx	CO	PM10	PM2.5
2016	0	0	0	0
2017	0	0	0	0
2018	33	15	1	1
2019	2	1	0	0
2020	0	0	0	0
2021	0	0	0	0
Maximum	**33**	**15**	**1**	**1**
Localized significance Thresholds	103.6	724.6	8.8	3.6
Significant Impact?	No	No	No	No

Zuma Beach

Year	NOx	CO	PM10	PM2.5
2016	0	0	0	0
2017	0	0	0	0
2018	0	0	0	0
2019	38	20	1	1
2020	11	6	0	0
2021	0	0	0	0
Maximum	**38**	**20**	**1**	**1**
Localized significance Thresholds	121	1233	27	8
Significant Impact?	No	No	No	No

Emissions Summary
Alternative 2b - Dam Removal with Mechanical Transport and Upstream Barrier Removal

Daily Onsite Emissions Summary

See Alt 2a tables for onsite emissions at Rindge Dam, Surfrider Beach, Topanga Beach, and Zuma Beach.

Upstream Barriers

Site	Year	NOx	CO	PM10	PM2.5
CC1	2018	82	53	3	3
	Localized significance Thresholds	103	562	4	3
	Significant Impact?	No	No	No	No
CC2	2019	39	22	2	1
	Localized significance Thresholds	103	562	4	3
	Significant Impact?	No	No	No	No
CC3	2019	22	15	1	1
	Localized significance Thresholds	103	562	4	3
	Significant Impact?	No	No	No	No
CC4	2018	5	3	0	0
	Localized significance Thresholds	143	1213	19	5
	Significant Impact?	No	No	No	No
CC5	2018	5	27	0	0
	Localized significance Thresholds	131.5	934.2	36	11
	Significant Impact?	No	No	No	No
LV1	2019	36	24	2	1
	Localized significance Thresholds	245	7724	146	77
	Significant Impact?	No	No	No	No
LV2	2018	7	4	0	0
	2019	7	5	0	0
	2020	7	6	0	0
	Localized significance Thresholds	236.667	6617.67	124	61.6667
	Significant Impact?	No	No	No	No
LV3&4	2020	30	17	1	1
	Localized significance Thresholds	147	827	6	4
	Significant Impact?	No	No	No	No

Emissions Summary
Alternative 3a - Dam Removal with Natural Transport

Daily Onsite Emissions Summary
Rindge Dam

Year	NOx	CO	PM10	PM2.5
2016	19	7	3	1
2017	84	48	11	4
2019	110	71	11	5
2021	99	74	11	4
2023	71	72	9	3
2025	59	70	9	3
2027	49	69	8	2
2029	44	68	8	2
2031	44	67	8	2
2033	43	66	8	2
2035	43	66	8	2
2037	43	65	8	2
2039 - 2063	43	65	8	2
2066	112	165	11	4
Maximum	**112**	**165**	**11**	**5**
Localized significance Thresholds	312	10467	174	95
ficant Impact?	No	No	No	No

Emissions Summary
Alternative 3b - Dam Removal with Natural Transport and Upstream Barrier Removal

Daily Onsite Emissions Summary
See Alt 3a tables for onsite emissions at Rindge Dam.

Upstream Barriers

Site	Year	NOx	CO	PM10	PM2.5
CC1	2019	75	52	3	3
	Localized significance Thresholds	103	562	4	3
	Significant Impact?	No	No	No	No
CC2	2021	32	21	1	1
	Localized significance Thresholds	103	562	4	3
	Significant Impact?	No	No	No	No
CC3	2021	18	14	1	1
	Localized significance Thresholds	103	562	4	3
	Significant Impact?	No	No	No	No
CC4	2019	4	3	0	0
	Localized significance Thresholds	143	1213	19	5
	Significant Impact?	No	No	No	No
CC5	2019	4	27	0	0
	Localized significance Thresholds	131.5	934.2	36	11
	Significant Impact?	No	No	No	No
LV1	2021	30	23	1	1
	Localized significance Thresholds	245	7724	146	77
	Significant Impact?	No	No	No	No
LV2	2019	7	4	0	0
	2021	6	5	0	0
	2023	5	6	0	0
	Localized significance Thresholds	236.667	6617.67	124	61.6667
	Significant Impact?	No	No	No	No
LV3&4	2023	19	16	1	1
	Localized significance Thresholds	147	827	6	4
	Significant Impact?	No	No	No	No

Emissions Summary
Alternative 4a - Dam Removal with Hybrid Mechanical and Natural Transport

Daily Onsite Emissions Summary
Rindge Dam

Year	NOx	CO	PM10	PM2.5	NOx	CO	PM10	PM2.5
2016	19	8	4	1	10	6	0	0
2017	135	70	12	6	53	55	1	1
2018	749	357	35	26	336	307	4	4
2019	435	232	23	16	206	205	3	3
2020	421	235	23	15	211	211	4	3
2021	591	389	31	22	379	368	6	5
Maximum	**749**	**389**	**35**	**26**	**379**	**368**	**6**	**5**
Localized significance Thresholds	312	10467	174	95	312	10467	174	95
Significant Impact?	Yes	No	No	No	Yes	No	No	No

Surfrider Beach

Year	NOx	CO	PM10	PM2.5	NOx	CO	PM10	PM2.5
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	162	78	6	5	59	52	0	0
2019	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0
Maximum	**162**	**78**	**6**	**5**	**59**	**52**	**0**	**0**
Localized significance Thresholds	150.8	1502.2	28	8	150.8	1502.2	28	8
Significant Impact?	Yes	No	No	No	No	No	No	No

Topanga Beach

Year	NOx	CO	PM10	PM2.5	NOx	CO	PM10	PM2.5
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	145	68	5	5	56	46	1	0
2019	65	35	2	2	28	28	0	0
2020	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0
Maximum	**145**	**68**	**5**	**5**	**56**	**46**	**1**	**0**
Localized significance Thresholds	103.6	724.6	8.8	3.6	103.6	724.6	8.8	3.6
Significant Impact?	Yes	No	No	Yes	No	No	No	No

Zuma Beach

Year	NOx	CO	PM10	PM2.5	NOx	CO	PM10	PM2.5
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
2019	60	32	2	2	26	26	0	0
2020	131	70	5	4	61	56	1	0
2021	0	0	0	0	0	0	0	0
Maximum	**131**	**70**	**5**	**4**	**61**	**56**	**1**	**0**
Localized significance Thresholds	121	1233	27	8	121	1233	27	8
Significant Impact?	Yes	No	No	No	No	No	No	No

Emissions Summary

Alternative 4b - Dam Removal with Hybrid Mechanical and Natural Transport with Upstream Barrier Removal

Daily Onsite Emissions Summary

See Alt 4a tables for onsite emissions at Rindge Dam, Surfrider Beach, Topanga Beach, and Zuma Beach.
See Alt 2b table for onsite emissions at upstream barriers.

Malibu Creek Ecosystem Restoration Feasibility Study
Localized Significance Thresholds

Pollutant	Site Acre	Receptor distance from site boundary (m)				
		25	50	100	200	500
CO (lb/day)	1	562	833	1233	237	7724
	2	827	1213	1695	2961	8446
	5	1531	1985	2762	4383	10467
NO2 (lb/day)	1	103	104	121	156	245
	2	147	143	156	186	262
	5	221	212	226	250	312
PM10 (lb/day)	1	4	12	27	57	146
	2	6	19	34	64	154
	5	13	40	55	84	174
PM2.5 (lb/day)	1	3	4	8	18	77
	2	4	5	10	21	82
	5	6	8	14	29	95

Emission thresholds for construction in Northwest Coastal LA County Source Receptor Area.
SCAQMD. 2008. Final Localized Significance Threshold Methodology. July.

Site	Acre	Receptor distance (m)	NO2	CO	PM10	PM2.5
Rindge Dam	5	1115	312	10467	174	95
Surfrider Beach	2	80	150.8	1502.2	28	8
Topanga Beach	1	40	103.6	724.6	8.8	3.6
Zuma Beach	1	100	121	1233	27	8
CC1	1	25	103	562	4	3
CC2	1	25	103	562	4	3
CC3	1	25	103	562	4	3
CC4	2	50	143	1213	19	5
CC5	1	130	132	934	36	11
LV1	1	700	245	7724	146	77
LV2	2	400	237	6618	124	62
LV3&4	2	25	147	827	6	4

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 1

Construction Start Year	2016
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Emission Factors - 2016 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Emission Factors - 2017 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96.00	22.2	73.8	52	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	2,320.00	535.4	1,784.6	52	210	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
Environmental protection measures	*WQ Testing*	3/4 ton pickup truck		80.00	18.5	61.5	52	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
	Biologist	3/4 ton pickup truck		1,213.00	279.9	933.1	52	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Clear & Grub - Sheriff's Overlook (Staging Area)	*Cutting*	1 ton pickup truck		0.46	0.5	0	52	0	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	0.77	0.8	0	52	0	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		0.77	0.8	0	52	0	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.39	0.4	0	52	0	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	0.39	0.4	0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	Brush chipper	250 hp	0.39	0.4	0	52	0	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	0.39	0.4	0	52	0	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
	Gravel	Grader	135 hp	11.11	11.1	0	52	0	0.273	3.372	1.893	0.004	0.189	0.174	320.916	0.028	0.000	0.256	3.132	1.891	0.004	0.176	0.162	320.916	0.027	0.000
		Vibratory roller	85 hp	16.00	16.0	0	52	0	0.195	2.178	1.500	0.003	0.160	0.148	222.777	0.027	0.000	0.180	2.030	1.489	0.003	0.147	0.135	222.777	0.025	0.000
		Tractor/crawler/dozer	310 hp	3.26	3.3	0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
		Tractor/crawler/dozer	440 hp	0.81	0.8	0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
		Asphalt distributor	3000 gal	0.81	0.8	0	52	0	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
	Guard Railing	Flatbed truck		8.75	8.8	0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Auger Drill	10 hp	8.75	8.8	0	52	0	3.341	2.469	132.341	0.006	1.896	1.892	226.175	0.190	0.196	3.339	2.468	132.332	0.006	1.896	1.892	226.176	0.190	0.196
	Demo Existing Gate	Loader/backhoe	75 hp	4.00	4.0	0	52	0	0.164	1.895	1.307	0.002	0.146	0.134	195.356	0.018	0.000	0.152	1.772	1.300	0.002	0.133	0.123	195.356	0.016	0.000
		Flatbed truck		4.00	4.0	0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
Clear & Grub - Sediment Removal Area & Access Rd	*Clear Brush*	1 ton pickup truck		23.16	0	23.2	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	94 hp	23.16	0	23.2	0	42	0.150	1.798	1.915	0.003	0.131	0.121	278.045	0.028	0.000	0.139	1.673	1.904	0.003	0.118	0.109	278.045	0.026	0.000
		Front end loader	210 hp	23.16	0	23.2	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
		Dump truck	10cy	23.16	0	23.2	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	23.16	0	23.2	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	23.16	0	23.2	0	42	0.105	1.115	0.439	0.002	0.035	0.033	224.028	0.009	0.000	0.098	0.993	0.427	0.002	0.032	0.029	224.028	0.009	0.000
		Front end loader	210 hp	10.65	0	10.7	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	Cutting	1 ton pickup truck		13.20	0	13.2	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	22.00	0	22.0	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		22.00	0	22.0	0	42	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	11.09	0	11.1	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	11.09	0	11.1	0	42	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	Brush chipper	250 hp	11.09	0	11.1	0	42	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	11.09	0	11.1	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2.00	0	2.0	0	178	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Front end loader	49 hp	4.00	0	4.0	0	178	0.293	1.770	1.893	0.003	0.086	0.079	231.302	0.026	0.000	0.261	1.691	1.864	0.003	0.071	0.066	231.302	0.024	0.000
		Roller	47 hp	4.00	0	4.0	0	178	0.723	2.105	2.430	0.003	0.173	0.160	235.507	0.065	0.000	0.660	2.035	2.367	0.003	0.158	0.145	235.507	0.060	0.000
		Water truck	3000 gal	4.00	0	4.0	0	178	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	300 hp	4.00	0	4.0	0	178	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		Front end loader	180 hp	4.00	0	4.0	0	178	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6.00	0	6.0	0	178	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	16.00	0	16.0	0	178	2.485	1.571	93.010	0.004	1.249	1.246	148.932	0.142	0.122	2.467	1.576	92.812	0.004	1.249	1.246	148.932	0.141	0.122
	36" Diversion Pipe	Crane 80'	130 hp	273.00	0	273.0	0	178	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		Loader/backhoe	75 hp	0.09	0	0.1	0	178	0.164	1.895	1.307	0.002	0.146	0.134	195.356	0.018	0.000	0.152	1.772	1.300	0.002	0.133	0.123	195.356	0.016	0.000
		Crane 94'	155 hp	155.00	0	155.0	0	32	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		1 ton pickup truck		155.00	0	155.0	0	32	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2.00	0	2.0	0	32	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
	Dewatering	Concrete saw	13 hp	8.00	0	8.0	0	159	3.075	2.272	117.599	0.006	1.685	1.681	200.981	0.175	0.188	3.075	2.272	117.591	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16.00	0	16.0	0	159	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		Flatbed truck		8.00	0	8.0	0	159	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Generator	80 hp	5,472.00	0	5,472.0	0	228	0.307	2.304	1.800	0.003	0.163	0.150	294.384	0.028	0.000	0.274	2.126	1.786	0.003	0.144	0.132	294.384	0.025	0.000
		Generator	7.5 hp	1.59	0	1.6	0	159	2.138	1.453	103.697	0.005	0.092	0.092	175.214	0.122	0.147	2.040	1.414	103.256	0.005	0.092	0.092	175.214	0.116	0.145
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	120.77	120.8	0.0	52	0	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Push	Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Build road	Tractor/crawler/dozer	600 hp	761.54	0	761.5	0	178	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Cut	Tractor/crawler/dozer	600 hp	20.46	0	20.5	0	178	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Fine Grading	Grader	135 hp	8.89	0	8.9	0	178	0.273	3.372	1.893	0.004	0.189	0.174	320.916	0.028	0.000	0.256	3.132	1.891	0.004	0.176	0.162	320.916	0.027	0.000
	Graveling	Asphalt distributor	3000 gal	10.00	0	10.0	0	178	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Vibratory roller	85 hp	30.46	0	30.5	0	178	0.195	2.178	1.500	0.003	0.160	0.148	222.777	0.027	0.000	0.180	2.030	1.489	0.003	0.147	0.135	222.777	0.025	0.000
		Tractor/crawler/dozer	310 hp	12.74	0	12.7	0	178	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Armoring	1 ton pickup truck		8.00	0	8.0	0	178	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	430 hp	8.00	0	8.0	0	178	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		1 ton pickup truck		8.00	0	8.0	0	178	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Maintenance	Grader	215 hp	340.00	0	340.0	0	210	0.135	2.314	0.714	0.004	0.075	0.069	312.002	0.020	0.000	0.134	2.258	0.697	0.004	0.074	0.068	312.002	0.019	0.000

Data from Alt2_EnvrAirQualityReport.pdf

Total Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Annual Emissions - 2016 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96.00	22.2	73.8	52	210	1.23E-04	9.52E-05	1.47E-03	1.50E-06	1.25E-05	5.81E-06	4.97E-01	4.94E-05	2.58E-05	5.06E-01	4.59E-01
Dust Control		**Water truck**	5000 gal	2,320.00	535.4	1,784.6	52	210	4.57E-03	7.40E-02	8.21E-03	6.36E-05	1.63E-03	1.08E-03	1.27E+01	3.01E-05	2.83E-05	1.27E+01	1.15E+01
Environmental protection	***WQ Testing***	**3/4 ton pickup truck**		80.00	18.5	61.5	52	210	1.03E-04	7.94E-05	1.23E-03	1.25E-06	1.04E-05	4.84E-06	4.14E-01	4.12E-05	2.15E-05	4.22E-01	3.83E-01
measures	***Biologist***	**3/4 ton pickup truck**		1,213.00	279.9	933.1	52	210	1.55E-03	1.20E-03	1.86E-02	1.89E-05	1.58E-04	7.34E-05	6.28E+00	6.25E-04	3.26E-04	6.40E+00	5.80E+00
Clear & Grub - Sheriff's	***Cutting***	**1 ton pickup truck**		0.46	0.5	0	52	0	1.81E-06	1.79E-06	2.43E-05	3.11E-08	2.55E-07	1.16E-07	1.03E-02	1.02E-06	5.34E-07	1.05E-02	9.52E-03
Overlook (Staging Area)		**Tractor/crawler/dozer**	250 hp	0.77	0.8	0	52	0	3.35E-05	5.47E-04	1.70E-04	7.15E-07	2.11E-05	1.94E-05	6.35E-02	5.16E-06	-	6.36E-02	5.77E-02
		Chain saw		0.77	0.8	0	52	0	5.17E-05	8.09E-07	9.34E-05	1.04E-08	1.47E-07	1.47E-07	2.53E-04	3.21E-06	2.77E-07	4.06E-04	3.68E-04
	Brush Piling	**Front end loader**	540 hp	0.39	0.4	0	52	0	2.56E-05	3.47E-04	1.59E-04	6.77E-07	1.36E-05	1.25E-05	6.74E-02	4.11E-06	-	6.74E-02	6.12E-02
		Tractor/crawler/dozer	310 hp	0.39	0.4	0	52	0	1.86E-05	2.98E-04	9.44E-05	3.04E-07	1.16E-05	1.06E-05	3.10E-02	2.35E-06	-	3.10E-02	2.81E-02
	Chipping	**Brush chipper**	250 hp	0.39	0.4	0	52	0	2.17E-05	2.41E-04	8.51E-05	4.82E-07	7.26E-06	6.68E-06	4.29E-02	1.96E-06	-	4.29E-02	3.89E-02
		Front end loader	540 hp	0.39	0.4	0	52	0	2.56E-05	3.47E-04	1.59E-04	6.77E-07	1.36E-05	1.25E-05	6.74E-02	4.11E-06	-	6.74E-02	6.12E-02
	Gravel	**Grader**	135 hp	11.11	11.1	0	52	0	4.52E-04	5.57E-03	3.13E-03	5.97E-06	3.13E-04	2.88E-04	5.31E-01	4.70E-05	-	5.32E-01	4.82E-01
		Vibratory roller	85 hp	16.00	16.0	0	52	0	2.92E-04	3.27E-03	2.25E-03	3.92E-06	2.40E-04	2.21E-04	3.34E-01	4.06E-05	-	3.35E-01	3.04E-01
		Tractor/crawler/dozer	310 hp	3.26	3.3	0	52	0	1.57E-04	2.52E-03	7.98E-04	2.57E-06	9.77E-05	8.99E-05	2.62E-01	1.99E-05	-	2.62E-01	2.38E-01
		Tractor/crawler/dozer	440 hp	0.81	0.8	0	52	0	5.58E-05	8.95E-04	2.83E-04	9.11E-07	3.47E-05	3.19E-05	9.29E-02	7.05E-06	-	9.30E-02	8.44E-02
		Asphalt distributor	3000 gal	0.81	0.8	0	52	0	6.92E-06	1.12E-04	1.24E-05	9.62E-08	2.47E-06	1.63E-06	1.93E-02	4.56E-08	4.29E-08	1.93E-02	1.75E-02
	Guard Railing	**Flatbed truck**		8.75	8.8	0	52	0	8.91E-05	8.72E-05	1.26E-03	5.89E-07	4.81E-06	2.16E-06	1.96E-01	4.44E-05	2.06E-05	2.04E-01	1.85E-01
		Auger Drill	10 hp	8.75	8.8	0	52	0	3.22E-04	2.38E-04	1.28E-02	6.22E-07	1.83E-04	1.83E-04	2.18E-02	1.84E-05	1.89E-05	2.81E-02	2.55E-02
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.00	4.0	0	52	0	5.42E-05	6.27E-04	4.32E-04	7.58E-07	4.82E-05	4.44E-05	6.46E-02	5.91E-06	-	6.47E-02	5.87E-02
		Flatbed truck		4.00	4.0	0	52	0	4.07E-05	3.99E-05	5.76E-04	2.69E-07	2.20E-06	9.87E-07	8.98E-02	2.03E-05	9.41E-06	9.31E-02	8.45E-02
Clear & Grub - Sediment	***Clear Brush***	**1 ton pickup truck**		23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-
Removal Area & Access Rd		**Excavator**	94 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	210 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-
		Brush chipper	275 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	210 hp	10.65	0	10.7	0	42	-	-	-	-	-	-	-	-	-	-	-
	Cutting	**1 ton pickup truck**		13.20	0	13.2	0	42	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	22.00	0	22.0	0	42	-	-	-	-	-	-	-	-	-	-	-
		Chain saw		22.00	0	22.0	0	42	-	-	-	-	-	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	49 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Roller	47 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Water truck	3000 gal	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Excavator	300 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	180 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6.00	0	6.0	0	178	-	-	-	-	-	-	-	-	-	-	-
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16.00	0	16.0	0	178	-	-	-	-	-	-	-	-	-	-	-
	36" Diversion Pipe	**Crane 80'**	130 hp	273.00	0	273.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Loader/backhoe	75 hp	0.09	0	0.1	0	178	-	-	-	-	-	-	-	-	-	-	-
		Crane 94'	155 hp	155.00	0	155.0	0	32	-	-	-	-	-	-	-	-	-	-	-
		1 ton pickup truck		155.00	0	155.0	0	32	-	-	-	-	-	-	-	-	-	-	-
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	32	-	-	-	-	-	-	-	-	-	-	-
	Dewatering	**Concrete saw**	13 hp	8.00	0	8.0	0	159	-	-	-	-	-	-	-	-	-	-	-
		Crane 80'	130 hp	16.00	0	16.0	0	159	-	-	-	-	-	-	-	-	-	-	-
		Flatbed truck		8.00	0	8.0	0	159	-	-	-	-	-	-	-	-	-	-	-
		Generator	80 hp	5,472.00	0	5,472.0	0	228	-	-	-	-	-	-	-	-	-	-	-
		Generator	7.5 hp	1.59	0	1.6	0	159	-	-	-	-	-	-	-	-	-	-	-
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.77	120.8	0.0	52	0	9.79E-03	1.62E-01	6.82E-02	2.26E-04	5.95E-03	5.48E-03	2.24E+01	1.71E-03	-	2.25E+01	2.04E+01
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	-	-	-	-	-
	Push	**Tractor/crawler/dozer**	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	-	-	-	-	-
	Build road	**Tractor/crawler/dozer**	600 hp	761.54	0	761.5	0	178	-	-	-	-	-	-	-	-	-	-	-
	Cut	**Tractor/crawler/dozer**	600 hp	20.46	0	20.5	0	178	-	-	-	-	-	-	-	-	-	-	-
	Fine Grading	**Grader**	135 hp	8.89	0	8.9	0	178	-	-	-	-	-	-	-	-	-	-	-
	Graveling	**Asphalt distributor**	3000 gal	10.00	0	10.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Vibratory roller	85 hp	30.46	0	30.5	0	178	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	12.74	0	12.7	0	178	-	-	-	-	-	-	-	-	-	-	-
	Armoring	**1 ton pickup truck**		8.00	0	8.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		Excavator	430 hp	8.00	0	8.0	0	178	-	-	-	-	-	-	-	-	-	-	-
		1 ton pickup truck		8.00	0	8.0	0	178	-	-	-	-	-	-	-	-	-	-	-
	Maintenance	**Grader**	215 hp	340.00	0	340.0	0	210	-	-	-	-	-	-	-	-	-	-	-
								Total	**1.78E-02**	**2.52E-01**	**1.20E-01**	**3.29E-04**	**8.76E-03**	**7.56E-03**	**4.42E+01**	**2.68E-03**	**4.51E-04**	**4.44E+01**	**4.03E+01**
								Daily Onsi											
								Rindge											
								Surfrider											
								Topanga											
								Zuma											
								Landfill											

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Activity	Annual Emissions - 2017 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey	3.69E-04	2.94E-04	4.43E-03	4.99E-06	4.13E-05	1.89E-05	1.66E+00	1.65E-04	8.60E-05	1.69E+00	1.53E+00
Dust Control	1.37E-02	2.25E-01	2.51E-02	2.12E-04	4.72E-03	2.93E-03	4.23E+01	1.00E-04	9.44E-05	4.24E+01	3.84E+01
Environmental protection	3.08E-04	2.45E-04	3.69E-03	4.16E-06	3.44E-05	1.58E-05	1.38E+00	1.37E-04	7.16E-05	1.41E+00	1.28E+00
measures	4.66E-03	3.71E-03	5.60E-02	6.30E-05	5.22E-04	2.39E-04	2.09E+01	2.08E-03	1.09E-03	2.13E+01	1.93E+01
Clear & Grub - Sheriff's	-	-	-	-	-	-	-	-	-	-	-
Overlook (Staging Area)	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub - Sediment	7.60E-05	8.09E-05	1.02E-03	1.57E-06	1.27E-05	5.70E-06	5.20E-01	5.17E-05	2.70E-05	5.29E-01	4.80E-01
Removal Area & Access Rd	3.33E-04	4.01E-03	4.57E-03	7.83E-06	2.84E-04	2.62E-04	6.67E-01	6.21E-05	-	6.68E-01	6.06E-01
	5.97E-04	9.22E-03	3.20E-03	1.63E-05	3.14E-04	2.89E-04	1.45E+00	8.76E-05	-	1.45E+00	1.32E+00
	1.78E-04	2.92E-03	3.25E-04	2.75E-06	6.13E-05	3.80E-05	5.49E-01	1.30E-06	1.23E-06	5.50E-01	4.99E-01
	1.78E-04	2.92E-03	3.25E-04	2.75E-06	6.13E-05	3.80E-05	5.49E-01	1.30E-06	1.23E-06	5.50E-01	4.99E-01
	6.90E-04	6.97E-03	3.00E-03	1.54E-05	2.24E-04	2.06E-04	1.57E+00	6.22E-05	-	1.57E+00	1.43E+00
	2.75E-04	4.24E-03	1.47E-03	7.49E-06	1.44E-04	1.33E-04	6.66E-01	4.03E-05	-	6.67E-01	6.05E-01
	4.33E-05	4.61E-05	5.82E-04	8.95E-07	7.24E-06	3.25E-06	2.96E-01	2.94E-05	1.54E-05	3.02E-01	2.74E-01
	9.23E-04	1.50E-02	4.73E-03	2.05E-05	5.72E-04	5.26E-04	1.83E+00	1.40E-04	-	1.83E+00	1.66E+00
	1.49E-03	2.33E-05	2.69E-03	2.99E-07	4.23E-06	4.22E-06	7.26E-03	9.23E-05	7.97E-06	1.17E-02	1.06E-02
	7.25E-04	9.67E-03	4.42E-03	1.95E-05	3.82E-04	3.51E-04	1.94E+00	1.12E-04	-	1.94E+00	1.76E+00
	5.17E-04	8.17E-03	2.59E-03	8.74E-06	3.16E-04	2.91E-04	8.90E-01	6.41E-05	-	8.92E-01	8.09E-01
	5.81E-04	6.16E-03	2.40E-03	1.39E-05	1.87E-04	1.72E-04	1.23E+00	5.24E-05	-	1.23E+00	1.12E+00
	7.25E-04	9.67E-03	4.42E-03	1.95E-05	3.82E-04	3.51E-04	1.94E+00	1.12E-04	-	1.94E+00	1.76E+00
Dewatering	6.04E-05	9.80E-04	3.10E-04	1.34E-06	3.74E-05	3.44E-05	1.20E-01	9.17E-06	-	1.20E-01	1.09E-01
	5.63E-05	3.65E-04	4.03E-04	6.46E-07	1.54E-05	1.42E-05	5.00E-02	5.08E-06	-	5.01E-02	4.54E-02
	1.37E-04	4.22E-04	4.91E-04	6.31E-07	3.28E-05	3.01E-05	4.88E-02	1.23E-05	-	4.91E-02	4.45E-02
	3.08E-05	5.04E-04	5.62E-05	4.74E-07	1.06E-05	6.56E-06	9.49E-02	2.25E-07	2.12E-07	9.50E-02	8.61E-02
	8.34E-05	1.27E-03	5.71E-04	2.75E-06	4.10E-05	3.77E-05	2.80E-01	1.53E-05	-	2.81E-01	2.55E-01
	8.84E-05	1.37E-03	4.73E-04	2.41E-06	4.65E-05	4.28E-05	2.14E-01	1.30E-05	-	2.15E-01	1.95E-01
	1.81E-04	2.94E-03	9.30E-04	4.03E-06	1.12E-04	1.03E-04	3.59E-01	2.75E-05	-	3.59E-01	3.26E-01
	7.40E-04	4.73E-04	2.78E-02	1.13E-06	3.74E-04	3.74E-04	4.47E-02	4.21E-05	3.65E-05	5.69E-02	5.16E-02
	6.48E-03	8.30E-02	4.84E-02	9.16E-05	4.48E-03	4.12E-03	8.14E+00	7.37E-04	-	8.16E+00	7.40E+00
	1.16E-06	1.35E-05	9.92E-06	1.75E-08	1.02E-06	9.36E-07	1.49E-03	1.24E-07	-	1.49E-03	1.35E-03
	4.39E-03	5.62E-02	3.27E-02	6.20E-05	3.03E-03	2.79E-03	5.51E+00	4.99E-04	-	5.52E+00	5.01E+00
	5.09E-04	5.41E-04	6.83E-03	1.05E-05	8.50E-05	3.82E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	6.04E-05	9.80E-04	3.10E-04	1.34E-06	3.74E-05	3.44E-05	1.20E-01	9.17E-06	-	1.20E-01	1.09E-01
	3.53E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
	3.80E-04	4.86E-03	2.83E-03	5.37E-06	2.63E-04	2.42E-04	4.77E-01	4.32E-05	-	4.78E-01	4.34E-01
	6.87E-05	6.95E-05	9.63E-04	5.38E-07	4.33E-06	1.91E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
	1.32E-01	1.03E+00	8.62E-01	1.67E-03	6.94E-02	6.39E-02	1.42E+02	1.19E-02	-	1.42E+02	1.29E+02
	2.68E-05	1.86E-05	1.35E-03	6.56E-08	1.21E-06	1.21E-06	2.30E-03	1.53E-06	1.91E-06	2.92E-03	2.65E-03
Temporary Access Road	-	-	-	-	-	-	-	-	-	-	-
	5.61E-02	9.13E-01	3.98E-01	1.38E-03	3.34E-02	3.08E-02	1.37E+02	9.92E-03	-	1.37E+02	1.25E+02
	5.61E-02	9.13E-01	3.98E-01	1.38E-03	3.34E-02	3.08E-02	1.37E+02	9.92E-03	-	1.37E+02	1.25E+02
	5.61E-02	9.13E-01	3.98E-01	1.38E-03	3.34E-02	3.08E-02	1.37E+02	9.92E-03	-	1.37E+02	1.25E+02
	5.79E-02	9.42E-01	4.10E-01	1.42E-03	3.45E-02	3.17E-02	1.41E+02	1.02E-02	-	1.42E+02	1.28E+02
	1.56E-03	2.53E-02	1.10E-02	3.82E-05	9.26E-04	8.52E-04	3.80E+00	2.75E-04	-	3.81E+00	3.45E+00
	3.38E-04	4.14E-03	2.50E-03	4.78E-06	2.33E-04	2.14E-04	4.24E-01	3.51E-05	-	4.25E-01	3.86E-01
	7.69E-05	1.26E-03	1.40E-04	1.19E-06	2.65E-05	1.64E-05	2.37E-01	5.62E-07	5.29E-07	2.37E-01	2.15E-01
	5.13E-04	5.79E-03	4.25E-03	7.46E-06	4.20E-04	3.86E-04	6.36E-01	7.16E-05	-	6.37E-01	5.78E-01
	5.94E-04	9.39E-03	2.97E-03	1.00E-05	3.63E-04	3.34E-04	1.02E+00	7.37E-05	-	1.02E+00	9.30E-01
	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
	2.39E-04	3.63E-03	1.64E-03	7.88E-06	1.17E-04	1.08E-04	8.03E-01	4.39E-05	-	8.04E-01	7.30E-01
	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
	1.08E-02	1.82E-01	5.62E-02	2.83E-04	5.93E-03	5.46E-03	2.51E+01	1.56E-03	-	2.52E+01	2.28E+01
	4.13E-01	**5.40E+00**	**2.81E+00**	**8.19E-03**	**2.29E-01**	**2.09E-01**	**8.27E+02**	**5.92E-02**	**1.67E-03**	**8.29E+02**	**7.52E+02**

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 1

Construction Start Year	2016
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96.00	22.2	73.8	52	210	9.46E-03	7.33E-03	1.13E-01	1.15E-04	9.64E-04	4.47E-04	7.03E-03	5.59E-03	8.43E-02	9.50E-05	7.87E-04	3.61E-04
Dust Control		**Water truck**	5000 gal	2,320.00	535.4	1,784.6	52	210	3.52E-01	5.69E+00	6.31E-01	4.89E-03	1.26E-01	8.29E-02	2.61E-01	4.29E+00	4.77E-01	4.03E-03	9.00E-02	5.58E-02
Environmental protection measures	***WQ Testing***	**3/4 ton pickup truck**		80.00	18.5	61.5	52	210	7.89E-03	6.11E-03	9.42E-02	9.60E-05	8.03E-04	3.73E-04	5.86E-03	4.66E-03	7.03E-02	7.92E-05	6.56E-04	3.01E-04
	Biologist	**3/4 ton pickup truck**		1,213.00	279.9	933.1	52	210	1.20E-01	9.26E-02	1.43E+00	1.46E-03	1.22E-02	5.65E-03	8.88E-02	7.06E-02	1.07E+00	1.20E-03	9.94E-03	4.56E-03
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.46	0.5	0	52	0	1.39E-04	1.38E-04	1.87E-03	2.40E-06	1.96E-05	8.94E-06	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.77	0.8	0	52	0	2.58E-03	4.21E-02	1.31E-02	5.50E-05	1.62E-03	1.49E-03	-	-	-	-	-	-
		Chain saw		0.77	0.8	0	52	0	3.97E-03	6.23E-05	7.19E-03	8.00E-07	1.13E-05	1.13E-05	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.39	0.4	0	52	0	1.97E-03	2.67E-02	1.22E-02	5.21E-05	1.05E-03	9.64E-04	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.39	0.4	0	52	0	1.43E-03	2.30E-02	7.26E-03	2.34E-05	8.89E-04	8.18E-04	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.39	0.4	0	52	0	1.67E-03	1.86E-02	6.54E-03	3.71E-05	5.58E-04	5.14E-04	-	-	-	-	-	-
		Front end loader	540 hp	0.39	0.4	0	52	0	1.97E-03	2.67E-02	1.22E-02	5.21E-05	1.05E-03	9.64E-04	-	-	-	-	-	-
	Gravel	**Grader**	135 hp	11.11	11.1	0	52	0	3.48E-02	4.29E-01	2.41E-01	4.59E-04	2.41E-02	2.22E-02	-	-	-	-	-	-
		Vibratory roller	85 hp	16.00	16.0	0	52	0	2.25E-02	2.51E-01	1.73E-01	3.01E-04	1.85E-02	1.70E-02	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.26	3.3	0	52	0	1.21E-02	1.94E-01	6.14E-02	1.98E-04	7.51E-03	6.91E-03	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.81	0.8	0	52	0	4.29E-03	6.88E-02	2.18E-02	7.01E-05	2.67E-03	2.45E-03	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.81	0.8	0	52	0	5.32E-04	8.61E-03	9.56E-04	7.40E-06	1.90E-04	1.25E-04	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.8	0	52	0	6.85E-03	6.71E-03	9.70E-02	4.53E-05	3.70E-04	1.66E-04	-	-	-	-	-	-
		Auger Drill	10 hp	8.75	8.8	0	52	0	2.48E-02	1.83E-02	9.82E-01	4.78E-05	1.41E-02	1.40E-02	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.00	4.0	0	52	0	4.17E-03	4.82E-02	3.32E-02	5.83E-05	3.71E-03	3.41E-03	-	-	-	-	-	-
		Flatbed truck		4.00	4.0	0	52	0	3.13E-03	3.07E-03	4.43E-02	2.07E-05	1.69E-04	7.59E-05	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area & Access Rd	***Clear Brush***	**1 ton pickup truck**		23.16	0	23.2	0	42	-	-	-	-	-	-	7.24E-03	7.70E-03	9.72E-02	1.50E-04	1.21E-03	5.43E-04
		Excavator	94 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	3.17E-02	3.82E-01	4.35E-01	7.45E-04	2.71E-02	2.49E-02
		Front end loader	210 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	5.69E-02	8.78E-01	3.05E-01	1.55E-03	2.99E-02	2.75E-02
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	1.70E-02	2.78E-01	3.10E-02	2.62E-04	5.84E-03	3.62E-03
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	1.70E-02	2.78E-01	3.10E-02	2.62E-04	5.84E-03	3.62E-03
		Brush chipper	275 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	6.57E-02	6.64E-01	2.86E-01	1.47E-03	2.13E-02	1.96E-02
		Front end loader	210 hp	10.65	0	10.7	0	42	-	-	-	-	-	-	2.62E-02	4.04E-01	1.40E-01	7.13E-04	1.38E-02	1.27E-02
	Cutting	**1 ton pickup truck**		13.20	0	13.2	0	42	-	-	-	-	-	-	4.13E-03	4.39E-03	5.54E-02	8.52E-05	6.89E-04	3.10E-04
		Tractor/crawler/dozer	250 hp	22.00	0	22.0	0	42	-	-	-	-	-	-	8.79E-02	1.43E+00	4.51E-01	1.96E-03	5.44E-02	5.01E-02
		Chain saw		22.00	0	22.0	0	42	-	-	-	-	-	-	1.41E-01	2.22E-03	2.56E-01	2.85E-05	4.03E-04	4.02E-04
	Brush Piling	**Front end loader**	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	6.90E-02	9.21E-01	4.21E-01	1.85E-03	3.64E-02	3.35E-02
		Tractor/crawler/dozer	310 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	4.92E-02	7.78E-01	2.46E-01	8.32E-04	3.01E-02	2.77E-02
	Chipping	**Brush chipper**	250 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	5.53E-02	5.86E-01	2.28E-01	1.32E-03	1.78E-02	1.63E-02
		Front end loader	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	6.90E-02	9.21E-01	4.21E-01	1.85E-03	3.64E-02	3.35E-02
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	178	-	-	-	-	-	-	1.36E-03	2.20E-02	6.96E-03	3.02E-05	8.41E-04	7.73E-04
		Front end loader	49 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	1.27E-03	8.21E-03	9.05E-03	1.45E-05	3.46E-04	3.18E-04
		Roller	47 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	3.08E-03	9.48E-03	1.10E-02	1.42E-05	7.36E-04	6.77E-04
		Water truck	3000 gal	4.00	0	4.0	0	178	-	-	-	-	-	-	6.91E-04	1.13E-02	1.26E-03	1.07E-05	2.38E-04	1.48E-04
		Excavator	300 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	1.87E-03	2.85E-02	1.28E-02	6.18E-05	9.20E-04	8.47E-04
		Front end loader	180 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	1.99E-03	3.07E-02	1.06E-02	5.42E-05	1.05E-03	9.62E-04
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6.00	0	6.0	0	178	-	-	-	-	-	-	4.07E-03	6.61E-02	2.09E-02	9.07E-05	2.52E-03	2.32E-03
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16.00	0	16.0	0	178	-	-	-	-	-	-	1.66E-02	1.06E-02	6.25E-01	2.54E-05	8.41E-03	8.39E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	273.00	0	273.0	0	178	-	-	-	-	-	-	1.46E-01	1.86E+00	1.09E+00	2.06E-03	1.01E-01	9.26E-02
		Loader/backhoe	75 hp	0.09	0	0.1	0	178	-	-	-	-	-	-	2.61E-05	3.04E-04	2.23E-04	3.93E-07	2.29E-05	2.10E-05
		Crane 94'	155 hp	155.00	0	155.0	0	32	-	-	-	-	-	-	5.49E-01	7.02E+00	4.09E+00	7.75E-03	3.79E-01	3.49E-01
		1 ton pickup truck		155.00	0	155.0	0	32	-	-	-	-	-	-	6.36E-02	6.77E-02	8.54E-01	1.31E-03	1.06E-02	4.77E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	32	-	-	-	-	-	-	7.55E-03	1.23E-01	3.87E-02	1.68E-04	4.68E-03	4.30E-03
	Dewatering	**Concrete saw**	13 hp	8.00	0	8.0	0	159	-	-	-	-	-	-	8.87E-03	6.55E-03	3.39E-01	1.65E-05	4.86E-03	4.85E-03
		Crane 80'	130 hp	16.00	0	16.0	0	159	-	-	-	-	-	-	9.56E-03	1.22E-01	7.13E-02	1.35E-04	6.60E-03	6.08E-03
		Flatbed truck		8.00	0	8.0	0	159	-	-	-	-	-	-	1.73E-03	1.75E-03	2.42E-02	1.35E-05	1.09E-04	4.81E-05
		Generator	80 hp	5,472.00	0	5,472.0	0	228	-	-	-	-	-	-	2.32E+00	1.80E+01	1.51E+01	2.92E-02	1.22E+00	1.12E+00
		Generator	7.5 hp	1.59	0	1.6	0	159	-	-	-	-	-	-	6.74E-04	4.67E-04	3.41E-02	1.65E-06	3.05E-05	3.04E-05
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.77	120.8	0.0	52	0	7.53E-01	1.24E+01	5.25E+00	1.73E-02	4.58E-01	4.21E-01	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	1.26E+00	2.05E+01	8.94E+00	3.10E-02	7.51E-01	6.91E-01
	Push	**Tractor/crawler/dozer**	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	1.26E+00	2.05E+01	8.94E+00	3.10E-02	7.51E-01	6.91E-01
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	1.26E+00	2.05E+01	8.94E+00	3.10E-02	7.51E-01	6.91E-01
	Build road	**Tractor/crawler/dozer**	600 hp	761.54	0	761.5	0	178	-	-	-	-	-	-	1.30E+00	2.12E+01	9.22E+00	3.20E-02	7.75E-01	7.13E-01
	Cut	**Tractor/crawler/dozer**	600 hp	20.46	0	20.5	0	178	-	-	-	-	-	-	3.50E-02	5.69E-01	2.48E-01	8.59E-04	2.08E-02	1.92E-02
	Fine Grading	**Grader**	135 hp	8.89	0	8.9	0	178	-	-	-	-	-	-	7.60E-03	9.31E-02	5.62E-02	1.07E-04	5.23E-03	4.81E-03
	Graveling	**Asphalt distributor**	3000 gal	10.00	0	10.0	0	178	-	-	-	-	-	-	1.73E-03	2.83E-02	3.16E-03	2.66E-05	5.95E-04	3.69E-04
		Vibratory roller	85 hp	30.46	0	30.5	0	178	-	-	-	-	-	-	1.15E-02	1.30E-01	9.55E-02	1.68E-04	9.43E-03	8.68E-03
		Tractor/crawler/dozer	310 hp	12.74	0	12.7	0	178	-	-	-	-	-	-	1.33E-02	2.11E-01	6.68E-02	2.26E-04	8.17E-03	7.51E-03
	Armoring	**1 ton pickup truck**		8.00	0	8.0	0	178	-	-	-	-	-	-	5.90E-04	6.28E-04	7.92E-03	1.22E-05	9.86E-05	4.43E-05
		Excavator	430 hp	8.00	0	8.0	0	178	-	-	-	-	-	-	5.37E-03	8.16E-02	3.68E-02	1.77E-04	2.64E-03	2.43E-03
		1 ton pickup truck		8.00	0	8.0	0	178	-	-	-	-	-	-	5.90E-04	6.28E-04	7.92E-03	1.22E-05	9.86E-05	4.43E-05
	Maintenance	**Grader**	215 hp	340.00	0	340.0	0	210	-	-	-	-	-	-	2.05E-01	3.47E+00	1.07E+00	5.39E-03	1.13E-01	1.04E-01
								Total	**1.37E+00**	**1.94E+01**	**9.23E+00**	**2.53E-02**	**6.74E-01**	**5.82E-01**	**9.56E+00**	**1.27E+02**	**6.51E+01**	**1.91E-01**	**5.31E+00**	**4.85E+00**

Data from Alt2_EnvrAirQualityReport.pdf

Daily Onsi													
Rindge	1	19	9	0	1	1	10	127	65	0	5	5	
Surfrider	0	0	0	0	0	0	0	0	0	0	0	0	
Topanga	0	0	0	0	0	0	0	0	0	0	0	0	
Zuma	0	0	0	0	0	0	0	0	0	0	0	0	
Landfill	0	0	0	0	0	0	0	0	0	0	0	0	

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2016
Birthday of Martin Luther King, Jr.	1/18/2016
Washington's Birthday	2/15/2016
Memorial Day	5/30/2016
Independence Day	7/4/2016
Labor Day	9/5/2016
Columbus Day	10/10/2016
Veterans Day	11/11/2016
Thanksgiving Day	11/24/2016
Christmas Day	12/26/2016
New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/10/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
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http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2017

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2018 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	210	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.099	1.282	0.650	0.003	0.051	0.047	293.384	0.016	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.177	1.778	0.772	0.005	0.054	0.050	403.250	0.016	0.000
		Front end loader	540 hp	3.696	19	0.099	1.282	0.650	0.003	0.051	0.047	293.384	0.016	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
		Front end loader	49 hp	4	19	0.239	1.620	1.844	0.003	0.059	0.054	231.302	0.022	0.000
		Roller	47 hp	4	19	0.600	1.968	2.309	0.003	0.143	0.132	235.507	0.054	0.000
		Water truck	3000 gal	4	19	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	300 hp	4	19	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Front end loader	180 hp	4	19	0.100	1.495	0.587	0.003	0.051	0.047	270.061	0.015	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
		Loader/backhoe	75 hp	0.0923	19	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
		Crane 94'	155 hp	155	19	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
		1 ton pickup truck		155	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
		1 ton pickup truck		155	20	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Dewatering	Concrete saw	13 hp	8	22	3.075	2.272	117.582	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	22	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
		Flatbed truck		8	22	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
		Generator	80 hp	5,856.00	244	0.242	1.957	1.773	0.003	0.126	0.116	294.384	0.022	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
	Armoring	1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Excavator	430 hp	2	19	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	340	210	0.130	2.154	0.685	0.004	0.070	0.064	312.002	0.018	0.000
Coarse Material (Gravel & Larger) (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	663.5	78	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	102	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Beach Crew	1 ton pickup truck		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Water truck	3000 gal	25	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2018 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	30	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	382.5	30	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	382.5	30	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	382.5	30	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	382.5	30	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	382.5	30	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	382.5	30	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	382.5	30	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	382.5	30	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	382.5	30	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Beach Crew	**1 ton pickup truck**		382.5	30	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	600 hp	382.5	30	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	382.5	30	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	382.5	30	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	382.5	30	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Water truck	3000 gal	382.5	30	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
		Tractor/crawler/dozer	440 hp	90	22	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
		3/4 ton pickup truck		360	22	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Drilling	**Rotary drill**	475 hp	88.1333	128	0.056	0.877	0.500	0.003	0.026	0.024	282.166	0.007	0.000
		3/4 ton pickup truck		84.1333	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	376	128	0.445	2.137	2.053	0.004	0.125	0.115	277.562	0.040	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		3/4 ton pickup truck		454.8767	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Load/Haul	**Front end loader**	350 hp	32	128	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	521	128	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Landfill	**Crane 260'**	375 hp	227.4384	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
	Micro-blast	**Crane 260'**	375 hp	60	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		Horizontal boring drill	10 hp	55	128	0.318	2.447	1.909	0.005	0.166	0.152	312.570	0.033	0.000
		3/4 ton pickup truck		60	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Demolish spillway	**Crane 260'**	375 hp	100	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		Air compressor	50 hp	200	128	1.018	1.339	49.027	0.004	0.024	0.023	307.059	0.058	0.075
		3/4 ton pickup truck		100	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2018 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		96	210	4.30E-04	3.53E-04	5.18E-03	6.48E-06	5.31E-05	2.41E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		Water truck	5000 gal	2320	210	1.78E-02	2.69E-01	3.27E-02	2.75E-04	5.91E-03	3.60E-03	5.50E+01	1.30E-04	1.23E-04	5.50E+01	4.99E+01
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	5.51E-03	4.52E-03	6.64E-02	8.30E-05	6.80E-04	3.09E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	3/4 ton pickup truck		16	19	7.17E-05	5.88E-05	8.64E-04	1.08E-06	8.86E-06	4.02E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.17E-05	1.38E-05	1.57E-04	2.98E-07	2.38E-06	1.05E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.85E-04	4.58E-03	1.53E-03	6.85E-06	1.73E-04	1.60E-04	6.09E-01	4.41E-05	-	6.10E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	Front end loader	540 hp	3.696	19	2.18E-04	2.82E-03	1.43E-03	6.49E-06	1.11E-04	1.02E-04	6.45E-01	3.56E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.54E-04	2.37E-03	8.24E-04	2.91E-06	9.18E-05	8.44E-05	2.97E-01	2.02E-05	-	2.97E-01	2.70E-01
	Chipping	Brush chipper	250 hp	3.696	19	1.80E-04	1.81E-03	7.87E-04	4.62E-06	5.53E-05	5.09E-05	4.11E-01	1.63E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	2.18E-04	2.82E-03	1.43E-03	6.49E-06	1.11E-04	1.02E-04	6.45E-01	3.56E-05	-	6.46E-01	5.86E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.60E-05	9.00E-04	3.01E-04	1.34E-06	3.41E-05	3.13E-05	1.20E-01	8.65E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	5.15E-05	3.50E-04	3.98E-04	6.46E-07	1.27E-05	1.17E-05	5.00E-02	4.65E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.24E-04	4.08E-04	4.78E-04	6.31E-07	2.97E-05	2.73E-05	4.88E-02	1.12E-05	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	3.07E-05	4.64E-04	5.64E-05	4.74E-07	1.02E-05	6.20E-06	9.47E-02	2.25E-07	2.12E-07	9.48E-02	8.60E-02
		Excavator	300 hp	4	19	7.29E-05	1.04E-03	5.62E-04	2.75E-06	3.36E-05	3.09E-05	2.80E-01	1.45E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	7.91E-05	1.19E-03	4.66E-04	2.41E-06	4.02E-05	3.70E-05	2.14E-01	1.23E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	1.68E-04	2.70E-03	9.02E-04	4.03E-06	1.02E-04	9.40E-05	3.59E-01	2.60E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	9.77E-07	1.17E-05	9.87E-06	1.75E-08	8.28E-07	7.61E-07	1.49E-03	1.13E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.92E-03	5.00E-02	3.27E-02	6.20E-05	2.68E-03	2.46E-03	5.51E+00	4.65E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	3.92E-03	5.00E-02	3.27E-02	6.20E-05	2.68E-03	2.46E-03	5.51E+00	4.65E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	5.60E-05	9.00E-04	3.01E-04	1.34E-06	3.41E-05	3.13E-05	1.20E-01	8.65E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	22	3.53E-04	2.61E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	22	3.39E-04	4.33E-03	2.83E-03	5.37E-06	2.32E-04	2.13E-04	4.77E-01	4.03E-05	-	4.78E-01	4.34E-01
		Flatbed truck		8	22	5.78E-05	6.04E-05	8.03E-04	5.37E-07	4.27E-06	1.86E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5,856.00	244	1.25E-01	1.01E+00	9.15E-01	1.78E-03	6.50E-02	5.98E-02	1.52E+02	1.13E-02	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
	Armoring	1 ton pickup truck		2	19	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	5.22E-05	7.42E-04	4.03E-04	1.97E-06	2.40E-05	2.21E-05	2.01E-01	1.04E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	Grader	215 hp	340	210	1.05E-02	1.74E-01	5.52E-02	2.83E-04	5.64E-03	5.19E-03	2.51E+01	1.47E-03	-	2.52E+01	2.28E+01
Coarse Material (Gravel & Larger) (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	1.77E-03	2.08E-03	2.36E-02	4.49E-05	3.59E-04	1.59E-04	1.49E+01	1.48E-03	7.72E-04	1.52E+01	1.38E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Water truck	3000 gal	663.5	78	5.09E-03	7.70E-02	9.36E-03	7.86E-05	1.69E-03	1.03E-03	1.57E+01	3.73E-05	3.51E-05	1.57E+01	1.43E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00	2.11E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Water truck	3000 gal	102	11	7.83E-04	1.18E-02	1.44E-03	1.21E-05	2.60E-04	1.58E-04	2.42E+00	5.73E-06	5.40E-06	2.42E+00	2.19E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
	Beach Crew	1 ton pickup truck		102	11	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00	2.11E+00
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Water truck	3000 gal	25	11	1.92E-04	2.90E-03	3.53E-04	2.96E-06	6.37E-05	3.88E-05	5.92E-01	1.41E-06	1.32E-06	5.93E-01	5.38E-01

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2018 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	*Material Excavation*	1 ton pickup truck		382.5	30	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00	7.93E+00
		Front end loader	350 hp	382.5	30	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	30	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	30	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	30	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Water truck	3000 gal	382.5	30	2.94E-03		5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00	8.23E+00
		Excavator	400 hp	382.5	30	9.30E-03		7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
		Excavator	400 hp	382.5	30	9.30E-03		7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
		Excavator	400 hp	382.5	30	9.30E-03		7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
		Excavator	400 hp	382.5	30	9.30E-03		7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
	Beach Crew	1 ton pickup truck		382.5	30	1.02E-03		1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00	7.93E+00
		Tractor/crawler/dozer	600 hp	382.5	30	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Tractor/crawler/dozer	600 hp	382.5	30	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Tractor/crawler/dozer	600 hp	382.5	30	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Tractor/crawler/dozer	600 hp	382.5	30	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Water truck	3000 gal	382.5	30	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00	8.23E+00
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	22	4.26E-02	6.55E-01	2.28E-01	8.05E-04	2.54E-02	2.33E-02	8.21E+01	5.60E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	5.32E-03	8.19E-02	2.85E-02	1.01E-04	3.17E-03	2.92E-03	1.03E+01	6.99E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	1.61E-03	1.32E-03	1.94E-02	2.43E-05	1.99E-04	9.05E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	Rotary drill	475 hp	88.1333	128	2.58E-03	4.05E-02	2.31E-02	1.28E-04	1.21E-03	1.11E-03	1.30E+01	3.35E-04	-	1.30E+01	1.18E+01
		3/4 ton pickup truck		84.1333	128	3.77E-04	3.09E-04	4.54E-03	5.68E-06	4.66E-05	2.11E-05	1.89E+00	1.88E-04	9.79E-05	1.92E+00	1.74E+00
	Cut with Diamond wire	3/4 ton pickup truck		376	128	1.69E-03	1.38E-03	2.03E-02	2.54E-05	2.08E-04	9.45E-05	8.44E+00	8.39E-04	4.38E-04	8.59E+00	7.79E+00
		Diamond cutting saw	50 hp	376	128	9.23E-03	4.43E-02	4.25E-02	7.44E-05	2.60E-03	2.39E-03	5.75E+00	8.33E-04	-	5.77E+00	5.23E+00
	Lift/Load blocks	Crane 260'	375 hp	454.8767	128	1.66E-02	2.51E-01	6.96E-02	3.01E-04	1.01E-02	9.32E-03	3.07E+01	1.85E-03	-	3.07E+01	2.79E+01
		3/4 ton pickup truck		454.8767	128	2.04E-03	1.67E-03	2.46E-02	3.07E-05	2.52E-04	1.14E-04	1.02E+01	1.01E-03	5.29E-04	1.04E+01	9.43E+00
	Load/Haul	Front end loader	350 hp	32	128	1.23E-03	1.66E-02	5.88E-03	2.60E-05	6.23E-04	5.73E-04	2.65E+00	1.45E-04	-	2.66E+00	2.41E+00
		Water truck	3000 gal	521	128	4.00E-03	6.05E-02	7.35E-03	6.17E-05	1.33E-03	8.08E-04	1.23E+01	2.93E-05	2.76E-05	1.23E+01	1.12E+01
	Landfill	Crane 260'	375 hp	227.4384	128	8.28E-03	1.26E-01	3.48E-02	1.51E-04	5.06E-03	4.66E-03	1.53E+01	9.24E-04	-	1.54E+01	1.39E+01
	Micro-blast	Crane 260'	375 hp	60	128	2.18E-03	3.31E-02	9.18E-03	3.97E-05	1.34E-03	1.23E-03	4.05E+00	2.44E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	1.93E-04	1.48E-03	1.16E-03	2.95E-06	1.00E-04	9.23E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	128	2.69E-04	2.20E-04	3.24E-03	4.05E-06	3.32E-05	1.51E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	100	128	3.64E-03	5.52E-02	1.53E-02	6.62E-05	2.23E-03	2.05E-03	6.75E+00	4.06E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	128	1.12E-02	1.48E-02	5.40E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	6.38E-04	8.29E-04	3.66E+00	3.32E+00
		3/4 ton pickup truck		100	128	4.48E-04	3.67E-04	5.40E-03	6.75E-06	5.53E-05	2.51E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
					Total	7.75E-01	9.47E+00	5.43E+00	1.78E-02	3.91E-01	3.55E-01	1.88E+03	1.14E-01	6.61E-03	1.89E+03	1.71E+03
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2018 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	210	8.20E-03	6.72E-03	9.88E-02	1.23E-04	1.01E-03	4.60E-04
Dust Control		Water truck	5000 gal	2320	210	3.39E-01	5.13E+00	6.23E-01	5.23E-03	1.13E-01	6.85E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	1.05E-01	8.60E-02	1.26E+00	1.58E-03	1.30E-02	5.88E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.37E-03	1.12E-03	1.65E-02	2.06E-05	1.69E-04	7.66E-05
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.23E-04	2.62E-04	2.98E-03	5.68E-06	4.53E-05	2.01E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	5.43E-03	8.73E-02	2.92E-02	1.30E-04	3.30E-03	3.04E-03
		Chain saw		7.3335	19	9.43E-03	1.48E-04	1.71E-02	1.90E-06	2.68E-05	2.68E-05
	Brush Piling	Front end loader	540 hp	3.696	19	4.14E-03	5.37E-02	2.73E-02	1.24E-04	2.12E-03	1.95E-03
		Tractor/crawler/dozer	310 hp	3.696	19	2.93E-03	4.51E-02	1.57E-02	5.55E-05	1.75E-03	1.61E-03
	Chipping	Brush chipper	250 hp	3.696	19	3.43E-03	3.45E-02	1.50E-02	8.80E-05	1.05E-03	9.70E-04
		Front end loader	540 hp	3.696	19	4.14E-03	5.37E-02	2.73E-02	1.24E-04	2.12E-03	1.95E-03
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.07E-03	1.71E-02	5.73E-03	2.56E-05	6.49E-04	5.97E-04
		Front end loader	49 hp	4	19	9.82E-04	6.67E-03	7.59E-03	1.23E-05	2.43E-04	2.23E-04
		Roller	47 hp	4	19	2.37E-03	7.77E-03	9.11E-03	1.20E-05	5.66E-04	5.21E-04
		Water truck	3000 gal	4	19	5.85E-04	8.84E-03	1.07E-03	9.02E-06	1.94E-04	1.18E-04
		Excavator	300 hp	4	19	1.39E-03	1.97E-02	1.07E-02	5.24E-05	6.39E-04	5.88E-04
		Front end loader	180 hp	4	19	1.51E-03	2.26E-02	8.87E-03	4.59E-05	7.66E-04	7.05E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	3.20E-03	5.14E-02	1.72E-02	7.68E-05	1.95E-03	1.79E-03
		Loader/backhoe	75 hp	0.0923	19	1.86E-05	2.23E-04	1.88E-04	3.33E-07	1.58E-05	1.45E-05
		Crane 94'	155 hp	155	19	7.46E-02	9.53E-01	6.23E-01	1.18E-03	5.10E-02	4.69E-02
		1 ton pickup truck		155	19	7.87E-03	9.23E-03	1.05E-01	2.00E-04	1.60E-03	7.07E-04
		Crane 94'	155 hp	155	20	7.46E-02	9.53E-01	6.23E-01	1.18E-03	5.10E-02	4.69E-02
		1 ton pickup truck		155	20	7.87E-03	9.23E-03	1.05E-01	2.00E-04	1.60E-03	7.07E-04
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.07E-03	1.71E-02	5.73E-03	2.56E-05	6.49E-04	5.97E-04
	Dewatering	Concrete saw	13 hp	8	22	6.71E-03	4.96E-03	2.57E-01	1.25E-05	3.68E-03	3.67E-03
		Crane 80'	130 hp	16	22	6.46E-03	8.25E-02	5.39E-02	1.02E-04	4.42E-03	4.06E-03
		Flatbed truck		8	22	1.10E-03	1.15E-03	1.53E-02	1.02E-05	8.13E-05	3.54E-05
		Generator	80 hp	5,856.00	244	2.38E+00	1.92E+01	1.74E+01	3.40E-02	1.24E+00	1.14E+00
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	2.44E-01	3.82E+00	1.81E+00	6.57E-03	1.41E-01	1.30E-01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.44E-01	3.82E+00	1.81E+00	6.57E-03	1.41E-01	1.30E-01
		Tractor/crawler/dozer	600 hp	184.6154	19	2.44E-01	3.82E+00	1.81E+00	6.57E-03	1.41E-01	1.30E-01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	2.44E-01	3.82E+00	1.81E+00	6.57E-03	1.41E-01	1.30E-01
	Armoring	1 ton pickup truck		2	19	1.01E-04	1.19E-04	1.36E-03	2.58E-06	2.06E-05	9.13E-06
		Excavator	430 hp	2	19	9.95E-04	1.41E-02	7.67E-03	3.75E-05	4.58E-04	4.21E-04
		1 ton pickup truck		2	19	1.01E-04	1.19E-04	1.36E-03	2.58E-06	2.06E-05	9.13E-06
	Maintenance	Grader	215 hp	340	210	1.99E-01	3.31E+00	1.05E+00	5.39E-03	1.07E-01	9.89E-02
Coarse Material (Gravel & Larger) (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	3.37E-02	3.95E-02	4.50E-01	8.56E-04	6.83E-03	3.03E-03
		Front end loader	350 hp	663.5	78	4.87E-01	6.57E+00	2.32E+00	1.03E-02	2.46E-01	2.26E-01
		Front end loader	350 hp	663.5	78	4.87E-01	6.57E+00	2.32E+00	1.03E-02	2.46E-01	2.26E-01
		Front end loader	350 hp	663.5	78	4.87E-01	6.57E+00	2.32E+00	1.03E-02	2.46E-01	2.26E-01
		Front end loader	350 hp	663.5	78	4.87E-01	6.57E+00	2.32E+00	1.03E-02	2.46E-01	2.26E-01
		Water truck	3000 gal	663.5	78	9.70E-02	1.47E+00	1.78E-01	1.50E-03	3.22E-02	1.96E-02
		Excavator	400 hp	663.5	78	3.07E-01	4.36E+00	2.37E+00	1.16E-02	1.41E-01	1.30E-01
		Excavator	400 hp	663.5	78	3.07E-01	4.36E+00	2.37E+00	1.16E-02	1.41E-01	1.30E-01
		Excavator	400 hp	663.5	78	3.07E-01	4.36E+00	2.37E+00	1.16E-02	1.41E-01	1.30E-01
		Excavator	400 hp	663.5	78	3.07E-01	4.36E+00	2.37E+00	1.16E-02	1.41E-01	1.30E-01
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	5.18E-03	6.08E-03	6.91E-02	1.32E-04	1.05E-03	4.66E-04
		Front end loader	350 hp	102	11	7.48E-02	1.01E+00	3.57E-01	1.58E-03	3.78E-02	3.48E-02
		Front end loader	350 hp	102	11	7.48E-02	1.01E+00	3.57E-01	1.58E-03	3.78E-02	3.48E-02
		Front end loader	350 hp	102	11	7.48E-02	1.01E+00	3.57E-01	1.58E-03	3.78E-02	3.48E-02
		Front end loader	350 hp	102	11	7.48E-02	1.01E+00	3.57E-01	1.58E-03	3.78E-02	3.48E-02
		Water truck	3000 gal	102	11	1.49E-02	2.25E-01	2.74E-02	2.30E-04	4.95E-03	3.01E-03
		Excavator	400 hp	102	11	4.72E-02	6.71E-01	3.64E-01	1.78E-03	2.17E-02	2.00E-02
		Excavator	400 hp	102	11	4.72E-02	6.71E-01	3.64E-01	1.78E-03	2.17E-02	2.00E-02
		Excavator	400 hp	102	11	4.72E-02	6.71E-01	3.64E-01	1.78E-03	2.17E-02	2.00E-02
		Excavator	400 hp	102	11	4.72E-02	6.71E-01	3.64E-01	1.78E-03	2.17E-02	2.00E-02
	Beach Crew	1 ton pickup truck		102	11	5.18E-03	6.08E-03	6.91E-02	1.32E-04	1.05E-03	4.66E-04
		Tractor/crawler/dozer	600 hp	102	11	1.35E-01	2.11E+00	1.00E+00	3.63E-03	7.79E-02	7.17E-02
		Tractor/crawler/dozer	600 hp	102	11	1.35E-01	2.11E+00	1.00E+00	3.63E-03	7.79E-02	7.17E-02
		Tractor/crawler/dozer	600 hp	102	11	1.35E-01	2.11E+00	1.00E+00	3.63E-03	7.79E-02	7.17E-02
		Tractor/crawler/dozer	600 hp	102	11	1.35E-01	2.11E+00	1.00E+00	3.63E-03	7.79E-02	7.17E-02
		Water truck	3000 gal	25	11	3.66E-03	5.53E-02	6.72E-03	5.64E-05	1.21E-03	7.38E-04

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEI
Gasoline	0.994	0.992	0.998	117 (VEHICI

Federal Holidays

New Year's Day	1/1/2018
Birthday of Martin Luther King, Jr.	1/15/2018
Washington's Birthday	2/19/2018
Memorial Day	5/28/2018
Independence Day	7/4/2018
Labor Day	9/3/2018
Columbus Day	10/8/2018
Veterans Day	11/12/2018
Thanksgiving Day	11/22/2018
Christmas Day	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-proced

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2018 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	30	1.94E-02	2.28E-02	2.59E-01	4.93E-04	3.94E-03	1.75E-03
		Front end loader	350 hp	382.5	30	2.81E-01	3.79E+00	1.34E+00	5.93E-03	1.42E-01	1.31E-01
		Front end loader	350 hp	382.5	30	2.81E-01	3.79E+00	1.34E+00	5.93E-03	1.42E-01	1.31E-01
		Front end loader	350 hp	382.5	30	2.81E-01	3.79E+00	1.34E+00	5.93E-03	1.42E-01	1.31E-01
		Front end loader	350 hp	382.5	30	2.81E-01	3.79E+00	1.34E+00	5.93E-03	1.42E-01	1.31E-01
		Water truck	3000 gal	382.5	30	5.59E-02	-	1.03E-01	8.63E-04	1.86E-02	1.13E-02
		Excavator	400 hp	382.5	30	1.77E-01	-	1.37E+00	6.68E-03	8.15E-02	7.50E-02
		Excavator	400 hp	382.5	30	1.77E-01	-	1.37E+00	6.68E-03	8.15E-02	7.50E-02
		Excavator	400 hp	382.5	30	1.77E-01	-	1.37E+00	6.68E-03	8.15E-02	7.50E-02
		Excavator	400 hp	382.5	30	1.77E-01	-	1.37E+00	6.68E-03	8.15E-02	7.50E-02
	Beach Crew	**1 ton pickup truck**		382.5	30	1.94E-02	-	2.59E-01	4.93E-04	3.94E-03	1.75E-03
		Tractor/crawler/dozer	600 hp	382.5	30	5.05E-01	7.92E+00	3.75E+00	1.36E-02	2.92E-01	2.69E-01
		Tractor/crawler/dozer	600 hp	382.5	30	5.05E-01	7.92E+00	3.75E+00	1.36E-02	2.92E-01	2.69E-01
		Tractor/crawler/dozer	600 hp	382.5	30	5.05E-01	7.92E+00	3.75E+00	1.36E-02	2.92E-01	2.69E-01
		Tractor/crawler/dozer	600 hp	382.5	30	5.05E-01	7.92E+00	3.75E+00	1.36E-02	2.92E-01	2.69E-01
		Water truck	3000 gal	382.5	30	5.59E-02	8.45E-01	1.03E-01	8.63E-04	1.86E-02	1.13E-02
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	8.11E-01	1.25E+01	4.34E+00	1.53E-02	4.83E-01	4.45E-01
		Tractor/crawler/dozer	440 hp	90	22	1.01E-01	1.56E+00	5.43E-01	1.92E-03	6.04E-02	5.56E-02
		3/4 ton pickup truck		360	22	3.07E-02	2.52E-02	3.70E-01	4.63E-04	3.80E-03	1.72E-03
	Drilling	**Rotary drill**	475 hp	88.1333	128	4.92E-02	7.71E-01	4.39E-01	2.43E-03	2.31E-02	2.12E-02
		3/4 ton pickup truck		84.1333	128	7.18E-03	5.89E-03	8.65E-02	1.08E-04	8.87E-04	4.03E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	3.21E-02	2.63E-02	3.87E-01	4.83E-04	3.96E-03	1.80E-03
		Diamond cutting saw	50 hp	376	128	1.76E-01	8.43E-01	8.10E-01	1.42E-03	4.95E-02	4.55E-02
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	3.15E-01	4.78E+00	1.33E+00	5.74E-03	1.93E-01	1.78E-01
		3/4 ton pickup truck		454.8767	128	3.88E-02	3.18E-02	4.68E-01	5.85E-04	4.80E-03	2.18E-03
	Load/Haul	**Front end loader**	350 hp	32	128	2.35E-02	3.17E-01	1.12E-01	4.96E-04	1.19E-02	1.09E-02
		Water truck	3000 gal	521	128	7.62E-02	1.15E+00	1.40E-01	1.17E-03	2.53E-02	1.54E-02
	Landfill	**Crane 260'**	375 hp	227.4384	128	1.58E-01	2.39E+00	6.63E-01	2.87E-03	9.65E-02	8.88E-02
	Micro-blast	**Crane 260'**	375 hp	60	128	4.16E-02	6.31E-01	1.75E-01	7.57E-04	2.54E-02	2.34E-02
		Horizontal boring drill	10 hp	55	128	3.68E-03	2.83E-02	2.20E-02	5.62E-05	1.91E-03	1.76E-03
		3/4 ton pickup truck		60	128	5.12E-03	4.20E-03	6.17E-02	7.72E-05	6.33E-04	2.87E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	6.93E-02	1.05E+00	2.92E-01	1.26E-03	4.24E-02	3.90E-02
		Air compressor	50 hp	200	128	2.14E-01	2.81E-01	1.03E+01	7.84E-04	4.94E-03	4.93E-03
		3/4 ton pickup truck		100	128	8.54E-03	7.00E-03	1.03E-01	1.29E-04	1.05E-03	4.79E-04
					Total	**1.48E+01**	**1.80E+02**	**1.03E+02**	**3.38E-01**	**7.45E+00**	**6.77E+00**

Data from Alt2_EnvrAirQualityReport.pdf

Daily Onsi						
Rindge	12	137	83	0	6	5
Surfrider	1	9	4	0	0	0
Topanga	2	33	15	0	1	1
Zuma	0	0	0	0	0	0
Landfill	0	2	1	0	0	0

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	2320	209	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.166	1.567	0.761	0.005	0.048	0.044	403.250	0.015	0.000
		Front end loader	540 hp	3.696	19	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Front end loader	49 hp	4	19	0.222	1.556	1.830	0.003	0.048	0.044	231.302	0.020	0.000
		Roller	47 hp	4	19	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000
		Water truck	3000 gal	4	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	300 hp	4	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		Front end loader	180 hp	4	19	0.093	1.355	0.579	0.003	0.045	0.042	270.061	0.015	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.450	1.583	92.611	0.004	1.249	1.246	148.932	0.140	0.122
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		Loader/backhoe	75 hp	0.0923	19	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
		Crane 94'	155 hp	155	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Crane 94'	155 hp	155	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Dewatering	Concrete saw	13 hp	8	21	3.075	2.272	117.574	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	21	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		Flatbed truck		8	21	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
		Generator	80 hp	5856	244	0.213	1.796	1.761	0.003	0.108	0.100	294.384	0.019	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Armoring	1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Excavator	430 hp	2	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Maintenance	Grader	215 hp	340	209	0.122	1.989	0.675	0.004	0.064	0.059	312.002	0.017	0.000
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Front end loader	350 hp	59.5	7	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Front end loader	350 hp	59.5	7	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Water truck	3000 gal	59.5	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	400 hp	59.5	7	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Beach Crew	1 ton pickup truck		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	600 hp	59.5	7	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Tractor/crawler/dozer	600 hp	59.5	7	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Water truck	3000 gal	14.875	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	*Material Excavation*	1 ton pickup truck		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Front end loader	350 hp	1028.5	131	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Front end loader	350 hp	1028.5	131	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Water truck	3000 gal	1028.5	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	400 hp	1028.5	131	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Beach Crew	1 ton pickup truck		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	600 hp	1028.5	131	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Tractor/crawler/dozer	600 hp	1028.5	131	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Water truck	3000 gal	257.125	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year	2019	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	22	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
		Tractor/crawler/dozer	440 hp	90	22	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
		3/4 ton pickup truck		360	22	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Drilling	Rotary drill	475 hp	54.4	128	0.054	0.779	0.500	0.003	0.024	0.022	282.166	0.007	0.000
		3/4 ton pickup truck		50.4	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton pickup truck		148	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	148	128	0.388	2.062	2.000	0.004	0.110	0.101	277.562	0.035	0.000
	Lift/Load blocks	Crane 260'	375 hp	179.6356	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		3/4 ton pickup truck		179.6356	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Load/Haul	Front end loader	350 hp	32	128	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
	Landfill	Crane 260'	375 hp	89.8178	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
	Micro-blast	Crane 260'	375 hp	60	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		Horizontal boring drill	10 hp	55	128	0.300	2.371	1.909	0.005	0.152	0.140	312.570	0.033	0.000
		3/4 ton pickup truck		60	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	100	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		Air compressor	50 hp	200	128	0.932	1.229	50.033	0.004	0.024	0.023	307.059	0.053	0.072
		3/4 ton pickup truck		100	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056

Data from Alt2_EnvrAirQualityReport.pdf

Total Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2019 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		96	209	3.71E-04	3.21E-04	4.51E-03	6.44E-06	5.25E-05	2.36E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		Water truck	5000 gal	2320	209	1.75E-02	2.47E-01	3.24E-02	2.73E-04	5.70E-03	3.40E-03	5.49E+01	1.30E-04	1.23E-04	5.49E+01	4.98E+01
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	4.75E-03	4.11E-03	5.77E-02	8.24E-05	6.73E-04	3.02E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	3/4 ton pickup truck		16	19	6.19E-05	5.34E-05	7.52E-04	1.07E-06	8.76E-06	3.93E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	9.54E-06	1.22E-05	1.29E-04	2.96E-07	2.35E-06	1.03E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.72E-04	4.31E-03	1.49E-03	6.85E-06	1.62E-04	1.49E-04	6.09E-01	4.16E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	Front end loader	540 hp	3.696	19	1.93E-04	2.40E-03	1.40E-03	6.49E-06	9.43E-05	8.67E-05	6.45E-01	3.38E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.43E-04	2.13E-03	7.91E-04	2.91E-06	8.28E-05	7.62E-05	2.97E-01	1.92E-05	-	2.97E-01	2.70E-01
	Chipping	Brush chipper	250 hp	3.696	19	1.69E-04	1.60E-03	7.75E-04	4.62E-06	4.92E-05	4.52E-05	4.11E-01	1.52E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	1.93E-04	2.40E-03	1.40E-03	6.49E-06	9.43E-05	8.67E-05	6.45E-01	3.38E-05	-	6.46E-01	5.86E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.34E-05	8.46E-04	2.92E-04	1.34E-06	3.19E-05	2.94E-05	1.20E-01	8.17E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.80E-05	3.36E-04	3.95E-04	6.46E-07	1.04E-05	9.61E-06	5.00E-02	4.33E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.13E-04	3.95E-04	4.67E-04	6.31E-07	2.68E-05	2.46E-05	4.88E-02	1.02E-05	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	3.02E-05	4.25E-04	5.58E-05	4.72E-07	9.82E-06	5.86E-06	9.46E-02	2.25E-07	2.12E-07	9.47E-02	8.59E-02
		Excavator	300 hp	4	19	6.77E-05	8.99E-04	5.55E-04	2.75E-06	2.92E-05	2.69E-05	2.80E-01	1.37E-05	-	2.81E-01	2.54E-01
		Front end loader	180 hp	4	19	7.34E-05	1.08E-03	4.60E-04	2.41E-06	3.61E-05	3.32E-05	2.14E-01	1.16E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	1.60E-04	2.54E-03	8.77E-04	4.03E-06	9.57E-05	8.81E-05	3.59E-01	2.45E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	1.84E-04	1.19E-04	6.94E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.05E-05	9.16E-06	1.42E-02	1.29E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	5.29E-04	6.71E-03	4.83E-03	9.17E-06	3.59E-04	3.30E-04	8.15E-01	6.40E-05	-	8.16E-01	7.41E-01
		Loader/backhoe	75 hp	0.0923	19	8.55E-07	1.04E-05	9.84E-06	1.75E-08	6.93E-07	6.38E-07	1.49E-03	1.03E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.58E-03	4.54E-02	3.26E-02	6.20E-05	2.42E-03	2.23E-03	5.51E+00	4.32E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	3.58E-03	4.54E-02	3.26E-02	6.20E-05	2.42E-03	2.23E-03	5.51E+00	4.32E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	5.34E-05	8.46E-04	2.92E-04	1.34E-06	3.19E-05	2.94E-05	1.20E-01	8.17E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	21	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	21	3.10E-04	3.93E-03	2.83E-03	5.37E-06	2.10E-04	1.93E-04	4.77E-01	3.74E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	21	4.87E-05	5.25E-05	6.75E-04	5.33E-07	4.22E-06	1.82E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	1.10E-01	9.28E-01	9.09E-01	1.78E-03	5.60E-02	5.15E-02	1.52E+02	9.93E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Armoring	1 ton pickup truck		2	19	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	4.85E-05	6.44E-04	3.98E-04	1.97E-06	2.09E-05	1.92E-05	2.01E-01	9.81E-06	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	Grader	215 hp	340	209	9.80E-03	1.60E-01	5.44E-02	2.83E-04	5.14E-03	4.73E-03	2.51E+01	1.39E-03	-	2.52E+01	2.28E+01
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
		Front end loader	350 hp	59.5	7	2.10E-03	2.73E-02	1.07E-02	4.84E-05	1.02E-03	9.38E-04	4.93E+00	2.57E-04	-	4.94E+00	4.48E+00
		Front end loader	350 hp	59.5	7	2.10E-03	2.73E-02	1.07E-02	4.84E-05	1.02E-03	9.38E-04	4.93E+00	2.57E-04	-	4.94E+00	4.48E+00
		Water truck	3000 gal	59.5	7	4.49E-04	6.32E-03	8.31E-04	7.01E-06	1.46E-04	8.71E-05	1.41E+00	3.34E-06	3.15E-06	1.41E+00	1.28E+00
		Excavator	400 hp	59.5	7	1.34E-03	1.78E-02	1.10E-02	5.46E-05	5.79E-04	5.33E-04	5.56E+00	2.72E-04	-	5.56E+00	5.05E+00
	Beach Crew	1 ton pickup truck		59.5	7	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
		Tractor/crawler/dozer	600 hp	59.5	7	3.71E-03	5.64E-02	2.94E-02	1.11E-04	2.08E-03	1.91E-03	1.10E+01	7.17E-04	-	1.11E+01	1.00E+01
		Tractor/crawler/dozer	600 hp	59.5	7	3.71E-03	5.64E-02	2.94E-02	1.11E-04	2.08E-03	1.91E-03	1.10E+01	7.17E-04	-	1.11E+01	1.00E+01
		Water truck	3000 gal	14.875	7	1.12E-04	1.58E-03	2.08E-04	1.75E-06	3.65E-05	2.18E-05	3.52E-01	8.36E-07	7.87E-07	3.52E-01	3.19E-01
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	*Material Excavation*	1 ton pickup truck		1028.5	131	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
		Front end loader	350 hp	1028.5	131	3.63E-02	4.72E-01	1.84E-01	8.37E-04	1.76E-02	1.62E-02	8.52E+01	4.44E-03	-	8.53E+01	7.74E+01
		Front end loader	350 hp	1028.5	131	3.63E-02	4.72E-01	1.84E-01	8.37E-04	1.76E-02	1.62E-02	8.52E+01	4.44E-03	-	8.53E+01	7.74E+01
		Water truck	3000 gal	1028.5	131	7.77E-03	1.09E-01	1.44E-02	1.21E-04	2.53E-03	1.51E-03	2.43E+01	5.78E-05	5.44E-05	2.43E+01	2.21E+01
		Excavator	400 hp	1028.5	131	2.32E-02	3.08E-01	1.90E-01	9.43E-04	1.00E-02	9.21E-03	9.61E+01	4.69E-03	-	9.62E+01	8.72E+01
	Beach Crew	1 ton pickup truck		1028.5	131	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
		Tractor/crawler/dozer	600 hp	1028.5	131	6.42E-02	9.75E-01	5.09E-01	1.92E-03	3.59E-02	3.30E-02	1.91E+02	1.24E-02	-	1.91E+02	1.74E+02
		Tractor/crawler/dozer	600 hp	1028.5	131	6.42E-02	9.75E-01	5.09E-01	1.92E-03	3.59E-02	3.30E-02	1.91E+02	1.24E-02	-	1.91E+02	1.74E+02
		Water truck	3000 gal	257.125	131	1.94E-03	2.73E-02	3.59E-03	3.03E-05	6.31E-04	3.77E-04	6.08E+00	1.45E-05	1.36E-05	6.08E+00	5.52E+00

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2019 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	3.94E-02	5.89E-01	2.19E-01	8.05E-04	2.29E-02	2.11E-02	8.21E+01	5.30E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	4.93E-03	7.36E-02	2.74E-02	1.01E-04	2.86E-03	2.63E-03	1.03E+01	6.63E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	1.39E-03	1.20E-03	1.69E-02	2.41E-05	1.97E-04	8.84E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	54.4	128	1.53E-03	2.22E-02	1.42E-02	7.89E-05	6.86E-04	6.31E-04	8.04E+00	1.93E-04	-	8.04E+00	7.29E+00
		3/4 ton pickup truck		50.4	128	1.95E-04	1.68E-04	2.37E-03	3.38E-06	2.76E-05	1.24E-05	1.13E+00	1.12E-04	5.87E-05	1.15E+00	1.04E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	5.72E-04	4.94E-04	6.95E-03	9.92E-06	8.10E-05	3.64E-05	3.32E+00	3.30E-04	1.72E-04	3.38E+00	3.07E+00
		Diamond cutting saw	50 hp	148	128	3.16E-03	1.68E-02	1.63E-02	2.93E-05	8.97E-04	8.25E-04	2.26E+00	2.85E-04	-	2.27E+00	2.06E+00
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	6.17E-03	9.19E-02	2.66E-02	1.19E-04	3.70E-03	3.41E-03	1.21E+01	6.94E-04	-	1.21E+01	1.10E+01
		3/4 ton pickup truck		179.6356	128	6.95E-04	6.00E-04	8.44E-03	1.20E-05	9.83E-05	4.41E-05	4.03E+00	4.01E-04	2.09E-04	4.10E+00	3.72E+00
	Load/Haul	**Front end loader**	350 hp	32	128	1.13E-03	1.47E-02	5.74E-03	2.60E-05	5.48E-04	5.04E-04	2.65E+00	1.38E-04	-	2.66E+00	2.41E+00
	Landfill	**Crane 260'**	375 hp	89.8178	128	3.09E-03	4.60E-02	1.33E-02	5.95E-05	1.85E-03	1.70E-03	6.06E+00	3.47E-04	-	6.07E+00	5.50E+00
	Micro-blast	**Crane 260'**	375 hp	60	128	2.06E-03		8.88E-03	3.97E-05	1.24E-03	1.14E-03	4.05E+00	2.32E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	1.82E-04		1.16E-03	2.95E-06	9.22E-05	8.48E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	128	2.32E-04		2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	128	3.44E-03		1.48E-02	6.62E-05	2.06E-03	1.90E-03	6.75E+00	3.86E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	128	1.03E-02		5.52E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	5.84E-04	7.95E-04	3.64E+00	3.31E+00
		3/4 ton pickup truck		100	128	3.87E-04		4.70E-03	6.70E-06	5.47E-05	2.46E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
					Total	**5.31E-01**	**6.56E+00**	**4.23E+00**	**1.26E-02**	**2.66E-01**	**2.40E-01**	**1.35E+03**	**8.17E-02**	**6.55E-03**	**1.35E+03**	**1.23E+03**

Data from Alt2_EnvrAirQualityReport.pdf

Daily Onsi
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	209	7.11E-03	6.14E-03	8.63E-02	1.23E-04	1.01E-03	4.51E-04
Dust Control		**Water truck**	5000 gal	2320	209	3.35E-01	4.72E+00	6.20E-01	5.23E-03	1.09E-01	6.50E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	9.10E-02	7.86E-02	1.11E+00	1.58E-03	1.29E-02	5.78E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.18E-03	1.02E-03	1.44E-02	2.05E-05	1.68E-04	7.52E-05
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.83E-04	2.34E-04	2.47E-03	5.66E-06	4.50E-05	1.97E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	5.20E-03	8.25E-02	2.85E-02	1.31E-04	3.11E-03	2.86E-03
		Chain saw		7.3335	19	9.48E-03	1.48E-04	1.71E-02	1.91E-06	2.70E-05	2.69E-05
	Brush Piling	**Front end loader**	540 hp	3.696	19	3.69E-03	4.60E-02	2.67E-02	1.24E-04	1.80E-03	1.66E-03
		Tractor/crawler/dozer	310 hp	3.696	19	2.73E-03	4.08E-02	1.51E-02	5.57E-05	1.58E-03	1.46E-03
	Chipping	**Brush chipper**	250 hp	3.696	19	3.23E-03	3.06E-02	1.48E-02	8.84E-05	9.41E-04	8.66E-04
		Front end loader	540 hp	3.696	19	3.69E-03	4.60E-02	2.67E-02	1.24E-04	1.80E-03	1.66E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.02E-03	1.62E-02	5.60E-03	2.57E-05	6.11E-04	5.62E-04
		Front end loader	49 hp	4	19	9.18E-04	6.44E-03	7.57E-03	1.24E-05	2.00E-04	1.84E-04
		Roller	47 hp	4	19	2.16E-03	7.56E-03	8.95E-03	1.21E-05	5.13E-04	4.72E-04
		Water truck	3000 gal	4	19	5.78E-04	8.14E-03	1.07E-03	9.02E-06	1.88E-04	1.12E-04
		Excavator	300 hp	4	19	1.30E-03	1.72E-02	1.06E-02	5.26E-05	5.59E-04	5.14E-04
		Front end loader	180 hp	4	19	1.41E-03	2.06E-02	8.80E-03	4.62E-05	6.90E-04	6.35E-04
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	3.07E-03	4.86E-02	1.68E-02	7.72E-05	1.83E-03	1.69E-03
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	3.51E-03	2.27E-03	1.33E-01	5.41E-06	1.79E-03	1.79E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	1.01E-02	1.28E-01	9.24E-02	1.75E-04	6.86E-03	6.31E-03
		Loader/backhoe	75 hp	0.0923	19	1.64E-05	1.99E-04	1.88E-04	3.35E-07	1.33E-05	1.22E-05
		Crane 94'	155 hp	155	19	6.85E-02	8.69E-01	6.25E-01	1.19E-03	4.64E-02	4.27E-02
		1 ton pickup truck		155	19	6.43E-03	8.25E-03	8.71E-02	1.99E-04	1.59E-03	6.95E-04
		Crane 94'	155 hp	155	19	6.85E-02	8.69E-01	6.25E-01	1.19E-03	4.64E-02	4.27E-02
		1 ton pickup truck		155	19	6.43E-03	8.25E-03	8.71E-02	1.99E-04	1.59E-03	6.95E-04
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	1.02E-03	1.62E-02	5.60E-03	2.57E-05	6.11E-04	5.62E-04
	Dewatering	**Concrete saw**	13 hp	8	21	6.75E-03	4.99E-03	2.58E-01	1.26E-05	3.70E-03	3.69E-03
		Crane 80'	130 hp	16	21	5.93E-03	7.52E-02	5.41E-02	1.03E-04	4.02E-03	3.70E-03
		Flatbed truck		8	21	9.32E-04	1.01E-03	1.29E-02	1.02E-05	8.08E-05	3.48E-05
		Generator	80 hp	5856	244	2.11E+00	1.78E+01	1.74E+01	3.41E-02	1.07E+00	9.86E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.21E-01	3.35E+00	1.75E+00	6.60E-03	1.23E-01	1.13E-01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.21E-01	3.35E+00	1.75E+00	6.60E-03	1.23E-01	1.13E-01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.21E-01	3.35E+00	1.75E+00	6.60E-03	1.23E-01	1.13E-01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.21E-01	3.35E+00	1.75E+00	6.60E-03	1.23E-01	1.13E-01
	Armoring	**1 ton pickup truck**		2	19	8.30E-05	1.06E-04	1.12E-03	2.57E-06	2.05E-05	8.96E-06
		Excavator	430 hp	2	19	9.28E-04	1.23E-02	7.62E-03	3.77E-05	4.00E-04	3.68E-04
		1 ton pickup truck		2	19	8.30E-05	1.06E-04	1.12E-03	2.57E-06	2.05E-05	8.96E-06
	Maintenance	**Grader**	215 hp	340	209	1.87E-01	3.07E+00	1.04E+00	5.41E-03	9.84E-02	9.06E-02
Sand to Topanga Beach (7,200 cy) (4/1-9)	***Material Excavation***	**1 ton pickup truck**		59.5	7	2.47E-03	3.17E-03	3.34E-02	7.66E-05	6.09E-04	2.67E-04
		Front end loader	350 hp	59.5	7	4.02E-02	5.23E-01	2.04E-01	9.26E-04	1.95E-02	1.79E-02
		Front end loader	350 hp	59.5	7	4.02E-02	5.23E-01	2.04E-01	9.26E-04	1.95E-02	1.79E-02
		Water truck	3000 gal	59.5	7	8.60E-03	1.21E-01	1.59E-02	1.34E-04	2.80E-03	1.67E-03
		Excavator	400 hp	59.5	7	2.57E-02	3.41E-01	2.11E-01	1.04E-03	1.11E-02	1.02E-02
	Beach Crew	**1 ton pickup truck**		59.5	7	2.47E-03	3.17E-03	3.34E-02	7.66E-05	6.09E-04	2.67E-04
		Tractor/crawler/dozer	600 hp	59.5	7	7.11E-02	1.08E+00	5.63E-01	2.13E-03	3.97E-02	3.66E-02
		Tractor/crawler/dozer	600 hp	59.5	7	7.11E-02	1.08E+00	5.63E-01	2.13E-03	3.97E-02	3.66E-02
		Water truck	3000 gal	14.875	7	2.15E-03	3.03E-02	3.97E-03	3.36E-05	6.99E-04	4.17E-04
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	***Material Excavation***	**1 ton pickup truck**		1028.5	131	4.27E-02	5.47E-02	5.78E-01	1.32E-03	1.05E-02	4.61E-03
		Front end loader	350 hp	1028.5	131	6.94E-01	9.03E+00	3.53E+00	1.60E-02	3.37E-01	3.10E-01
		Front end loader	350 hp	1028.5	131	6.94E-01	9.03E+00	3.53E+00	1.60E-02	3.37E-01	3.10E-01
		Water truck	3000 gal	1028.5	131	1.49E-01	2.09E+00	2.75E-01	2.32E-03	4.83E-02	2.88E-02
		Excavator	400 hp	1028.5	131	4.44E-01	5.90E+00	3.64E+00	1.80E-02	1.92E-01	1.76E-01
	Beach Crew	**1 ton pickup truck**		1028.5	131	4.27E-02	5.47E-02	5.78E-01	1.32E-03	1.05E-02	4.61E-03
		Tractor/crawler/dozer	600 hp	1028.5	131	1.23E+00	1.87E+01	9.74E+00	3.68E-02	6.87E-01	6.32E-01
		Tractor/crawler/dozer	600 hp	1028.5	131	1.23E+00	1.87E+01	9.74E+00	3.68E-02	6.87E-01	6.32E-01
		Water truck	3000 gal	257.125	131	3.72E-02	5.23E-01	6.87E-02	5.80E-04	1.21E-02	7.21E-03

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

	Data from EMFAC2011 (g/hr)
	Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEI
Gasoline	0.994	0.992	0.998	117 (VEHIC

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019

10

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year	2019	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	7.55E-01	1.13E+01	4.19E+00	1.54E-02	4.38E-01	4.03E-01
		Tractor/crawler/dozer	440 hp	90	22	9.44E-02	1.41E+00	5.24E-01	1.93E-03	5.48E-02	5.04E-02
		3/4 ton pickup truck		360	22	2.66E-02	2.30E-02	3.24E-01	4.62E-04	3.77E-03	1.69E-03
	Drilling	**Rotary drill**	475 hp	54.4	128	2.92E-02	4.25E-01	2.72E-01	1.51E-03	1.31E-02	1.21E-02
		3/4 ton pickup truck		50.4	128	3.73E-03	3.22E-03	4.53E-02	6.47E-05	5.28E-04	2.37E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	1.10E-02	9.46E-03	1.33E-01	1.90E-04	1.55E-03	6.96E-04
		Diamond cutting saw	50 hp	148	128	6.05E-02	3.22E-01	3.12E-01	5.60E-04	1.72E-02	1.58E-02
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	1.18E-01	1.76E+00	5.09E-01	2.28E-03	7.08E-02	6.52E-02
		3/4 ton pickup truck		179.6356	128	1.33E-02	1.15E-02	1.61E-01	2.30E-04	1.88E-03	8.44E-04
	Load/Haul	**Front end loader**	350 hp	32	128	2.16E-02	2.81E-01	1.10E-01	4.98E-04	1.05E-02	9.65E-03
	Landfill	**Crane 260'**	375 hp	89.8178	128	5.91E-02	8.80E-01	2.54E-01	1.14E-03	3.54E-02	3.26E-02
	Micro-blast	**Crane 260'**	375 hp	60	128	3.95E-02	-	1.70E-01	7.61E-04	2.37E-02	2.18E-02
		Horizontal boring drill	10 hp	55	128	3.48E-03	-	2.21E-02	5.64E-05	1.76E-03	1.62E-03
		3/4 ton pickup truck		60	128	4.44E-03	-	5.39E-02	7.70E-05	6.28E-04	2.82E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	6.58E-02	-	2.83E-01	1.27E-03	3.94E-02	3.63E-02
		Air compressor	50 hp	200	128	1.97E-01	-	1.06E+01	7.88E-04	4.96E-03	4.95E-03
		3/4 ton pickup truck		100	128	7.40E-03	-	8.99E-02	1.28E-04	1.05E-03	4.70E-04
					Total	**1.02E+01**	**1.25E+02**	**8.10E+01**	**2.41E-01**	**5.09E+00**	**4.60E+00**

Data from Alt2_EnvrAirQualityReport.pdf

Daily Onsi						
Rindge	7	85	59	0	4	3
Surfrider	0	0	0	0	0	0
Topanga	0	2	1	0	0	0
Zuma	3	38	20	0	1	1
Landfill	0	1	0	0	0	0

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year	2020
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2020 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	209	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.083	1.001	0.621	0.003	0.039	0.036	293.384	0.015	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.156	1.378	0.752	0.005	0.043	0.039	403.250	0.014	0.000
		Front end loader	540 hp	3.696	19	0.083	1.001	0.621	0.003	0.039	0.036	293.384	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
		Front end loader	49 hp	4	19	0.208	1.500	1.818	0.003	0.039	0.036	231.302	0.019	0.000
		Roller	47 hp	4	19	0.492	1.848	2.208	0.003	0.116	0.106	235.507	0.044	0.000
		Water truck	3000 gal	4	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	300 hp	4	19	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
		Front end loader	180 hp	4	19	0.087	1.238	0.573	0.003	0.041	0.038	270.061	0.014	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.448	1.584	92.582	0.004	1.249	1.246	148.932	0.140	0.122
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		Loader/backhoe	75 hp	0.0923	19	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
		Crane 94'	155 hp	155	19	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Crane 94'	155 hp	155	19	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Dewatering	Concrete saw	13 hp	8	22	3.075	2.272	117.566	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	22	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		Flatbed truck		8	22	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
		Generator	80 hp	5856	244	0.191	1.653	1.753	0.003	0.094	0.087	294.384	0.017	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Armoring	1 ton pickup truck		0.9333	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Excavator	430 hp	0.9333	19	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
		1 ton pickup truck		0.9333	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Compaction	Vibratory roller	50 hp	7.38	19	0.492	1.848	2.208	0.003	0.116	0.106	235.507	0.044	0.000
		Tractor/crawler/dozer	250 hp	7.38	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
		Water truck	5000 gal	9.225	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Maintenance	Grader	215 hp	340	209	0.119	1.912	0.668	0.004	0.061	0.056	312.002	0.016	0.000
Sand to Zuma Beach (19,000 cy) (4/1-26)	*Material Excavation*	1 ton pickup truck		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Front end loader	350 hp	161.5	18	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Front end loader	350 hp	161.5	18	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	400 hp	161.5	18	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
	Beach Crew	1 ton pickup truck		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Fines to landfill (147,700 cy) (4/27-10/15)	*Material Excavation*	1 ton pickup truck		1066	120	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Front end loader	350 hp	1066	120	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Front end loader	350 hp	1066	120	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Water truck	3000 gal	1066	120	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	400 hp	1066	120	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2020 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
		Tractor/crawler/dozer	440 hp	90	20	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
		3/4 ton pickup truck		360	20	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Drilling	**Rotary drill**	475 hp	61.7333	127	0.052	0.708	0.500	0.003	0.022	0.021	282.166	0.006	0.000
		3/4 ton pickup truck		57.7333	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	196	127	0.344	1.993	1.959	0.004	0.096	0.089	277.562	0.031	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		3/4 ton pickup truck		239.2283	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Load/Haul	**Front end loader**	350 hp	32	127	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Water truck	3000 gal	14	127	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Landfill	**Crane 260'**	375 hp	119.6141	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
	Micro-blast	**Crane 260'**	375 hp	60	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		Horizontal boring drill	10 hp	55	127	0.297	2.334	1.909	0.005	0.148	0.136	312.570	0.033	0.000
		3/4 ton pickup truck		60	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Demolish spillway	**Crane 260'**	375 hp	100	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		Air compressor	50 hp	200	127	0.882	1.143	50.704	0.004	0.024	0.023	307.059	0.050	0.070
		3/4 ton pickup truck		100	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
					Total									

Data from Alt2_EnvrAirQualityReport.pdf

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2020 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		96	209	3.29E-04	2.97E-04	4.01E-03	6.43E-06	5.21E-05	2.31E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		Water truck	5000 gal	2320	209	1.70E-02	1.99E-01	3.17E-02	2.73E-04	5.18E-03	2.93E-03	5.47E+01	1.30E-04	1.23E-04	5.48E+01	4.97E+01
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	4.22E-03	3.80E-03	5.14E-02	8.24E-05	6.67E-04	2.96E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	3/4 ton pickup truck		16	19	5.49E-05	4.95E-05	6.69E-04	1.07E-06	8.68E-06	3.86E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	8.02E-06	1.11E-05	1.10E-04	2.96E-07	2.33E-06	1.01E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.58E-04	4.01E-03	1.45E-03	6.85E-06	1.51E-04	1.39E-04	6.09E-01	3.93E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	Front end loader	540 hp	3.696	19	1.82E-04	2.20E-03	1.37E-03	6.49E-06	8.55E-05	7.87E-05	6.45E-01	3.21E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.35E-04	1.96E-03	7.63E-04	2.91E-06	7.63E-05	7.02E-05	2.97E-01	1.82E-05	-	2.97E-01	2.70E-01
	Chipping	Brush chipper	250 hp	3.696	19	1.59E-04	1.40E-03	7.66E-04	4.62E-06	4.36E-05	4.01E-05	4.11E-01	1.43E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	1.82E-04	2.20E-03	1.37E-03	6.49E-06	8.55E-05	7.87E-05	6.45E-01	3.21E-05	-	6.46E-01	5.86E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.06E-05	7.88E-04	2.85E-04	1.34E-06	2.97E-05	2.73E-05	1.20E-01	7.71E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.50E-05	3.24E-04	3.93E-04	6.46E-07	8.46E-06	7.78E-06	5.00E-02	4.06E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.02E-04	3.83E-04	4.58E-04	6.31E-07	2.40E-05	2.21E-05	4.88E-02	9.20E-06	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	2.92E-05	3.43E-04	5.47E-05	4.70E-07	8.94E-06	5.04E-06	9.43E-02	2.25E-07	2.12E-07	9.44E-02	8.56E-02
		Excavator	300 hp	4	19	6.40E-05	7.94E-04	5.50E-04	2.75E-06	2.62E-05	2.41E-05	2.80E-01	1.30E-05	-	2.81E-01	2.54E-01
		Front end loader	180 hp	4	19	6.89E-05	9.82E-04	4.54E-04	2.41E-06	3.26E-05	3.00E-05	2.14E-01	1.10E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	1.52E-04	2.36E-03	8.56E-04	4.03E-06	8.91E-05	8.20E-05	3.59E-01	2.31E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	1.83E-04	1.19E-04	6.94E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.05E-05	9.16E-06	1.42E-02	1.29E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	5.01E-04	6.29E-03	4.82E-03	9.17E-06	3.36E-04	3.09E-04	8.15E-01	5.93E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	7.69E-07	9.35E-06	9.80E-06	1.75E-08	5.91E-07	5.44E-07	1.49E-03	9.52E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.39E-03	4.25E-02	3.26E-02	6.20E-05	2.27E-03	2.09E-03	5.51E+00	4.01E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	3.39E-03	4.25E-02	3.26E-02	6.20E-05	2.27E-03	2.09E-03	5.51E+00	4.01E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	5.06E-05	7.88E-04	2.85E-04	1.34E-06	2.97E-05	2.73E-05	1.20E-01	7.71E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	22	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	22	2.93E-04	3.68E-03	2.82E-03	5.37E-06	1.97E-04	1.81E-04	4.77E-01	3.47E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	22	4.12E-05	4.58E-05	5.67E-04	5.32E-07	4.18E-06	1.78E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	9.87E-02	8.54E-01	9.05E-01	1.78E-03	4.87E-02	4.48E-02	1.52E+02	8.90E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Armoring	1 ton pickup truck		0.9333	19	1.70E-06	2.35E-06	2.32E-05	6.27E-08	4.94E-07	2.14E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02	1.93E-02
		Excavator	430 hp	0.9333	19	2.14E-05	2.66E-04	1.84E-04	9.20E-07	8.75E-06	8.05E-06	9.37E-02	4.34E-06	-	9.38E-02	8.51E-02
		1 ton pickup truck		0.9333	19	1.70E-06	2.35E-06	2.32E-05	6.27E-08	4.94E-07	2.14E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02	1.93E-02
	Compaction	Vibratory roller	50 hp	7.38	19	2.00E-04	7.52E-04	8.98E-04	1.24E-06	4.71E-05	4.33E-05	9.58E-02	1.81E-05	-	9.62E-02	8.72E-02
		Tractor/crawler/dozer	250 hp	7.38	19	2.59E-04	4.04E-03	1.46E-03	6.89E-06	1.52E-04	1.40E-04	6.12E-01	3.95E-05	-	6.13E-01	5.56E-01
		Water truck	5000 gal	9.225	19	6.74E-05	7.90E-04	1.26E-04	1.08E-06	2.06E-05	1.16E-05	2.18E-01	5.19E-07	4.88E-07	2.18E-01	1.98E-01
	Maintenance	Grader	215 hp	340	209	9.58E-03	1.54E-01	5.38E-02	2.83E-04	4.93E-03	4.53E-03	2.51E+01	1.32E-03	-	2.52E+01	2.28E+01
Sand to Zuma Beach (19,000 cy) (4/1-26)	*Material Excavation*	1 ton pickup truck		161.5	18	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
		Front end loader	350 hp	161.5	18	5.38E-03	6.80E-02	2.83E-02	1.31E-04	2.53E-03	2.33E-03	1.34E+01	6.64E-04	-	1.34E+01	1.22E+01
		Front end loader	350 hp	161.5	18	5.38E-03	6.80E-02	2.83E-02	1.31E-04	2.53E-03	2.33E-03	1.34E+01	6.64E-04	-	1.34E+01	1.22E+01
		Water truck	3000 gal	161.5	18	1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
		Excavator	400 hp	161.5	18	3.45E-03	4.28E-02	2.96E-02	1.48E-04	1.41E-03	1.30E-03	1.51E+01	6.98E-04	-	1.51E+01	1.37E+01
	Beach Crew	1 ton pickup truck		161.5	18	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Water truck	3000 gal	161.5	18	1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
Fines to landfill (147,700 cy) (4/27-10/15)	*Material Excavation*	1 ton pickup truck		1066	120	1.94E-03	2.68E-03	2.65E-02	7.16E-05	5.65E-04	2.45E-04	2.39E+01	2.38E-03	1.24E-03	2.44E+01	2.21E+01
		Front end loader	350 hp	1066	120	3.55E-02	4.49E-01	1.87E-01	8.67E-04	1.67E-02	1.54E-02	8.83E+01	4.38E-03	-	8.84E+01	8.02E+01
		Front end loader	350 hp	1066	120	3.55E-02	4.49E-01	1.87E-01	8.67E-04	1.67E-02	1.54E-02	8.83E+01	4.38E-03	-	8.84E+01	8.02E+01
		Water truck	3000 gal	1066	120	7.79E-03	9.13E-02	1.46E-02	1.25E-04	2.38E-03	1.34E-03	2.51E+01	5.99E-05	5.64E-05	2.52E+01	2.28E+01
		Excavator	400 hp	1066	120	2.28E-02	2.82E-01	1.96E-01	9.77E-04	9.30E-03	8.55E-03	9.96E+01	4.61E-03	-	9.97E+01	9.04E+01

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2020 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	3.73E-02	5.42E-01	2.11E-01	8.05E-04	2.11E-02	1.94E-02	8.21E+01	5.02E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	4.66E-03	6.78E-02	2.64E-02	1.01E-04	2.64E-03	2.43E-03	1.03E+01	6.28E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	20	1.24E-03	1.11E-03	1.50E-02	2.41E-05	1.95E-04	8.68E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	61.7333	127	1.67E-03	2.29E-02	1.61E-02	8.95E-05	7.24E-04	6.66E-04	9.12E+00	2.07E-04	-	9.12E+00	8.28E+00
		3/4 ton pickup truck		57.7333	127	1.98E-04	1.79E-04	2.41E-03	3.87E-06	3.13E-05	1.39E-05	1.30E+00	1.29E-04	6.72E-05	1.32E+00	1.20E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	6.73E-04	6.06E-04	8.19E-03	1.31E-05	1.06E-04	4.73E-05	4.40E+00	4.37E-04	2.28E-04	4.48E+00	4.06E+00
		Diamond cutting saw	50 hp	196	127	3.71E-03	2.15E-02	2.12E-02	3.88E-05	1.04E-03	9.56E-04	3.00E+00	3.35E-04	-	3.01E+00	2.73E+00
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	7.55E-03	1.10E-01	3.44E-02	1.58E-04	4.41E-03	4.06E-03	1.61E+01	8.79E-04	-	1.62E+01	1.47E+01
		3/4 ton pickup truck		239.2283	127	8.21E-04	7.40E-04	1.00E-02	1.60E-05	1.30E-04	5.77E-05	5.37E+00	5.34E-04	2.78E-04	5.47E+00	4.96E+00
	Load/Haul	**Front end loader**	350 hp	32	127	1.07E-03	1.35E-02	5.61E-03	2.60E-05	5.01E-04	4.61E-04	2.65E+00	1.31E-04	-	2.65E+00	2.41E+00
		Water truck	3000 gal	14	127	1.02E-04		1.92E-04	1.65E-06	3.13E-05	1.77E-05	3.30E-01	7.87E-07	7.41E-07	3.30E-01	3.00E-01
	Landfill	**Crane 260'**	375 hp	119.6141	127	3.77E-03		1.72E-02	7.92E-05	2.21E-03	2.03E-03	8.07E+00	4.40E-04	-	8.08E+00	7.33E+00
	Micro-blast	**Crane 260'**	375 hp	60	127	1.89E-03		8.63E-03	3.97E-05	1.11E-03	1.02E-03	4.05E+00	2.21E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	127	1.80E-04		1.16E-03	2.95E-06	8.96E-05	8.24E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	127	2.06E-04		2.51E-03	4.02E-06	3.25E-05	1.45E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	127	3.16E-03		1.44E-02	6.62E-05	1.84E-03	1.70E-03	6.75E+00	3.68E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	127	9.72E-03	1.26E-02	5.59E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	5.53E-04	7.68E-04	3.63E+00	3.30E+00
		3/4 ton pickup truck		100	127	3.43E-04	3.09E-04	4.18E-03	6.70E-06	5.42E-05	2.41E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
					Total	**4.23E-01**	**4.84E+00**	**3.49E+00**	**1.01E-02**	**2.01E-01**	**1.81E-01**	**1.09E+03**	**6.08E-02**	**5.74E-03**	**1.10E+03**	**9.96E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year	2020
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2020 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	209	6.30E-03	5.69E-03	7.68E-02	1.23E-04	9.96E-04	4.43E-04
Dust Control		**Water truck**	5000 gal	2320	209	3.25E-01	3.80E+00	6.08E-01	5.22E-03	9.92E-02	5.60E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	8.07E-02	7.28E-02	9.83E-01	1.58E-03	1.28E-02	5.67E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.05E-03	9.48E-04	1.28E-02	2.05E-05	1.66E-04	7.38E-05
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.53E-04	2.12E-04	2.10E-03	5.66E-06	4.46E-05	1.93E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	4.93E-03	7.68E-02	2.78E-02	1.31E-04	2.89E-03	2.66E-03
		Chain saw		7.3335	19	9.48E-03	1.48E-04	1.71E-02	1.91E-06	2.70E-05	2.69E-05
	Brush Piling	**Front end loader**	540 hp	3.696	19	3.49E-03	4.22E-02	2.61E-02	1.24E-04	1.64E-03	1.51E-03
		Tractor/crawler/dozer	310 hp	3.696	19	2.58E-03	3.75E-02	1.46E-02	5.57E-05	1.46E-03	1.34E-03
	Chipping	**Brush chipper**	250 hp	3.696	19	3.04E-03	2.69E-02	1.47E-02	8.84E-05	8.34E-04	7.67E-04
		Front end loader	540 hp	3.696	19	3.49E-03	4.22E-02	2.61E-02	1.24E-04	1.64E-03	1.51E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	9.69E-04	1.51E-02	5.46E-03	2.57E-05	5.68E-04	5.23E-04
		Front end loader	49 hp	4	19	8.62E-04	6.20E-03	7.52E-03	1.24E-05	1.62E-04	1.49E-04
		Roller	47 hp	4	19	1.95E-03	7.33E-03	8.76E-03	1.21E-05	4.59E-04	4.22E-04
		Water truck	3000 gal	4	19	5.60E-04	6.56E-03	1.05E-03	9.00E-06	1.71E-04	9.66E-05
		Excavator	300 hp	4	19	1.23E-03	1.52E-02	1.05E-02	5.26E-05	5.01E-04	4.61E-04
		Front end loader	180 hp	4	19	1.32E-03	1.88E-02	8.70E-03	4.62E-05	6.24E-04	5.74E-04
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	2.91E-03	4.53E-02	1.64E-02	7.72E-05	1.71E-03	1.57E-03
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	3.51E-03	2.27E-03	1.33E-01	5.41E-06	1.79E-03	1.79E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	9.58E-03	1.20E-01	9.23E-02	1.75E-04	6.43E-03	5.92E-03
		Loader/backhoe	75 hp	0.0923	19	1.47E-05	1.79E-04	1.88E-04	3.35E-07	1.13E-05	1.04E-05
		Crane 94'	155 hp	155	19	6.48E-02	8.13E-01	6.24E-01	1.19E-03	4.35E-02	4.00E-02
		1 ton pickup truck		155	19	5.40E-03	7.46E-03	7.39E-02	1.99E-04	1.57E-03	6.81E-04
		Crane 94'	155 hp	155	19	6.48E-02	8.13E-01	6.24E-01	1.19E-03	4.35E-02	4.00E-02
		1 ton pickup truck		155	19	5.40E-03	7.46E-03	7.39E-02	1.99E-04	1.57E-03	6.81E-04
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	9.69E-04	1.51E-02	5.46E-03	2.57E-05	5.68E-04	5.23E-04
	Dewatering	**Concrete saw**	13 hp	8	22	6.75E-03	4.99E-03	2.58E-01	1.26E-05	3.70E-03	3.69E-03
		Crane 80'	130 hp	16	22	5.61E-03	7.04E-02	5.40E-02	1.03E-04	3.77E-03	3.46E-03
		Flatbed truck		8	22	7.88E-04	8.76E-04	1.09E-02	1.02E-05	8.01E-05	3.42E-05
		Generator	80 hp	5856	244	1.89E+00	1.63E+01	1.73E+01	3.41E-02	9.32E-01	8.58E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.12E-01	3.14E+00	1.69E+00	6.60E-03	1.15E-01	1.06E-01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.12E-01	3.14E+00	1.69E+00	6.60E-03	1.15E-01	1.06E-01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.12E-01	3.14E+00	1.69E+00	6.60E-03	1.15E-01	1.06E-01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.12E-01	3.14E+00	1.69E+00	6.60E-03	1.15E-01	1.06E-01
	Armoring	**1 ton pickup truck**		0.9333	19	3.25E-05	4.49E-05	4.45E-04	1.20E-06	9.46E-06	4.10E-06
		Excavator	430 hp	0.9333	19	4.10E-04	5.08E-03	3.52E-03	1.76E-05	1.67E-04	1.54E-04
		1 ton pickup truck		0.9333	19	3.25E-05	4.49E-05	4.45E-04	1.20E-06	9.46E-06	4.10E-06
	Compaction	**Vibratory roller**	50 hp	7.38	19	3.83E-03	1.44E-02	1.72E-02	2.37E-05	9.01E-04	8.29E-04
		Tractor/crawler/dozer	250 hp	7.38	19	4.97E-03	7.73E-02	2.80E-02	1.32E-04	2.91E-03	2.68E-03
		Water truck	5000 gal	9.225	19	1.29E-03	1.51E-02	2.42E-03	2.08E-05	3.95E-04	2.23E-04
	Maintenance	**Grader**	215 hp	340	209	1.83E-01	2.95E+00	1.03E+00	5.41E-03	9.43E-02	8.67E-02
Sand to Zuma Beach (19,000 cy) (4/1-26)	***Material Excavation***	**1 ton pickup truck**		161.5	18	5.63E-03	7.77E-03	7.70E-02	2.08E-04	1.64E-03	7.09E-04
		Front end loader	350 hp	161.5	18	1.03E-01	1.30E+00	5.42E-01	2.51E-03	4.84E-02	4.45E-02
		Front end loader	350 hp	161.5	18	1.03E-01	1.30E+00	5.42E-01	2.51E-03	4.84E-02	4.45E-02
		Water truck	3000 gal	161.5	18	2.26E-02	2.65E-01	4.23E-02	3.63E-04	6.91E-03	3.90E-03
		Excavator	400 hp	161.5	18	6.60E-02	8.18E-01	5.67E-01	2.83E-03	2.70E-02	2.48E-02
	Beach Crew	**1 ton pickup truck**		161.5	18	5.63E-03	7.77E-03	7.70E-02	2.08E-04	1.64E-03	7.09E-04
		Tractor/crawler/dozer	600 hp	161.5	18	1.86E-01	2.75E+00	1.47E+00	5.77E-03	1.01E-01	9.28E-02
		Tractor/crawler/dozer	600 hp	161.5	18	1.86E-01	2.75E+00	1.47E+00	5.77E-03	1.01E-01	9.28E-02
		Tractor/crawler/dozer	600 hp	161.5	18	1.86E-01	2.75E+00	1.47E+00	5.77E-03	1.01E-01	9.28E-02
		Tractor/crawler/dozer	600 hp	161.5	18	1.86E-01	2.75E+00	1.47E+00	5.77E-03	1.01E-01	9.28E-02
		Water truck	3000 gal	161.5	18	2.26E-02	2.65E-01	4.23E-02	3.63E-04	6.91E-03	3.90E-03
Fines to landfill (147,700 cy) (4/27-10/15)	***Material Excavation***	**1 ton pickup truck**		1066	120	3.72E-02	5.13E-02	5.08E-01	1.37E-03	1.08E-02	4.68E-03
		Front end loader	350 hp	1066	120	6.80E-01	8.59E+00	3.58E+00	1.66E-02	3.19E-01	2.94E-01
		Front end loader	350 hp	1066	120	6.80E-01	8.59E+00	3.58E+00	1.66E-02	3.19E-01	2.94E-01
		Water truck	3000 gal	1066	120	1.49E-01	1.75E+00	2.79E-01	2.40E-03	4.56E-02	2.57E-02
		Excavator	400 hp	1066	120	4.35E-01	5.40E+00	3.74E+00	1.87E-02	1.78E-01	1.64E-01

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEI
Gasoline	0.994	0.992	0.998	117 (VEHICI

Federal Holidays

New Year's Day	1/1/2020
Birthday of Martin Luther King, Jr.	1/20/2020
Washington's Birthday	2/17/2020
Memorial Day	5/25/2020
Independence Day	7/3/2020
Labor Day	9/7/2020
Columbus Day	10/12/2020
Veterans Day	11/11/2020
Thanksgiving Day	11/26/2020
Christmas Day	12/25/2020
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-proced

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year	2020
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2020 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	7.14E-01	1.04E+01	4.04E+00	1.54E-02	4.04E-01	3.71E-01
		Tractor/crawler/dozer	440 hp	90	20	8.92E-02	1.30E+00	5.05E-01	1.93E-03	5.05E-02	4.64E-02
		3/4 ton pickup truck		360	20	2.36E-02	2.13E-02	2.88E-01	4.62E-04	3.74E-03	1.66E-03
	Drilling	**Rotary drill**	475 hp	61.7333	127	3.20E-02	4.38E-01	3.09E-01	1.71E-03	1.39E-02	1.27E-02
		3/4 ton pickup truck		57.7333	127	3.79E-03	3.42E-03	4.62E-02	7.40E-05	5.99E-04	2.66E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	1.29E-02	1.16E-02	1.57E-01	2.51E-04	2.03E-03	9.04E-04
		Diamond cutting saw	50 hp	196	127	7.11E-02	4.12E-01	4.05E-01	7.42E-04	1.99E-02	1.83E-02
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	1.44E-01	2.11E+00	6.59E-01	3.03E-03	8.44E-02	7.77E-02
		3/4 ton pickup truck		239.2283	127	1.57E-02	1.42E-02	1.91E-01	3.07E-04	2.48E-03	1.10E-03
	Load/Haul	**Front end loader**	350 hp	32	127	2.04E-02	2.58E-01	1.07E-01	4.98E-04	9.59E-03	8.82E-03
		Water truck	3000 gal	14	127	1.96E-03	-	3.67E-03	3.15E-05	5.99E-04	3.38E-04
	Landfill	**Crane 260'**	375 hp	119.6141	127	7.22E-02	-	3.29E-01	1.52E-03	4.22E-02	3.88E-02
	Micro-blast	**Crane 260'**	375 hp	60	127	3.62E-02	-	1.65E-01	7.61E-04	2.12E-02	1.95E-02
		Horizontal boring drill	10 hp	55	127	3.45E-03	-	2.21E-02	5.64E-05	1.71E-03	1.58E-03
		3/4 ton pickup truck		60	127	3.94E-03	-	4.80E-02	7.69E-05	6.23E-04	2.77E-04
	Demolish spillway	**Crane 260'**	375 hp	100	127	6.04E-02	-	2.75E-01	1.27E-03	3.53E-02	3.25E-02
		Air compressor	50 hp	200	127	1.86E-01	2.41E-01	1.07E+01	7.88E-04	4.96E-03	4.95E-03
		3/4 ton pickup truck		100	127	6.57E-03	5.92E-03	8.00E-02	1.28E-04	1.04E-03	4.61E-04
					Total	**8.10E+00**	**9.26E+01**	**6.68E+01**	**1.94E-01**	**3.84E+00**	**3.46E+00**
					Daily Onsi						
Data from Alt2_EnvrAirQualityReport.pdf					**Rindge**	7	81	60	0	3	3
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	1	11	6	0	0	0
					Landfill	0	0	0	0	0	0

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year	2021
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	210	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Environmental protection measures	Biologist	3/4 ton pickup truck		1229.3333	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.148	1.214	0.746	0.005	0.038	0.035	403.250	0.013	0.000
		Front end loader	540 hp	3.696	19	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
Landscaping	*Rock from Landfill*	Loader/backhoe	75 hp	24	20	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
		Front end loader	350 hp	20	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Front end loader	49 hp	4	19	0.199	1.450	1.811	0.003	0.032	0.030	231.302	0.018	0.000
		Roller	47 hp	4	19	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Water truck	3000 gal	4	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	300 hp	4	19	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Front end loader	180 hp	4	19	0.080	1.085	0.567	0.003	0.036	0.033	270.061	0.013	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.438	1.578	92.570	0.004	1.249	1.246	148.932	0.139	0.122
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		Loader/backhoe	75 hp	0.0923	19	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
		Crane 94'	155 hp	155	19	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		1 ton pickup truck		155	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		1 ton pickup truck		155	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.070	2.268	117.560	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		Flatbed truck		8	23	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.172	1.509	1.744	0.003	0.081	0.075	294.384	0.016	0.000
Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
		Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Compaction	Vibratory roller	50 hp	17.28	19	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Tractor/crawler/dozer	250 hp	17.28	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Water truck	5000 gal	21.6	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Maintenance	Grader	215 hp	340	210	0.113	1.791	0.661	0.004	0.057	0.052	312.002	0.015	0.000
Fines to landfill (82,300 cy) (4/1-7/10)	*Material Excavation*	1 ton pickup truck		597	70	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Front end loader	350 hp	597	70	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	597	70	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	597	70	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	400 hp	597	70	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	*Material Excavation*	1 ton pickup truck		195.5	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	195.5	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	*Material Excavation*	1 ton pickup truck		585	72	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Front end loader	350 hp	585	72	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	585	72	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	585	72	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	400 hp	585	72	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year	2021
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		Tractor/crawler/dozer	440 hp	90	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		3/4 ton pickup truck		360	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Drilling	**Rotary drill**	475 hp	204.4666	126	0.049	0.613	0.500	0.003	0.021	0.019	282.166	0.006	0.000
		3/4 ton pickup truck		208.4666	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Cut with Diamond wire	**3/4 ton pickup truck**		348	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	348	126	0.306	1.918	1.917	0.004	0.082	0.076	277.562	0.028	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	418.8639	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		3/4 ton pickup truck		418.8639	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Load/Haul	**Front end loader**	350 hp	66	126	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	14	126	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Landfill	**Crane 260'**	375 hp	209.4319	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	Micro-blast	**Crane 260'**	375 hp	60	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		Horizontal boring drill	10 hp	55	126	0.295	2.329	1.909	0.005	0.146	0.135	312.570	0.033	0.000
		3/4 ton pickup truck		60	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Demolish spillway	**Crane 260'**	375 hp	100	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		Air compressor	50 hp	200	126	0.837	1.059	50.665	0.004	0.024	0.023	307.059	0.048	0.067
		3/4 ton pickup truck		100	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Fracture	**Excavator**	400 hp	540	126	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	300 hp	540	126	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	300 hp	270	126	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Tractor/crawler/dozer	440 hp	270	126	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		3/4 ton pickup truck		540	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	0.171	1.978	1.884	0.004	0.110	0.102	320.916	0.020	0.000
		Tractor/crawler/dozer	250 hp	30.4	20	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Excavator	400 hp	30.4	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	0.071	0.746	0.490	0.002	0.027	0.025	246.840	0.012	0.000
		Line Striper	23 hp	92.576	20	0.110	0.330	8.519	0.003	0.021	0.021	260.327	0.006	0.021
		Roller	70 hp	442.5143	20	0.110	1.347	1.455	0.003	0.082	0.076	222.777	0.018	0.000
		Vibratory roller	33 hp	442.5143	20	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Flatbed truck		92.576	20	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
		3/4 ton pickup truck		92.576	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2021 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		96	210	2.89E-04	2.75E-04	3.55E-03	6.45E-06	5.16E-05	2.27E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		Water truck	5000 gal	2320	210	1.79E-02	1.28E-01	3.40E-02	2.72E-04	4.72E-03	2.50E-03	5.45E+01	1.30E-04	1.23E-04	5.45E+01	4.94E+01
Environmental protection measures	Biologist	3/4 ton pickup truck		1229.3333	210	3.70E-03	3.52E-03	4.54E-02	8.26E-05	6.61E-04	2.91E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	3/4 ton pickup truck		16	19	4.82E-05	4.58E-05	5.91E-04	1.07E-06	8.60E-06	3.79E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	6.69E-06	1.00E-05	9.27E-05	2.97E-07	2.31E-06	9.92E-07	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.45E-04	3.76E-03	1.42E-03	6.85E-06	1.41E-04	1.30E-04	6.09E-01	3.71E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	Front end loader	540 hp	3.696	19	1.79E-04	2.10E-03	1.34E-03	6.49E-06	8.15E-05	7.49E-05	6.45E-01	3.06E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.27E-04	1.77E-03	7.39E-04	2.91E-06	6.99E-05	6.43E-05	2.97E-01	1.72E-05	-	2.97E-01	2.70E-01
	Chipping	Brush chipper	250 hp	3.696	19	1.50E-04	1.24E-03	7.59E-04	4.62E-06	3.87E-05	3.56E-05	4.11E-01	1.36E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	1.79E-04	2.10E-03	1.34E-03	6.49E-06	8.15E-05	7.49E-05	6.45E-01	3.06E-05	-	6.46E-01	5.86E-01
Landscaping	*Rock from Landfill*	Loader/backhoe	75 hp	24	20	1.79E-04	2.19E-03	2.54E-03	4.55E-06	1.29E-04	1.19E-04	3.88E-01	2.30E-05	-	3.88E-01	3.52E-01
		Front end loader	350 hp	20	20	6.10E-04	7.29E-03	3.44E-03	1.63E-05	2.72E-04	2.50E-04	1.66E+00	7.82E-05	-	1.66E+00	1.51E+00
		Dump truck	20cy/24 ton	20	20	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
		Dump truck	20cy/24 ton	20	20	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	4.82E-05	7.37E-04	2.79E-04	1.34E-06	2.77E-05	2.55E-05	1.20E-01	7.29E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.30E-05	3.13E-04	3.91E-04	6.46E-07	6.99E-06	6.43E-06	5.00E-02	3.88E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	9.22E-05	3.72E-04	4.49E-04	6.31E-07	2.13E-05	1.96E-05	4.88E-02	8.32E-06	-	4.90E-02	4.44E-02
		Water truck	3000 gal	4	19	3.08E-05	2.20E-04	5.86E-05	4.69E-07	8.14E-06	4.31E-06	9.39E-02	2.25E-07	2.12E-07	9.40E-02	8.53E-02
		Excavator	300 hp	4	19	5.97E-05	6.73E-04	5.47E-04	2.75E-06	2.25E-05	2.07E-05	2.80E-01	1.23E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	6.32E-05	8.61E-04	4.50E-04	2.41E-06	2.87E-05	2.64E-05	2.14E-01	1.04E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	1.45E-04	2.21E-03	8.37E-04	4.03E-06	8.32E-05	7.66E-05	3.59E-01	2.19E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	1.83E-04	1.18E-04	6.94E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.04E-05	9.14E-06	1.42E-02	1.29E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	4.65E-04	5.77E-03	4.82E-03	9.17E-06	3.08E-04	2.83E-04	8.15E-01	5.50E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	6.88E-07	8.42E-06	9.78E-06	1.75E-08	4.97E-07	4.57E-07	1.49E-03	8.84E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.14E-03	3.90E-02	3.26E-02	6.20E-05	2.08E-03	1.91E-03	5.51E+00	3.72E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	3.14E-03	3.90E-02	3.26E-02	6.20E-05	2.08E-03	1.91E-03	5.51E+00	3.72E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	4.82E-05	7.37E-04	2.79E-04	1.34E-06	2.77E-05	2.55E-05	1.20E-01	7.29E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.73E-02
		Crane 80'	130 hp	16	23	2.72E-04	3.38E-03	2.82E-03	5.37E-06	1.80E-04	1.66E-04	4.77E-01	3.22E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	3.47E-05	3.98E-05	4.78E-04	5.33E-07	4.15E-06	1.76E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	8.88E-02	7.79E-01	9.00E-01	1.78E-03	4.19E-02	3.86E-02	1.52E+02	8.02E-03	-	1.52E+02	1.38E+02
Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
	Compaction	Vibratory roller	50 hp	17.28	19	4.24E-04	1.71E-03	2.06E-03	2.90E-06	9.81E-05	9.03E-05	2.24E-01	3.82E-05	-	2.25E-01	2.04E-01
		Tractor/crawler/dozer	250 hp	17.28	19	5.78E-04	8.85E-03	3.35E-03	1.61E-05	3.33E-04	3.06E-04	1.43E+00	8.75E-05	-	1.44E+00	1.30E+00
		Water truck	5000 gal	21.6	19	1.67E-04	1.19E-03	3.16E-04	2.53E-06	4.40E-05	2.33E-05	5.07E-01	1.21E-06	1.14E-06	5.07E-01	4.60E-01
	Maintenance	Grader	215 hp	340	210	9.12E-03	1.44E-01	5.33E-02	2.83E-04	4.57E-03	4.21E-03	2.51E+01	1.25E-03	-	2.52E+01	2.28E+01
Fines to landfill (82,300 cy) (4/1-7/10)	*Material Excavation*	1 ton pickup truck		597	70	9.08E-04	1.36E-03	1.26E-02	4.02E-05	3.14E-04	1.35E-04	1.34E+01	1.33E-03	6.95E-04	1.36E+01	1.24E+01
		Front end loader	350 hp	597	70	1.82E-02	2.18E-01	1.03E-01	4.86E-04	8.12E-03	7.47E-03	4.95E+01	2.34E-03	-	4.95E+01	4.49E+01
		Front end loader	350 hp	597	70	1.82E-02	2.18E-01	1.03E-01	4.86E-04	8.12E-03	7.47E-03	4.95E+01	2.34E-03	-	4.95E+01	4.49E+01
		Water truck	3000 gal	597	70	4.60E-03	3.29E-02	8.74E-03	6.99E-05	1.22E-03	6.44E-04	1.40E+01	3.36E-05	3.16E-05	1.40E+01	1.27E+01
		Excavator	400 hp	597	70	1.19E-02	1.34E-01	1.09E-01	5.47E-04	4.48E-03	4.12E-03	5.58E+01	2.45E-03	-	5.58E+01	5.06E+01
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	*Material Excavation*	1 ton pickup truck		195.5	20	2.97E-04	4.46E-04	4.12E-03	1.32E-05	1.03E-04	4.41E-05	4.39E+00	4.36E-04	2.28E-04	4.47E+00	4.05E+00
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Water truck	3000 gal	195.5	20	1.51E-03	1.08E-02	2.86E-03	2.29E-05	3.98E-04	2.11E-04	4.59E+00	1.10E-05	1.03E-05	4.59E+00	4.17E+00
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	*Material Excavation*	1 ton pickup truck		585	72	8.89E-04	1.33E-03	1.23E-02	3.94E-05	3.07E-04	1.32E-04	1.31E+01	1.31E-03	6.81E-04	1.34E+01	1.21E+01
		Front end loader	350 hp	585	72	1.78E-02	2.13E-01	1.01E-01	4.76E-04	7.96E-03	7.32E-03	4.85E+01	2.29E-03	-	4.85E+01	4.40E+01
		Front end loader	350 hp	585	72	1.78E-02	2.13E-01	1.01E-01	4.76E-04	7.96E-03	7.32E-03	4.85E+01	2.29E-03	-	4.85E+01	4.40E+01
		Water truck	3000 gal	585	72	4.51E-03	3.22E-02	8.56E-03	6.85E-05	1.19E-03	6.31E-04	1.37E+01	3.29E-05	3.10E-05	1.37E+01	1.25E+01
		Excavator	400 hp	585	72	1.16E-02	1.31E-01	1.07E-01	5.36E-04	4.39E-03	4.04E-03	5.46E+01	2.40E-03	-	5.47E+01	4.96E+01

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2021 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	3.51E-02	4.91E-01	2.04E-01	8.05E-04	1.93E-02	1.78E-02	8.21E+01	4.77E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	4.38E-03	6.13E-02	2.55E-02	1.01E-04	2.41E-03	2.22E-03	1.03E+01	5.96E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	20	1.08E-03	1.03E-03	1.33E-02	2.42E-05	1.94E-04	8.53E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	204.4666	126	5.20E-03	6.57E-02	5.35E-02	2.96E-04	2.20E-03	2.02E-03	3.02E+01	6.60E-04	-	3.02E+01	2.74E+01
		3/4 ton pickup truck		208.4666	126	6.28E-04	5.97E-04	7.70E-03	1.40E-05	1.12E-04	4.94E-05	4.68E+00	4.65E-04	2.43E-04	4.76E+00	4.32E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		348	126	1.05E-03		1.29E-02	2.34E-05	1.87E-04	8.24E-05	7.81E+00	7.76E-04	4.05E-04	7.95E+00	7.21E+00
		Diamond cutting saw	50 hp	348	126	5.87E-03		3.68E-02	6.88E-05	1.58E-03	1.46E-03	5.32E+00	5.30E-04	-	5.33E+00	4.84E+00
	Lift/Load blocks	**Crane 260'**	375 hp	418.8639	126	1.22E-02		5.88E-02	2.77E-04	6.91E-03	6.36E-03	2.83E+01	1.47E-03	-	2.83E+01	2.57E+01
		3/4 ton pickup truck		418.8639	126	1.26E-03		1.55E-02	2.81E-05	2.25E-04	9.92E-05	9.40E+00	9.35E-04	4.88E-04	9.57E+00	8.68E+00
	Load/Haul	**Front end loader**	350 hp	66	126	2.01E-03		1.14E-02	5.37E-05	8.98E-04	8.26E-04	5.47E+00	2.58E-04	-	5.48E+00	4.97E+00
		Water truck	3000 gal	14	126	1.08E-04		2.05E-04	1.64E-06	2.85E-05	1.51E-05	3.29E-01	7.87E-07	7.41E-07	3.29E-01	2.98E-01
	Landfill	**Crane 260'**	375 hp	209.4319	126	6.09E-03	8.59E-02	2.94E-02	1.39E-04	3.45E-03	3.18E-03	1.41E+01	7.33E-04	-	1.41E+01	1.28E+01
	Micro-blast	**Crane 260'**	375 hp	60	126	1.74E-03	2.46E-02	8.42E-03	3.97E-05	9.90E-04	9.11E-04	4.05E+00	2.10E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	126	1.79E-04	1.41E-03	1.16E-03	2.95E-06	8.86E-05	8.15E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	126	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	126	2.91E-03	4.10E-02	1.40E-02	6.62E-05	1.65E-03	1.52E-03	6.75E+00	3.50E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	126	9.23E-03	1.17E-02	5.58E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	5.25E-04	7.40E-04	3.63E+00	3.29E+00
		3/4 ton pickup truck		100	126	3.01E-04	2.86E-04	3.70E-03	6.72E-06	5.38E-05	2.37E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
	Fracture	**Excavator**	400 hp	540	126	1.07E-02	1.21E-01	9.84E-02	4.95E-04	4.05E-03	3.73E-03	5.04E+01	2.21E-03	-	5.05E+01	4.58E+01
		Excavator	300 hp	540	126	8.06E-03	9.08E-02	7.38E-02	3.71E-04	3.04E-03	2.80E-03	3.78E+01	1.66E-03	-	3.79E+01	3.44E+01
		Excavator	300 hp	270	126	4.03E-03	4.54E-02	3.69E-02	1.86E-04	1.52E-03	1.40E-03	1.89E+01	8.30E-04	-	1.89E+01	1.72E+01
		Tractor/crawler/dozer	440 hp	270	126	1.31E-02	1.84E-01	7.66E-02	3.02E-04	7.24E-03	6.66E-03	3.08E+01	1.79E-03	-	3.08E+01	2.79E+01
		3/4 ton pickup truck		540	126	1.63E-03	1.55E-03	2.00E-02	3.63E-05	2.90E-04	1.28E-04	1.21E+01	1.20E-03	6.29E-04	1.23E+01	1.12E+01
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	7.72E-04	8.95E-03	8.52E-03	1.63E-05	4.99E-04	4.59E-04	1.45E+00	9.02E-05	-	1.45E+00	1.32E+00
		Tractor/crawler/dozer	250 hp	30.4	20	1.02E-03	1.56E-02	5.89E-03	2.84E-05	5.86E-04	5.39E-04	2.52E+00	1.54E-04	-	2.53E+00	2.29E+00
		Excavator	400 hp	30.4	20	6.05E-04	6.82E-03	5.54E-03	2.79E-05	2.28E-04	2.10E-04	2.84E+00	1.25E-04	-	2.84E+00	2.58E+00
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	1.04E-02	1.09E-01	7.17E-02	3.55E-04	4.00E-03	3.68E-03	3.61E+01	1.69E-03	-	3.62E+01	3.28E+01
		Line Striper	23 hp	92.576	20	2.59E-04	7.76E-04	2.00E-02	6.07E-06	4.87E-05	4.86E-05	6.11E-01	1.47E-05	5.01E-05	6.27E-01	5.69E-01
		Roller	70 hp	442.5143	20	3.74E-03	4.60E-02	4.97E-02	8.92E-05	2.81E-03	2.59E-03	7.61E+00	6.15E-04	-	7.62E+00	6.91E+00
		Vibratory roller	33 hp	442.5143	20	7.16E-03	2.89E-02	3.48E-02	4.90E-05	1.66E-03	1.53E-03	3.79E+00	6.46E-04	-	3.80E+00	3.45E+00
		Flatbed truck		92.576	20	4.02E-04	4.61E-04	5.53E-03	6.16E-06	4.81E-05	2.03E-05	2.08E+00	4.70E-04	2.18E-04	2.16E+00	1.96E+00
		3/4 ton pickup truck		92.576	20	2.79E-04	2.65E-04	3.42E-03	6.22E-06	4.98E-05	2.19E-05	2.08E+00	2.07E-04	1.08E-04	2.12E+00	1.92E+00
					Total	**4.73E-01**	**4.89E+00**	**4.02E+00**	**1.26E-02**	**2.08E-01**	**1.87E-01**	**1.37E+03**	**7.11E-02**	**7.27E-03**	**1.37E+03**	**1.24E+03**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year	2021
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	210	5.50E-03	5.23E-03	6.76E-02	1.23E-04	9.83E-04	4.33E-04
Dust Control		Water truck	5000 gal	2320	210	3.41E-01	2.43E+00	6.47E-01	5.18E-03	9.00E-02	4.76E-02
Environmental protection measures	Biologist	3/4 ton pickup truck		1229.3333	210	7.05E-02	6.70E-02	8.65E-01	1.57E-03	1.26E-02	5.55E-03
	Fish relocation	3/4 ton pickup truck		16	19	9.17E-04	8.72E-04	1.13E-02	2.05E-05	1.64E-04	7.22E-05
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.27E-04	1.91E-04	1.76E-03	5.65E-06	4.40E-05	1.89E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	4.67E-03	7.15E-02	2.71E-02	1.30E-04	2.69E-03	2.48E-03
		Chain saw		7.3335	19	9.43E-03	1.48E-04	1.71E-02	1.90E-06	2.68E-05	2.68E-05
	Brush Piling	Front end loader	540 hp	3.696	19	3.40E-03	4.00E-02	2.55E-02	1.24E-04	1.55E-03	1.43E-03
		Tractor/crawler/dozer	310 hp	3.696	19	2.41E-03	3.38E-02	1.41E-02	5.55E-05	1.33E-03	1.22E-03
	Chipping	Brush chipper	250 hp	3.696	19	2.86E-03	2.36E-02	1.45E-02	8.80E-05	7.36E-04	6.77E-04
		Front end loader	540 hp	3.696	19	3.40E-03	4.00E-02	2.55E-02	1.24E-04	1.55E-03	1.43E-03
Landscaping	*Rock from Landfill*	Loader/backhoe	75 hp	24	20	3.41E-03	4.17E-02	4.84E-02	8.66E-05	2.46E-03	2.26E-03
		Front end loader	350 hp	20	20	1.16E-02	1.39E-01	6.55E-02	3.10E-04	5.18E-03	4.77E-03
		Dump truck	20cy/24 ton	20	20	2.94E-03	2.10E-02	5.58E-03	4.46E-05	7.75E-04	4.11E-04
		Dump truck	20cy/24 ton	20	20	2.94E-03	2.10E-02	5.58E-03	4.46E-05	7.75E-04	4.11E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	9.18E-04	1.40E-02	5.32E-03	2.56E-05	5.28E-04	4.86E-04
		Front end loader	49 hp	4	19	8.19E-04	5.97E-03	7.45E-03	1.23E-05	1.33E-04	1.23E-04
		Roller	47 hp	4	19	1.76E-03	7.08E-03	8.55E-03	1.20E-05	4.07E-04	3.74E-04
		Water truck	3000 gal	4	19	5.87E-04	4.19E-03	1.12E-03	8.93E-06	1.55E-04	8.21E-05
		Excavator	300 hp	4	19	1.14E-03	1.28E-02	1.04E-02	5.24E-05	4.29E-04	3.95E-04
		Front end loader	180 hp	4	19	1.20E-03	1.64E-02	8.57E-03	4.59E-05	5.47E-04	5.03E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	2.75E-03	4.21E-02	1.60E-02	7.68E-05	1.59E-03	1.46E-03
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	3.48E-03	2.25E-03	1.32E-01	5.39E-06	1.78E-03	1.78E-03
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	8.85E-03	1.10E-01	9.18E-02	1.75E-04	5.86E-03	5.39E-03
		Loader/backhoe	75 hp	0.0923	19	1.31E-05	1.60E-04	1.86E-04	3.33E-07	9.46E-06	8.70E-06
		Crane 94'	155 hp	155	19	5.99E-02	7.43E-01	6.21E-01	1.18E-03	3.96E-02	3.65E-02
		1 ton pickup truck		155	19	4.49E-03	6.73E-03	6.22E-02	1.99E-04	1.55E-03	6.66E-04
		Crane 94'	155 hp	155	20	5.99E-02	7.43E-01	6.21E-01	1.18E-03	3.96E-02	3.65E-02
		1 ton pickup truck		155	20	4.49E-03	6.73E-03	6.22E-02	1.99E-04	1.55E-03	6.66E-04
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	9.18E-04	1.40E-02	5.32E-03	2.56E-05	5.28E-04	4.86E-04
	Dewatering	Concrete saw	13 hp	8	23	6.70E-03	4.95E-03	2.57E-01	1.25E-05	3.68E-03	3.67E-03
		Crane 80'	130 hp	16	23	5.18E-03	6.43E-02	5.37E-02	1.02E-04	3.43E-03	3.16E-03
		Flatbed truck		8	23	6.61E-04	7.59E-04	9.11E-03	1.01E-05	7.91E-05	3.35E-05
		Generator	80 hp	5856	244	1.69E+00	1.48E+01	1.72E+01	3.40E-02	7.98E-01	7.35E-01
Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.97E-01	2.82E+00	1.62E+00	6.57E-03	1.04E-01	9.52E-02
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.97E-01	2.82E+00	1.62E+00	6.57E-03	1.04E-01	9.52E-02
		Tractor/crawler/dozer	600 hp	184.6154	19	1.97E-01	2.82E+00	1.62E+00	6.57E-03	1.04E-01	9.52E-02
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.97E-01	2.82E+00	1.62E+00	6.57E-03	1.04E-01	9.52E-02
	Compaction	Vibratory roller	50 hp	17.28	19	8.07E-03	3.25E-02	3.93E-02	5.52E-05	1.87E-03	1.72E-03
		Tractor/crawler/dozer	250 hp	17.28	19	1.10E-02	1.69E-01	6.38E-02	3.07E-04	6.34E-03	5.83E-03
		Water truck	5000 gal	21.6	19	3.17E-03	2.26E-02	6.02E-03	4.82E-05	8.37E-04	4.44E-04
	Maintenance	Grader	215 hp	340	210	1.74E-01	2.75E+00	1.01E+00	5.39E-03	8.71E-02	8.01E-02
Fines to landfill (82,300 cy) (4/1-7/10)	*Material Excavation*	1 ton pickup truck		597	70	1.73E-02	2.59E-02	2.39E-01	7.66E-04	5.97E-03	2.56E-03
		Front end loader	350 hp	597	70	3.47E-01	4.14E+00	1.96E+00	9.25E-03	1.55E-01	1.42E-01
		Front end loader	350 hp	597	70	3.47E-01	4.14E+00	1.96E+00	9.25E-03	1.55E-01	1.42E-01
		Water truck	3000 gal	597	70	8.77E-02	6.26E-01	1.66E-01	1.33E-03	2.31E-02	1.23E-02
		Excavator	400 hp	597	70	2.26E-01	2.55E+00	2.07E+00	1.04E-02	8.53E-02	7.85E-02
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	*Material Excavation*	1 ton pickup truck		195.5	20	5.66E-03	8.49E-03	7.84E-02	2.51E-04	1.96E-03	8.40E-04
		Front end loader	350 hp	195.5	20	1.14E-01	1.36E+00	6.41E-01	3.03E-03	5.06E-02	4.66E-02
		Front end loader	350 hp	195.5	20	1.14E-01	1.36E+00	6.41E-01	3.03E-03	5.06E-02	4.66E-02
		Front end loader	350 hp	195.5	20	1.14E-01	1.36E+00	6.41E-01	3.03E-03	5.06E-02	4.66E-02
		Front end loader	350 hp	195.5	20	1.14E-01	1.36E+00	6.41E-01	3.03E-03	5.06E-02	4.66E-02
		Water truck	3000 gal	195.5	20	2.87E-02	2.05E-01	5.45E-02	4.36E-04	7.58E-03	4.01E-03
		Excavator	400 hp	195.5	20	7.41E-02	8.35E-01	6.79E-01	3.41E-03	2.79E-02	2.57E-02
		Excavator	400 hp	195.5	20	7.41E-02	8.35E-01	6.79E-01	3.41E-03	2.79E-02	2.57E-02
		Excavator	400 hp	195.5	20	7.41E-02	8.35E-01	6.79E-01	3.41E-03	2.79E-02	2.57E-02
		Excavator	400 hp	195.5	20	7.41E-02	8.35E-01	6.79E-01	3.41E-03	2.79E-02	2.57E-02
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	*Material Excavation*	1 ton pickup truck		585	72	1.69E-02	2.54E-02	2.35E-01	7.51E-04	5.85E-03	2.51E-03
		Front end loader	350 hp	585	72	3.40E-01	4.06E+00	1.92E+00	9.06E-03	1.52E-01	1.39E-01
		Front end loader	350 hp	585	72	3.40E-01	4.06E+00	1.92E+00	9.06E-03	1.52E-01	1.39E-01
		Water truck	3000 gal	585	72	8.59E-02	6.13E-01	1.63E-01	1.31E-03	2.27E-02	1.20E-02
		Excavator	400 hp	585	72	2.22E-01	2.50E+00	2.03E+00	1.02E-02	8.36E-02	7.69E-02

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

- Data from OFFROAD2011 (g/hp-hr)
- Data from OFFROAD2007 (g/hp-hr)
- Data from EMFAC2011 (g/hr)
- Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEI
Gasoline	0.994	0.992	0.998	117 (VEHICI

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	6.68E-01	9.34E+00	3.89E+00	1.53E-02	3.68E-01	3.38E-01
		Tractor/crawler/dozer	440 hp	90	20	8.35E-02	1.17E+00	4.86E-01	1.92E-03	4.60E-02	4.23E-02
		3/4 ton pickup truck		360	20	2.06E-02	1.96E-02	2.53E-01	4.61E-04	3.69E-03	1.62E-03
	Drilling	**Rotary drill**	475 hp	204.4666	126	9.91E-02	1.25E+00	1.02E+00	5.65E-03	4.19E-02	3.85E-02
		3/4 ton pickup truck		208.4666	126	1.20E-02	1.14E-02	1.47E-01	2.67E-04	2.14E-03	9.41E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		348	126	2.00E-02	-	2.45E-01	4.45E-04	3.56E-03	1.57E-03
		Diamond cutting saw	50 hp	348	126	1.12E-01	-	7.00E-01	1.31E-03	3.01E-02	2.77E-02
	Lift/Load blocks	**Crane 260'**	375 hp	418.8639	126	2.32E-01	-	1.12E+00	5.28E-03	1.32E-01	1.21E-01
		3/4 ton pickup truck		418.8639	126	2.40E-02	-	2.95E-01	5.36E-04	4.29E-03	1.89E-03
	Load/Haul	**Front end loader**	350 hp	66	126	3.83E-02	-	2.16E-01	1.02E-03	1.71E-02	1.57E-02
		Water truck	3000 gal	14	126	2.06E-03	-	3.90E-03	3.12E-05	5.43E-04	2.87E-04
	Landfill	**Crane 260'**	375 hp	209.4319	126	1.16E-01	1.64E+00	5.60E-01	2.64E-03	6.58E-02	6.05E-02
	Micro-blast	**Crane 260'**	375 hp	60	126	3.32E-02	4.69E-01	1.60E-01	7.57E-04	1.89E-02	1.73E-02
		Horizontal boring drill	10 hp	55	126	3.41E-03	2.69E-02	2.20E-02	5.62E-05	1.69E-03	1.55E-03
		3/4 ton pickup truck		60	126	3.44E-03	3.27E-03	4.22E-02	7.68E-05	6.15E-04	2.71E-04
	Demolish spillway	**Crane 260'**	375 hp	100	126	5.54E-02	7.81E-01	2.67E-01	1.26E-03	3.14E-02	2.89E-02
		Air compressor	50 hp	200	126	1.76E-01	2.22E-01	1.06E+01	7.84E-04	4.94E-03	4.93E-03
		3/4 ton pickup truck		100	126	5.73E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Fracture	**Excavator**	400 hp	540	126	2.05E-01	2.31E+00	1.88E+00	9.43E-03	7.72E-02	7.10E-02
		Excavator	300 hp	540	126	1.53E-01	1.73E+00	1.41E+00	7.07E-03	5.79E-02	5.33E-02
		Excavator	300 hp	270	126	7.67E-02	8.65E-01	7.03E-01	3.54E-03	2.89E-02	2.66E-02
		Tractor/crawler/dozer	440 hp	270	126	2.50E-01	3.50E+00	1.46E+00	5.75E-03	1.38E-01	1.27E-01
		3/4 ton pickup truck		540	126	3.10E-02	2.94E-02	3.80E-01	6.91E-04	5.53E-03	2.44E-03
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	1.47E-02	1.70E-01	1.62E-01	3.11E-04	9.51E-03	8.75E-03
		Tractor/crawler/dozer	250 hp	30.4	20	1.94E-02	2.97E-01	1.12E-01	5.41E-04	1.12E-02	1.03E-02
		Excavator	400 hp	30.4	20	1.15E-02	1.30E-01	1.06E-01	5.31E-04	4.35E-03	4.00E-03
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	1.98E-01	2.08E+00	1.37E+00	6.75E-03	7.63E-02	7.02E-02
		Line Striper	23 hp	92.576	20	4.93E-03	1.48E-02	3.81E-01	1.16E-04	9.27E-04	9.25E-04
		Roller	70 hp	442.5143	20	7.13E-02	8.76E-01	9.47E-01	1.70E-03	5.35E-02	4.93E-02
		Vibratory roller	33 hp	442.5143	20	1.36E-01	5.50E-01	6.64E-01	9.33E-04	3.16E-02	2.91E-02
		Flatbed truck		92.576	20	7.65E-03	8.78E-03	1.05E-01	1.17E-04	9.15E-04	3.87E-04
		3/4 ton pickup truck		92.576	20	5.31E-03	5.05E-03	6.52E-02	1.18E-04	9.48E-04	4.18E-04
					Total	**9.01E+00**	**9.31E+01**	**7.65E+01**	**2.41E-01**	**3.96E+00**	**3.56E+00**
					Daily Onsi						
					Rindge	9	91	76	0	4	4
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	2	1	0	0	0

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Emission Factors - 2016 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Emission Factors - 2017 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	11.1	36.9	52	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	2320	535.4	1,784.6	52	210	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
Environmental protection measures		3/4 ton Pickup truck		1213	0.0	1,213.0	0	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Clear & Grub - Sheriff's Overlook (Staging Area)	*Cutting*	1 ton pickup truck		0.4591	0.5	0.0	52	210	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		0.7652	0.8	0.0	52	0	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.3857	0.4	0.0	52	0	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	Brush chipper	250 hp	0.3857	0.4	0.0	52	0	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
	Gravel	Vibratory roller	85 hp	16	16.0	0.0	52	0	0.195	2.178	1.500	0.003	0.160	0.148	222.777	0.027	0.000	0.180	2.030	1.489	0.003	0.147	0.135	222.777	0.025	0.000
		Tractor/crawler/dozer	310 hp	3.7481	3.7	0.0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
	Guard Railing	Flatbed truck		8.75	8.8	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.341	2.469	132.341	0.006	1.896	1.892	226.175	0.190	0.196	3.339	2.468	132.332	0.006	1.896	1.892	226.176	0.190	0.196
	Demo Existing Gate	Loader/backhoe	75 hp	4.2	4.2	0.0	52	0	0.164	1.895	1.307	0.002	0.146	0.134	195.356	0.018	0.000	0.152	1.772	1.300	0.002	0.133	0.123	195.356	0.016	0.000
		Flatbed truck		4	4.0	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
Clear & Grub - Sediment Removal	*Clear Brush*	1 ton pickup truck		0.3026	0.0	0.3	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	94 hp	0.3026	0.0	0.3	0	42	0.150	1.798	1.915	0.003	0.131	0.121	278.045	0.028	0.000	0.139	1.673	1.904	0.003	0.118	0.109	278.045	0.026	0.000
		Front end loader	210 hp	0.3026	0.0	0.3	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
		Dump truck	10cy	0.3026	0.0	0.3	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	0.3026	0.0	0.3	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	0.3026	0.0	0.3	0	42	0.105	1.115	0.439	0.002	0.035	0.033	224.028	0.009	0.000	0.098	0.993	0.427	0.002	0.032	0.029	224.028	0.009	0.000
		Front end loader	210 hp	0.1392	0.0	0.1	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	Cutting	1 ton pickup truck		8.625	0.0	8.6	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		0.2875	0.0	0.3	0	42	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.1449	0.0	0.1	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	0.1449	0.0	0.1	0	42	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	Brush chipper	250 hp	0.1449	0.0	0.1	0	42	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	0.1449	0.0	0.1	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
Clear & Grub - Access Rd	*Clear Brush*	1 ton pickup truck		5.1316	0.0	5.1	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	94 hp	5.1316	0.0	5.1	0	42	0.150	1.798	1.915	0.003	0.131	0.121	278.045	0.028	0.000	0.139	1.673	1.904	0.003	0.118	0.109	278.045	0.026	0.000
		Front end loader	210 hp	5.1316	0.0	5.1	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
		Dump truck	10cy	5.1316	0.0	5.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	5.1316	0.0	5.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	5.1316	0.0	5.1	0	42	0.105	1.115	0.439	0.002	0.035	0.033	224.028	0.009	0.000	0.098	0.993	0.427	0.002	0.032	0.029	224.028	0.009	0.000
		Front end loader	210 hp	2.3595	0.0	2.4	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	Cutting	1 ton pickup truck		2.925	0.0	2.9	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	4.8751	0.0	4.9	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Tractor/crawler/dozer	250 hp	4.875	0.0	4.9	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		4.8751	0.0	4.9	0	42	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	2.457	0.0	2.5	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	2.457	0.0	2.5	0	42	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	Brush chipper	250 hp	2.457	0.0	2.5	0	42	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	2.457	0.0	2.5	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	0.0	2.0	0	106	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Front end loader	49 hp	4	0.0	4.0	0	106	0.293	1.770	1.893	0.003	0.086	0.079	231.302	0.026	0.000	0.261	1.691	1.864	0.003	0.071	0.066	231.302	0.024	0.000
		Roller	47 hp	4	0.0	4.0	0	106	0.723	2.105	2.430	0.003	0.173	0.160	235.507	0.065	0.000	0.660	2.035	2.367	0.003	0.158	0.145	235.507	0.060	0.000
		Water truck	3000 gal	4	0.0	4.0	0	106	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	300 hp	4	0.0	4.0	0	106	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		Front end loader	180 hp	4	0.0	4.0	0	106	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	0.0	6.0	0	106	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	16	0.0	16.0	0	106	2.485	1.571	93.010	0.004	1.249	1.246	148.932	0.142	0.122	2.467	1.576	92.812	0.004	1.249	1.246	148.932	0.141	0.122
	36" Diversion Pipe	Crane 80'	130 hp	273	0.0	273.0	0	106	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	106	0.164	1.895	1.307	0.002	0.146	0.134	195.356	0.018	0.000	0.152	1.772	1.300	0.002	0.133	0.123	195.356	0.016	0.000
		Crane 94'	155 hp	155	0.0	155.0	0	20	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		1 ton pickup truck		155	0.0	155.0	0	20	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	0.0	2.0	0	20	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
	Dewatering	Concrete saw	13 hp	8	0.0	8.0	0	171	3.075	2.272	117.599	0.006	1.685	1.681	200.981	0.175	0.188	3.075	2.272	117.591	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	0.0	16.0	0	171	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		Flatbed truck		8	0.0	8.0	0	171	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Generator	80 hp	6528	0.0	6,528.0	0	272	0.307	2.304	1.800	0.003	0.163	0.150	294.384	0.028	0.000	0.274	2.126	1.786	0.003	0.144	0.132	294.384	0.025	0.000
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	2.138	1.453	103.697	0.005	0.092	0.092	175.214	0.122	0.147	2.040	1.414	103.256	0.005	0.092	0.092	175.214	0.116	0.145
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	120.7692	120.8	0.0	52	0	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Excavate	Tractor/crawler/dozer	600 hp	315.3846	0.0	315.4	0	190	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Push	Tractor/crawler/dozer	600 hp	315.3846	0.0	315.4	0	190	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Push	Tractor/crawler/dozer	600 hp	315.3846	0.0	315.4	0	190	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Build road	Tractor/crawler/dozer	600 hp	338.4616	0.0	338.5	0	190	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Cut	Tractor/crawler/dozer	600 hp	11.2308	0.0	11.2	0	190	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Fine Grading	Grader	135 hp	8.889	0.0	8.9	0	190	0.273	3.372	1.893	0.004	0.189	0.174	320.916	0.028	0.000	0.256	3.132	1.891	0.004	0.176	0.162	320.916	0.027	0.000
		Asphalt distributor	3000 gal	8	0.0	8.0	0	190	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Vibratory roller	85 hp	29.2583	0.0	29.3	0	190	0.195	2.178	1.500	0.003	0.160	0.148	222.777	0.027	0.000	0.180	2.030	1.489	0.003	0.147	0.135	222.777	0.025	0.000
		Tractor/crawler/dozer	310 hp	12.489	0.0	12.5	0	190	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Armoring	1 ton pickup truck		4.2667	0.0	4.3	0	190	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	430 hp	4.2667	0.0	4.3	0	190	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		1 ton pickup truck		4.2667	0.0	4.3	0	190	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Maintenance	Grader	215 hp	340	0.0	340.0	0	191	0.135	2.314	0.714	0.004	0.075	0.069	312.002	0.020	0.000	0.134	2.258	0.697	0.004	0.074	0.068	312.002	0.019	0.000

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year	2016
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Emission Factors - 2016 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Emission Factors - 2017 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Excavation/Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	0.0	6.8	0	41	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	430 hp	4.445	0.0	4.4	0	41	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	0.0	3.2	0	41	0.171	3.216	1.011	0.003	0.095	0.087	298.249	0.024	0.000	0.172	3.230	0.960	0.003	0.096	0.088	298.249	0.023	0.000
	Drilling	**Rotary drill**	475 hp	7.3333	0.0	7.3	0	41	0.071	1.261	0.499	0.003	0.039	0.036	282.166	0.008	0.000	0.069	1.190	0.500	0.003	0.036	0.033	282.166	0.008	0.000
		3/4 ton Pickup truck		7.3333	0.0	7.3	0	41	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	0.0	48.0	0	41	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	0.0	48.0	0	41	0.571	2.295	2.169	0.004	0.158	0.145	277.562	0.052	0.000	0.506	2.214	2.108	0.004	0.141	0.130	277.562	0.046	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	0.0	60.0	0	41	0.105	1.627	0.402	0.002	0.067	0.062	163.241	0.011	0.000	0.098	1.507	0.385	0.002	0.061	0.056	163.241	0.010	0.000
		3/4 ton Pickup truck		60.0214	0.0	60.0	0	41	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
	Landfill	**Crane 260'**	375 hp	30.0107	0.0	30.0	0	41	0.105	1.627	0.402	0.002	0.067	0.062	163.241	0.011	0.000	0.098	1.507	0.385	0.002	0.061	0.056	163.241	0.010	0.000
	FloodWall	**Crane 50'**	263 hp	1240	0.0	1,240.0	0	190	0.105	1.627	0.402	0.002	0.067	0.062	163.241	0.011	0.000	0.098	1.507	0.385	0.002	0.061	0.056	163.241	0.010	0.000
		Pile hammer driver	325 hp	1240	0.0	1,240.0	0	190	0.071	1.261	0.499	0.003	0.039	0.036	282.166	0.008	0.000	0.069	1.190	0.500	0.003	0.036	0.033	282.166	0.008	0.000
		Generator	7.5 hp	636.7029	0.0	636.7	0	190	2.138	1.453	103.697	0.005	0.092	0.092	175.214	0.122	0.147	2.040	1.414	103.256	0.005	0.092	0.092	175.214	0.116	0.145
		Concrete pump		394.214	0.0	394.2	0	190	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048

Total

Daily Onsite Emissions (lb/day)

Rindge

Surfrider

Topanga

Zuma

Landfill

Floodwall

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Annual Emissions - 2016 (tons per year) GWP 1 21 310 VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr	Annual Emissions - 2017 (tons per year) 1 21 310 VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	11.1	36.9	52	210	6.15E-05	4.76E-05	7.35E-04	7.49E-07	6.26E-06	2.91E-06	2.49E-01	2.47E-05	1.29E-05	2.53E-01	2.30E-01	1.85E-04	1.47E-04	2.21E-03	2.49E-06	2.07E-05	9.47E-06	8.29E-01	8.24E-05	4.30E-05	8.44E-01	7.65E-01
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	210	4.57E-03	7.40E-02	8.21E-03	6.36E-05	1.63E-03	1.08E-03	1.27E+01	3.01E-05	2.83E-05	1.27E+01	1.15E+01	1.37E-02	2.25E-01	2.51E-02	2.12E-04	4.72E-03	2.93E-03	4.23E+01	1.00E-04	9.44E-05	4.24E+01	3.84E+01
Environmental protection measures		**3/4 ton Pickup truck**		1213	0.0	1,213.0	0	210	-	-	-	-	-	-	-	-	-	-	-	6.06E-03	4.82E-03	7.27E-02	8.19E-05	6.78E-04	3.11E-04	2.72E+01	2.71E-03	1.41E-03	2.77E+01	2.51E+01
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	210	1.81E-06	1.79E-06	2.43E-05	3.11E-08	2.55E-07	1.16E-07	1.03E-02	1.02E-06	5.34E-07	1.05E-02	9.52E-03	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	3.35E-05	5.47E-04	1.70E-04	7.15E-07	2.11E-05	1.94E-05	6.35E-02	5.16E-06	-	6.36E-02	5.77E-02	-	-	-	-	-	-	-	-	-	-	-
		Chain saw		0.7652	0.8	0.0	52	0	5.17E-05	8.09E-07	9.34E-05	1.04E-08	1.47E-07	1.47E-07	2.53E-04	3.21E-06	2.77E-07	4.06E-04	3.68E-04	-	-	-	-	-	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	2.56E-05	3.47E-04	1.59E-04	6.77E-07	1.36E-05	1.25E-05	6.74E-02	4.11E-06	-	6.74E-02	6.12E-02	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	1.86E-05	2.98E-04	9.44E-05	3.04E-07	1.16E-05	1.06E-05	3.10E-02	2.35E-06	-	3.10E-02	2.81E-02	-	-	-	-	-	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	2.17E-05	2.41E-04	8.51E-05	4.82E-07	7.26E-06	6.68E-06	4.29E-02	1.96E-06	-	4.29E-02	3.89E-02	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	2.56E-05	3.47E-04	1.59E-04	6.77E-07	1.36E-05	1.25E-05	6.74E-02	4.11E-06	-	6.74E-02	6.12E-02	-	-	-	-	-	-	-	-	-	-	-
	Gravel	**Vibratory roller**	85 hp	16	16.0	0.0	52	0	2.92E-04	3.27E-03	2.25E-03	3.92E-06	2.40E-04	2.21E-04	3.34E-01	4.06E-05	-	3.35E-01	3.04E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.7481	3.7	0.0	52	0	1.81E-04	2.90E-03	9.17E-04	2.95E-06	1.12E-04	1.03E-04	3.01E-01	2.29E-05	-	3.01E-01	2.73E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	5.58E-05	8.95E-04	2.83E-04	9.11E-07	3.47E-05	3.19E-05	9.29E-02	7.05E-06	-	9.30E-02	8.44E-02	-	-	-	-	-	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	6.92E-06	1.12E-04	1.24E-05	9.62E-08	2.47E-06	1.63E-06	1.93E-02	4.56E-08	4.29E-08	1.93E-02	1.75E-02	-	-	-	-	-	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	8.91E-05	8.72E-05	1.26E-03	5.89E-07	4.81E-06	2.16E-06	1.96E-01	4.44E-05	2.06E-05	2.04E-01	1.85E-01	-	-	-	-	-	-	-	-	-	-	-
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.22E-04	2.38E-04	1.28E-02	6.22E-07	1.83E-04	1.83E-04	2.18E-02	1.84E-05	1.89E-05	2.81E-02	2.55E-02	-	-	-	-	-	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	5.69E-05	6.58E-04	4.54E-04	7.96E-07	5.07E-05	4.66E-05	6.78E-02	6.20E-06	-	6.80E-02	6.17E-02	-	-	-	-	-	-	-	-	-	-	-
		Flatbed truck		4	4.0	0.0	52	0	4.07E-05	3.99E-05	5.76E-04	2.69E-07	2.20E-06	9.87E-07	8.98E-02	2.03E-05	9.41E-06	9.31E-02	8.45E-02	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub - Sediment Removal	***Clear Brush***	**1 ton pickup truck**		0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	9.93E-07	1.06E-06	1.33E-05	2.05E-08	1.66E-07	7.45E-08	6.79E-03	6.75E-07	3.52E-07	6.91E-03	6.27E-03
		Excavator	94 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	4.35E-06	5.24E-05	5.97E-05	1.02E-07	3.72E-06	3.42E-06	8.72E-03	8.12E-07	-	8.73E-03	7.92E-03
		Front end loader	210 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	7.81E-06	1.20E-04	4.18E-05	2.13E-07	4.10E-06	3.78E-06	1.89E-02	1.15E-06	-	1.89E-02	1.72E-02
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	2.33E-06	3.82E-05	4.25E-06	3.59E-08	8.01E-07	4.97E-07	7.18E-03	1.70E-08	1.60E-08	7.18E-03	6.52E-03
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	2.33E-06	3.82E-05	4.25E-06	3.59E-08	8.01E-07	4.97E-07	7.18E-03	1.70E-08	1.60E-08	7.18E-03	6.52E-03
		Brush chipper	275 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	9.01E-06	9.11E-05	3.92E-05	2.02E-07	2.93E-06	2.69E-06	2.05E-02	8.13E-07	-	2.06E-02	1.87E-02
		Front end loader	210 hp	0.1392	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.59E-06	5.54E-05	1.92E-05	9.79E-08	1.89E-06	1.74E-06	8.70E-03	5.27E-07	-	8.71E-03	7.90E-03
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	-	-	-	-	-	-	-	-	-	-	-	2.83E-05	3.01E-05	3.80E-04	5.85E-07	4.73E-06	2.12E-06	1.94E-01	1.92E-05	1.00E-05	1.97E-01	1.79E-01
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	1.21E-05	1.96E-04	6.19E-05	2.68E-07	7.47E-06	6.87E-06	2.39E-02	1.83E-06	-	2.39E-02	2.17E-02
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	1.21E-05	1.96E-04	6.19E-05	2.68E-07	7.47E-06	6.87E-06	2.39E-02	1.83E-06	-	2.39E-02	2.17E-02
		Chain saw		0.2875	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	1.94E-05	3.04E-07	3.51E-05	3.91E-09	5.52E-08	5.51E-08	9.49E-05	1.21E-06	1.04E-07	1.53E-04	1.38E-04
	Brush Piling	**Front end loader**	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	9.47E-06	1.26E-04	5.77E-05	2.54E-07	4.99E-06	4.59E-06	2.53E-02	1.47E-06	-	2.53E-02	2.30E-02
		Tractor/crawler/dozer	310 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	6.75E-06	1.07E-04	3.38E-05	1.14E-07	4.13E-06	3.80E-06	1.16E-02	8.38E-07	-	1.17E-02	1.06E-02
	Chipping	**Brush chipper**	250 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	7.59E-06	8.05E-05	3.14E-05	1.81E-07	2.44E-06	2.24E-06	1.61E-02	6.85E-07	-	1.61E-02	1.46E-02
		Front end loader	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	9.47E-06	1.26E-04	5.77E-05	2.54E-07	4.99E-06	4.59E-06	2.53E-02	1.47E-06	-	2.53E-02	2.30E-02
Clear & Grub - Access Rd	***Clear Brush***	**1 ton pickup truck**		5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.68E-05	1.79E-05	2.26E-04	3.48E-07	2.81E-06	1.26E-06	1.15E-01	1.14E-05	5.97E-06	1.17E-01	1.06E-01
		Excavator	94 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	7.38E-05	8.89E-04	1.01E-03	1.73E-06	6.30E-05	5.80E-05	1.48E-01	1.38E-05	-	1.48E-01	1.34E-01
		Front end loader	210 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.32E-04	2.04E-03	7.09E-04	3.61E-06	6.96E-05	6.40E-05	3.21E-01	1.94E-05	-	3.21E-01	2.91E-01
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.95E-05	6.47E-04	7.21E-05	6.08E-07	1.36E-05	8.42E-06	1.22E-01	2.88E-07	2.72E-07	1.22E-01	1.11E-01
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.95E-05	6.47E-04	7.21E-05	6.08E-07	1.36E-05	8.42E-06	1.22E-01	2.88E-07	2.72E-07	1.22E-01	1.11E-01
		Brush chipper	275 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.53E-04	1.54E-03	6.64E-04	3.42E-06	4.96E-05	4.57E-05	3.48E-01	1.38E-05	-	3.49E-01	3.16E-01
		Front end loader	210 hp	2.3595	0.0	2.4	0	42	-	-	-	-	-	-	-	-	-	-	-	6.09E-05	9.40E-04	3.26E-04	1.66E-06	3.20E-05	2.94E-05	1.48E-01	8.93E-06	-	1.48E-01	1.34E-01
	Cutting	**1 ton pickup truck**		2.925	0.0	2.9	0	42	-	-	-	-	-	-	-	-	-	-	-	9.60E-06	1.02E-05	1.29E-04	1.98E-07	1.60E-06	7.21E-07	6.56E-02	6.53E-06	3.40E-06	6.68E-02	6.06E-02
		Tractor/crawler/dozer	250 hp	4.8751	0.0	4.9	0	42	-	-	-	-	-	-	-	-	-	-	-	2.04E-04	3.32E-03	1.05E-03	4.55E-06	1.27E-04	1.17E-04	4.05E-01	3.10E-05	-	4.05E-01	3.68E-01
		Tractor/crawler/dozer	250 hp	4.875	0.0	4.9	0	42	-	-	-	-	-	-	-	-	-	-	-	2.04E-04	3.32E-03	1.05E-03	4.55E-06	1.27E-04	1.17E-04	4.05E-01	3.10E-05	-	4.05E-01	3.68E-01
		Chain saw		4.8751	0.0	4.9	0	42	-	-	-	-	-	-	-	-	-	-	-	3.29E-04	5.16E-06	5.95E-04	6.63E-08	9.37E-07	9.35E-07	1.61E-03	2.05E-05	1.77E-06	2.59E-03	2.35E-03
	Brush Piling	**Front end loader**	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	1.61E-04	2.14E-03	9.79E-04	4.31E-06	8.46E-05	7.78E-05	4.29E-01	2.49E-05	-	4.30E-01	3.90E-01
		Tractor/crawler/dozer	310 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	1.15E-04	1.81E-03	5.73E-04	1.94E-06	7.01E-05	6.45E-05	1.97E-01	1.42E-05	-	1.98E-01	1.79E-01
	Chipping	**Brush chipper**	250 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	1.29E-04	1.36E-03	5.32E-04	3.07E-06	4.13E-05	3.80E-05	2.73E-01	1.16E-05	-	2.73E-01	2.48E-01
		Front end loader	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	1.61E-04	2.14E-03	9.79E-04	4.31E-06	8.46E-05	7.78E-05	4.29E-01	2.49E-05	-	4.30E-01	3.90E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	106	-	-	-	-	-	-	-	-	-	-	-	6.04E-05	9.80E-04	3.10E-04	1.34E-06	3.74E-05	3.44E-05	1.20E-01	9.17E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	5.63E-05	3.65E-04	4.03E-04	6.46E-07	1.54E-05	1.42E-05	5.00E-02	5.08E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	1.37E-04	4.22E-04	4.91E-04	6.31E-07	3.28E-05	3.01E-05	4.88E-02	1.23E-05	-	4.91E-02	4.45E-02
		Water truck	3000 gal	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	3.08E-05	5.04E-04	5.62E-05	4.74E-07	1.06E-05	6.56E-06	9.49E-02	2.25E-07	2.12E-07	9.50E-02	8.61E-02
		Excavator	300 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	8.34E-05	1.27E-03	5.71E-04	2.75E-06	4.10E-05	3.77E-05	2.80E-01	1.53E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	8.84E-05	1.37E-03	4.73E-04	2.41E-06	4.65E-05	4.28E-05	2.14E-01	1.30E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	106	-	-	-	-	-	-	-	-	-	-	-	1.81E-04	2.94E-03	9.30E-04	4.03E-06	1.12E-04	1.03E-04	3.59E-01	2.75E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	106	-	-	-	-	-	-	-	-	-	-	-	7.40E-04	4.73E-04	2.78E-02	1.13E-06	3.74E-04	3.74E-04	4.47E-02	4.21E-05	3.65E-05	5.69E-02	5.16E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	106	-	-	-	-	-	-	-	-	-	-	-	6.48E-03	8.30E-02	4.84E-02	9.16E-05	4.48E-03	4.12E-03	8.14E+00	7.37E-04	-	8.16E+00	7.40E+00
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	106	-	-	-	-	-	-	-	-	-	-	-	1.16E-06	1.35E-05	9.92E-06	1.75E-08	1.02E-06	9.36E-07	1.49E-03	1.24E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	0.0	155.0	0	20	-	-	-	-	-	-	-	-	-	-	-	4.39E-03	5.62E-02	3.27E-02	6.20E-05	3.03E-03	2.79E-03	5.51E+00	4.99E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	0.0	155.0	0	20	-	-	-	-	-	-	-	-	-	-	-	5.09E-04	5.41E-04	6.83E-03	1.05E-05	8.50E-05	3.82E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	20	-	-	-	-	-	-	-	-	-	-	-	6.04E-05	9.80E-04	3.10E-04	1.34E-06	3.74E-05	3.44E-05	1.20E-01	9.17E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	3.53E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	0.0	16.0	0	171	-	-	-	-	-	-	-	-	-	-	-	3.80E-04	4.86E-03	2.83E-03	5.37E-06	2.63E-04	2.42E-04	4.77E-01	4.32E-05	-	4.78E-01	4.34E-01
		Flatbed truck		8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	6.87E-05	6.95E-05	9.63E-04	5.38E-07	4.33E-06	1.91E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	6528	0.0	6,528.0	0	272	-	-	-	-	-	-	-	-	-	-	-	1.58E-01	1.22E+00	1.03E+00	1.99E-03	8.28E-02	7.62E-02	1.69E+02	1.42E-02	-	1.70E+02	1.54E+02
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	-	-	-	-	-	-	-	-	-	-	-	2.68E-05	1.86E-05	1.35E-03	6.56E-08	1.21E-06	1.21E-06	2.30E-03	1.53E-06	1.91E-06	2.92E-03	2.65E-03
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	9.79E-03	1.62E-01	6.82E-02	2.26E-04	5.95E-03	5.48E-03	2.24E+01	1.71E-03	-	2.25E+01	2.04E+01	-	-	-	-	-	-	-	-	-	-	-
	Excavate	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	-	-	-	-	-	2.40E-02	3.90E-01	1.70E-01	5.89E-04	1.43E-02	1.31E-02	5.86E+01	4.24E-03	-	5.87E+01	5.32E+01
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	-	-	-	-	-	2.40E-02	3.90E-01	1.70E-01	5.89E-04	1.43E-02	1.31E-02	5.86E+01	4.24E-03	-	5.87E+01	5.32E+01
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	-	-	-	-	-	2.40E-02	3.90E-01	1.70E-01	5.89E-04	1.43E-02	1.31E-02	5.86E+01	4.24E-03	-	5.87E+01	5.32E+01
	Build road	**Tractor/crawler/dozer**	600 hp	338.4616	0.0	338.5	0	190	-	-	-	-	-	-	-	-	-	-	-	2.57E-02	4.19E-01	1.82E-01	6.32E-04	1.53E-02	1.41E-02	6.29E+01	4.55E-03	-	6.30E+01	5.71E+01
	Cut	**Tractor/crawler/dozer**	600 hp	11.2308	0.0	11.2	0	190	-	-	-	-	-	-	-	-	-	-	-	8.54E-04	1.39E-02	6.05E-03	2.10E-05	5.09E-04	4.68E-04	2.09E+00	1.51E-04	-	2.09E+00	1.89E+00
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	190	-	-	-	-	-	-	-	-	-	-	-	3.38E-04	4.14E-03	2.50E-03	4.78E-06	2.33E-04	2.14E-04	4.24E-01	3.51E-05	-	4.25E-01	3.86E-01
		Asphalt distributor	3000 gal	8	0.0	8.0	0	190	-	-	-	-	-	-	-	-	-	-	-	6.15E-05	1.01E-03	1.12E-04	9.49E-07	2.12E-05	1.31E-05	1.90E-01	4.50E-07	4.23E-07	1.90E-01	1.72E-01
		Vibratory roller	85 hp	29.2583	0.0	29.3	0	190	-	-	-	-	-	-	-	-	-	-	-	4.93E-04	5.57E-03	4.08E-03	7.16E-06	4.03E-04	3.71E-04	6.11E-01	6.88E-05	-	6.12E-01	5.55E-01
		Tractor/crawler/dozer	310 hp	12.489	0.0	12.5	0	190	-	-	-	-	-	-	-	-	-	-	-	5.82E-04	9.20E-03	2.91E-03	9.84E-06	3.56E-04	3.28E-04	1.00E+00	7.22E-05	-	1.00E+00	9.11E-01
	Armoring	**1 ton pickup truck**		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	-	-	-	-	-	1.40E-05	1.49E-05	1.88E-04	2.89E-07	2.34E-06	1.05E-06	9.58E-02	9.52E-06	4.97E-06	9.75E-02	8.85E-02
		Excavator	430 hp	4.2667	0.0	4.3	0	190	-	-	-	-	-	-	-	-	-	-	-	1.28E-04	1.94E-03	8.73E-04	4.21E-06	6.26E-05	5.76E-05	4.28E-01	2.34E-05	-	4.29E-01	3.89E-01
		1 ton pickup truck		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	-	-	-	-	-	1.40E-05	1.49E-05	1.88E-04	2.89E-07	2.34E-06	1.05E-06	9.58E-02	9.52E-06	4.97E-06	9.75E-02	8.85E-02
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	191	-	-	-	-	-	-	-	-	-	-	-	1.08E-02	1.82E-01	5.62E-02	2.83E-04	5.93E-03	5.46E-03	2.51E+01	1.56E-03	-	2.52E+01	2.28E+01

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Annual Emissions - 2016 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
									GWP						1	21	310		
Excavation/Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	0.0	6.8	0	41	-	-	-	-	-	-	-	-	-	-	-
		Excavator	430 hp	4.445	0.0	4.4	0	41	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	850 hp	3.2327	0.0	3.2	0	41	-	-	-	-	-	-	-	-	-	-	-
	Drilling	**Rotary drill**	475 hp	7.3333	0.0	7.3	0	41	-	-	-	-	-	-	-	-	-	-	-
		3/4 ton Pickup truck		7.3333	0.0	7.3	0	41	-	-	-	-	-	-	-	-	-	-	-
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	0.0	48.0	0	41	-	-	-	-	-	-	-	-	-	-	-
		Diamond cutting saw	50 hp	48	0.0	48.0	0	41	-	-	-	-	-	-	-	-	-	-	-
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	0.0	60.0	0	41	-	-	-	-	-	-	-	-	-	-	-
		3/4 ton Pickup truck		60.0214	0.0	60.0	0	41	-	-	-	-	-	-	-	-	-	-	-
	Landfill	**Crane 260'**	375 hp	30.0107	0.0	30.0	0	41	-	-	-	-	-	-	-	-	-	-	-
	FloodWall	**Crane 50'**	263 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	-	-	-	-	-
		Pile hammer driver	325 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	-	-	-	-	-
		Generator	7.5 hp	636.7029	0.0	636.7	0	190	-	-	-	-	-	-	-	-	-	-	-
		Concrete pump		394.214	0.0	394.2	0	190	-	-	-	-	-	-	-	-	-	-	-
								Total	**1.56E-02**	**2.46E-01**	**9.65E-02**	**3.03E-04**	**8.29E-03**	**7.21E-03**	**3.68E+01**	**1.95E-03**	**9.10E-05**	**3.69E+01**	**3.34E+01**
								Daily Onsi											
								Rindge											
								Surfrider											
								Topanga											
								Zuma											
								Landfill											
								Floodwall											

Activity		Annual Emissions - 2017 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
								1	21	310		
Excavation/Demolition	***Excavation for Dam Demo***	5.21E-05	8.55E-04	9.52E-05	8.04E-07	1.80E-05	1.11E-05	1.61E-01	3.81E-07	3.59E-07	1.61E-01	1.46E-01
		1.33E-04	2.02E-03	9.09E-04	4.38E-06	6.52E-05	6.00E-05	4.46E-01	2.44E-05	-	4.47E-01	4.05E-01
		5.22E-04	9.78E-03	2.91E-03	9.08E-06	2.90E-04	2.67E-04	9.03E-01	7.02E-05	-	9.05E-01	8.21E-01
	Drilling	2.65E-04	4.57E-03	1.92E-03	1.06E-05	1.40E-04	1.28E-04	1.08E+00	3.00E-05	-	1.08E+00	9.83E-01
		3.67E-05	2.91E-05	4.40E-04	4.95E-07	4.10E-06	1.88E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	2.40E-04	1.91E-04	2.88E-03	3.24E-06	2.68E-05	1.23E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		1.34E-03	5.86E-03	5.58E-03	9.49E-06	3.74E-04	3.44E-04	7.34E-01	1.21E-04	-	7.37E-01	6.68E-01
	Lift/Load blocks	2.42E-03	3.74E-02	9.54E-03	3.98E-05	1.52E-03	1.40E-03	4.05E+00	2.56E-04	-	4.06E+00	3.68E+00
		3.00E-04	2.39E-04	3.60E-03	4.06E-06	3.36E-05	1.54E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Landfill	1.21E-03	1.87E-02	4.77E-03	1.99E-05	7.59E-04	6.98E-04	2.03E+00	1.28E-04	-	2.03E+00	1.84E+00
	FloodWall	3.51E-02	5.42E-01	1.38E-01	5.76E-04	2.20E-02	2.02E-02	5.87E+01	3.71E-03	-	5.88E+01	5.33E+01
		3.06E-02	5.28E-01	2.22E-01	1.23E-03	1.61E-02	1.49E-02	1.25E+02	3.47E-03	-	1.25E+02	1.14E+02
		1.07E-02	7.44E-03	5.44E-01	2.63E-05	4.86E-04	4.85E-04	9.22E-01	6.12E-04	7.66E-04	1.17E+00	1.06E+00
		3.03E-03	4.97E-02	5.54E-03	4.67E-05	1.04E-03	6.47E-04	9.35E+00	2.22E-05	2.09E-05	9.36E+00	8.49E+00
		3.90E-01	**4.64E+00**	**2.98E+00**	**7.22E-03**	**2.06E-01**	**1.88E-01**	**7.38E+02**	**4.71E-02**	**2.76E-03**	**7.40E+02**	**6.71E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	11.1	36.9	52	210	4.73E-03	3.66E-03	5.65E-02	5.76E-05	4.82E-04	2.24E-04	3.52E-03	2.80E-03	4.22E-02	4.75E-05	3.93E-04	1.80E-04
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	210	3.52E-01	5.69E+00	6.31E-01	4.89E-03	1.26E-01	8.29E-02	2.61E-01	4.29E+00	4.77E-01	4.03E-03	9.00E-02	5.58E-02
Environmental protection measures		**3/4 ton Pickup truck**		1213	0.0	1,213.0	0	210	-	-	-	-	-	-	1.16E-01	9.18E-02	1.39E+00	1.56E-03	1.29E-02	5.93E-03
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	210	1.39E-04	1.38E-04	1.87E-03	2.40E-06	1.96E-05	8.94E-06	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	2.58E-03	4.21E-02	1.31E-02	5.50E-05	1.62E-03	1.49E-03	-	-	-	-	-	-
		Chain saw		0.7652	0.8	0.0	52	0	3.97E-03	6.23E-05	7.19E-03	8.00E-07	1.13E-05	1.13E-05	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	1.97E-03	2.67E-02	1.22E-02	5.21E-05	1.05E-03	9.64E-04	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	1.43E-03	2.30E-02	7.26E-03	2.34E-05	8.89E-04	8.18E-04	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	1.67E-03	1.86E-02	6.54E-03	3.71E-05	5.58E-04	5.14E-04	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	1.97E-03	2.67E-02	1.22E-02	5.21E-05	1.05E-03	9.64E-04	-	-	-	-	-	-
	Gravel	**Vibratory roller**	85 hp	16	16.0	0.0	52	0	2.25E-02	2.51E-01	1.73E-01	3.01E-04	1.85E-02	1.70E-02	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.7481	3.7	0.0	52	0	1.39E-02	2.23E-01	7.06E-02	2.27E-04	8.64E-03	7.95E-03	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	4.29E-03	6.88E-02	2.18E-02	7.01E-05	2.67E-03	2.45E-03	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	5.32E-04	8.61E-03	9.56E-04	7.40E-06	1.90E-04	1.25E-04	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	6.85E-03	6.71E-03	9.70E-02	4.53E-05	3.70E-04	1.66E-04	-	-	-	-	-	-
		Auger drill	10 hp	8.75	8.8	0.0	52	0	2.48E-02	1.83E-02	9.82E-01	4.78E-05	1.41E-02	1.40E-02	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	4.38E-03	5.06E-02	3.49E-02	6.12E-05	3.90E-03	3.59E-03	-	-	-	-	-	-
		Flatbed truck		4	4.0	0.0	52	0	3.13E-03	3.07E-03	4.43E-02	2.07E-05	1.69E-04	7.59E-05	-	-	-	-	-	-
Clear & Grub - Sediment Removal	***Clear Brush***	**1 ton pickup truck**		0.3026	0.0	0.3	0	42	-	-	-	-	-	-	9.46E-05	1.01E-04	1.27E-03	1.95E-06	1.58E-05	7.10E-06
		Excavator	94 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	4.15E-04	4.99E-03	5.69E-03	9.74E-06	3.54E-04	3.26E-04
		Front end loader	210 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	7.43E-04	1.15E-02	3.98E-03	2.03E-05	3.91E-04	3.60E-04
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	2.22E-04	3.63E-03	4.05E-04	3.42E-06	7.63E-05	4.73E-05
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	2.22E-04	3.63E-03	4.05E-04	3.42E-06	7.63E-05	4.73E-05
		Brush chipper	275 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	8.58E-04	8.68E-03	3.73E-03	1.92E-05	2.79E-04	2.56E-04
		Front end loader	210 hp	0.1392	0.0	0.1	0	42	-	-	-	-	-	-	3.42E-04	5.28E-03	1.83E-03	9.32E-06	1.80E-04	1.65E-04
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	-	-	-	-	-	-	2.70E-03	2.87E-03	3.62E-02	5.57E-05	4.50E-04	2.02E-04
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	1.15E-03	1.86E-02	5.89E-03	2.56E-05	7.11E-04	6.54E-04
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	1.15E-03	1.86E-02	5.89E-03	2.56E-05	7.11E-04	6.54E-04
		Chain saw		0.2875	0.0	0.3	0	42	-	-	-	-	-	-	1.85E-03	2.90E-05	3.34E-03	3.72E-07	5.26E-06	5.25E-06
	Brush Piling	**Front end loader**	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	9.02E-04	1.20E-02	5.50E-03	2.42E-05	4.75E-04	4.37E-04
		Tractor/crawler/dozer	310 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	6.43E-04	1.02E-02	3.22E-03	1.09E-05	3.94E-04	3.62E-04
	Chipping	**Brush chipper**	250 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	7.23E-04	7.66E-03	2.99E-03	1.73E-05	2.32E-04	2.14E-04
		Front end loader	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	9.02E-04	1.20E-02	5.50E-03	2.42E-05	4.75E-04	4.37E-04
Clear & Grub - Access Rd	***Clear Brush***	**1 ton pickup truck**		5.1316	0.0	5.1	0	42	-	-	-	-	-	-	1.60E-03	1.71E-03	2.15E-02	3.31E-05	2.68E-04	1.20E-04
		Excavator	94 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	7.03E-03	8.47E-02	9.64E-02	1.65E-04	6.00E-03	5.52E-03
		Front end loader	210 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	1.26E-02	1.95E-01	6.75E-02	3.44E-04	6.63E-03	6.10E-03
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	3.76E-03	6.16E-02	6.86E-03	5.79E-05	1.29E-03	8.02E-04
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	3.76E-03	6.16E-02	6.86E-03	5.79E-05	1.29E-03	8.02E-04
		Brush chipper	275 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	1.46E-02	1.47E-01	6.33E-02	3.26E-04	4.73E-03	4.35E-03
		Front end loader	210 hp	2.3595	0.0	2.4	0	42	-	-	-	-	-	-	5.80E-03	8.95E-02	3.10E-02	1.58E-04	3.05E-03	2.80E-03
	Cutting	**1 ton pickup truck**		2.925	0.0	2.9	0	42	-	-	-	-	-	-	9.14E-04	9.73E-04	1.23E-02	1.89E-05	1.53E-04	6.86E-05
		Tractor/crawler/dozer	250 hp	4.8751	0.0	4.9	0	42	-	-	-	-	-	-	1.95E-02	3.16E-01	9.99E-02	4.34E-04	1.21E-02	1.11E-02
		Tractor/crawler/dozer	250 hp	4.875	0.0	4.9	0	42	-	-	-	-	-	-	1.95E-02	3.16E-01	9.99E-02	4.34E-04	1.21E-02	1.11E-02
		Chain saw		4.8751	0.0	4.9	0	42	-	-	-	-	-	-	3.13E-02	4.91E-04	5.67E-02	6.31E-06	8.92E-05	8.90E-05
	Brush Piling	**Front end loader**	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	1.53E-02	2.04E-01	9.32E-02	4.11E-04	8.06E-03	7.41E-03
		Tractor/crawler/dozer	310 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	1.09E-02	1.72E-01	5.46E-02	1.84E-04	6.67E-03	6.14E-03
	Chipping	**Brush chipper**	250 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	1.23E-02	1.30E-01	5.06E-02	2.93E-04	3.94E-03	3.62E-03
		Front end loader	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	1.53E-02	2.04E-01	9.32E-02	4.11E-04	8.06E-03	7.41E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	106	-	-	-	-	-	-	2.28E-03	3.70E-02	1.17E-02	5.07E-05	1.41E-03	1.30E-03
		Front end loader	49 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	2.13E-03	1.38E-02	1.52E-02	2.44E-05	5.81E-04	5.34E-04
		Roller	47 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	5.16E-03	1.59E-02	1.85E-02	2.38E-05	1.24E-03	1.14E-03
		Water truck	3000 gal	4	0.0	4.0	0	106	-	-	-	-	-	-	1.16E-03	1.90E-02	2.12E-03	1.79E-05	4.00E-04	2.48E-04
		Excavator	300 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	3.15E-03	4.78E-02	2.15E-02	1.04E-04	1.55E-03	1.42E-03
		Front end loader	180 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	3.34E-03	5.15E-02	1.79E-02	9.10E-05	1.76E-03	1.61E-03
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	106	-	-	-	-	-	-	6.84E-03	1.11E-01	3.51E-02	1.52E-04	4.24E-03	3.90E-03
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	106	-	-	-	-	-	-	2.79E-02	1.78E-02	1.05E+00	4.27E-05	1.41E-02	1.41E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	106	-	-	-	-	-	-	2.45E-01	3.13E+00	1.83E+00	3.46E-03	1.69E-01	1.55E-01
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	106	-	-	-	-	-	-	4.39E-05	5.10E-04	3.74E-04	6.60E-07	3.84E-05	3.53E-05
		Crane 94'	155 hp	155	0.0	155.0	0	20	-	-	-	-	-	-	8.78E-01	1.12E+01	6.55E+00	1.24E-02	6.06E-01	5.58E-01
		1 ton pickup truck		155	0.0	155.0	0	20	-	-	-	-	-	-	1.02E-01	1.08E-01	1.37E+00	2.10E-03	1.70E-02	7.64E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	20	-	-	-	-	-	-	1.21E-02	1.96E-01	6.20E-02	2.69E-04	7.48E-03	6.88E-03
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	8.25E-03	6.09E-03	3.15E-01	1.54E-05	4.52E-03	4.51E-03
		Crane 80'	130 hp	16	0.0	16.0	0	171	-	-	-	-	-	-	8.89E-03	1.14E-01	6.63E-02	1.26E-04	6.14E-03	5.65E-03
		Flatbed truck		8	0.0	8.0	0	171	-	-	-	-	-	-	1.61E-03	1.62E-03	2.25E-02	1.26E-05	1.01E-04	4.47E-05
		Generator	80 hp	6528	0.0	6,528.0	0	272	-	-	-	-	-	-	2.32E+00	1.80E+01	1.51E+01	2.92E-02	1.22E+00	1.12E+00
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	-	-	-	-	-	-	6.26E-04	4.34E-04	3.17E-02	1.53E-06	2.83E-05	2.83E-05
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	7.53E-01	1.24E+01	5.25E+00	1.73E-02	4.58E-01	4.21E-01	-	-	-	-	-	-
	Excavate	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	5.05E-01	8.21E+00	3.58E+00	1.24E-02	3.01E-01	2.77E-01
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	5.05E-01	8.21E+00	3.58E+00	1.24E-02	3.01E-01	2.77E-01
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	5.05E-01	8.21E+00	3.58E+00	1.24E-02	3.01E-01	2.77E-01
	Build road	**Tractor/crawler/dozer**	600 hp	338.4616	0.0	338.5	0	190	-	-	-	-	-	-	5.42E-01	8.81E+00	3.84E+00	1.33E-02	3.23E-01	2.97E-01
	Cut	**Tractor/crawler/dozer**	600 hp	11.2308	0.0	11.2	0	190	-	-	-	-	-	-	1.80E-02	2.92E-01	1.27E-01	4.41E-04	1.07E-02	9.85E-03
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	190	-	-	-	-	-	-	7.12E-03	8.72E-02	5.27E-02	1.01E-04	4.90E-03	4.51E-03
		Asphalt distributor	3000 gal	8	0.0	8.0	0	190	-	-	-	-	-	-	1.30E-03	2.12E-02	2.36E-03	2.00E-05	4.46E-04	2.76E-04
		Vibratory roller	85 hp	29.2583	0.0	29.3	0	190	-	-	-	-	-	-	1.04E-02	1.17E-01	8.60E-02	1.51E-04	8.49E-03	7.81E-03
		Tractor/crawler/dozer	310 hp	12.489	0.0	12.5	0	190	-	-	-	-	-	-	1.23E-02	1.94E-01	6.13E-02	2.07E-04	7.50E-03	6.90E-03
	Armoring	**1 ton pickup truck**		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	2.95E-04	3.14E-04	3.96E-03	6.09E-06	4.93E-05	2.21E-05
		Excavator	430 hp	4.2667	0.0	4.3	0	190	-	-	-	-	-	-	2.69E-03	4.08E-02	1.84E-02	8.85E-05	1.32E-03	1.21E-03
		1 ton pickup truck		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	2.95E-04	3.14E-04	3.96E-03	6.09E-06	4.93E-05	2.21E-05
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	191	-	-	-	-	-	-	2.26E-01	3.81E+00	1.18E+00	5.92E-03	1.24E-01	1.14E-01

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2016
Birthday of Martin Luther King, Jr.	1/18/2016
Washington's Birthday	2/15/2016
Memorial Day	5/30/2016
Independence Day	7/4/2016
Labor Day	9/5/2016
Columbus Day	10/10/2016
Veterans Day	11/11/2016
Thanksgiving Day	11/24/2016
Christmas Day	12/26/2016
New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/10/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
20	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2016
http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2017

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Excavation/Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	0.0	6.8	0	41	-	-	-	-	-	-	5.09E-03	8.34E-02	9.29E-03	7.84E-05	1.75E-03	1.09E-03
		Excavator	430 hp	4.445	0.0	4.4	0	41	-	-	-	-	-	-	1.30E-02	1.97E-01	8.87E-02	4.27E-04	6.36E-03	5.86E-03
		Tractor/crawler/dozer	850 hp	3.2327	0.0	3.2	0	41	-	-	-	-	-	-	5.09E-02	9.54E-01	2.84E-01	8.86E-04	2.83E-02	2.60E-02
	Drilling	**Rotary drill**	475 hp	7.3333	0.0	7.3	0	41	-	-	-	-	-	-	2.58E-02	4.46E-01	1.87E-01	1.04E-03	1.36E-02	1.25E-02
		3/4 ton Pickup truck		7.3333	0.0	7.3	0	41	-	-	-	-	-	-	3.58E-03	2.84E-03	4.29E-02	4.83E-05	4.00E-04	1.84E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	0.0	48.0	0	41	-	-	-	-	-	-	2.34E-02	1.86E-02	2.81E-01	3.16E-04	2.62E-03	1.20E-03
		Diamond cutting saw	50 hp	48	0.0	48.0	0	41	-	-	-	-	-	-	1.31E-01	5.71E-01	5.44E-01	9.26E-04	3.65E-02	3.36E-02
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	0.0	60.0	0	41	-	-	-	-	-	-	2.36E-01	3.65E+00	9.31E-01	3.88E-03	1.48E-01	1.36E-01
		3/4 ton Pickup truck		60.0214	0.0	60.0	0	41	-	-	-	-	-	-	2.93E-02	2.33E-02	3.51E-01	3.96E-04	3.28E-03	1.50E-03
	Landfill	**Crane 260'**	375 hp	30.0107	0.0	30.0	0	41	-	-	-	-	-	-	1.18E-01	1.82E+00	4.65E-01	1.94E-03	7.41E-02	6.81E-02
	FloodWall	**Crane 50'**	263 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	7.39E-01	1.14E+01	2.91E+00	1.21E-02	4.63E-01	4.26E-01
		Pile hammer driver	325 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	6.44E-01	1.11E+01	4.67E+00	2.59E-02	3.40E-01	3.13E-01
		Generator	7.5 hp	636.7029	0.0	636.7	0	190	-	-	-	-	-	-	2.26E-01	1.57E-01	1.14E+01	5.54E-04	1.02E-02	1.02E-02
		Concrete pump		394.214	0.0	394.2	0	190	-	-	-	-	-	-	6.38E-02	1.05E+00	1.17E-01	9.84E-04	2.20E-02	1.36E-02
								Total	**1.20E+00**	**1.89E+01**	**7.42E+00**	**2.33E-02**	**6.38E-01**	**5.54E-01**	**8.84E+00**	**1.09E+02**	**6.78E+01**	**1.64E-01**	**4.77E+00**	**4.34E+00**

Daily Onsi													
Rindge	1	19	7	0	1	1	7	84	48	0	4	4
Surfrider	0	0	0	0	0	0	0	0	0	0	0	0
Topanga	0	0	0	0	0	0	0	0	0	0	0	0
Zuma	0	0	0	0	0	0	0	0	0	0	0	0
Landfill	0	0	0	0	0	0	0	2	0	0	0	0
Floodwall	0	0	0	0	0	0	2	24	19	0	1	1

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 2

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	1696	209	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.166	1.567	0.761	0.005	0.048	0.044	403.250	0.015	0.000
		Front end loader	540 hp	0.8673	19	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Front end loader	49 hp	4	19	0.222	1.556	1.830	0.003	0.048	0.044	231.302	0.020	0.000
		Roller	47 hp	4	19	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000
		Water truck	3000 gal	4	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	300 hp	4	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		Front end loader	180 hp	4	19	0.093	1.355	0.579	0.003	0.045	0.042	270.061	0.015	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Loader/backhoe	75 hp	0.0923	19	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
		Crane 94'	155 hp	155	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Crane 94'	155 hp	155	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Dewatering	Concrete saw	13 hp	8	21	3.075	2.272	117.574	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	21	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		Flatbed truck		8	21	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
		Generator	80 hp	5856	244	0.213	1.796	1.761	0.003	0.108	0.100	294.384	0.019	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Armoring	1 ton pickup truck		1.0667	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Excavator	430 hp	1.0667	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		1 ton pickup truck		1.0667	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Maintenance	Grader	215 hp	144	209	0.122	1.989	0.675	0.004	0.064	0.059	312.002	0.017	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	430 hp	4.445	22	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.163	3.093	0.873	0.003	0.090	0.083	298.249	0.021	0.000
	Drilling	Rotary drill	475 hp	7.3333	128	0.054	0.779	0.500	0.003	0.024	0.022	282.166	0.007	0.000
		3/4 ton Pickup truck		7.3333	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	128	0.388	2.062	2.000	0.004	0.110	0.101	277.562	0.035	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		3/4 ton Pickup truck		60.0214	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Water truck	3000 gal	507	128	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
					Total									

Data from Alt3_EnvrAirQualityReport.pdf

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 2

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

						GWP	1	21	310						
		Equipment	Equipment	Total	Days per	Annual Emissions - 2019 (tons per year)									Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	209	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	209	1.28E-02	1.80E-01	2.37E-02	2.00E-04	4.17E-03	2.48E-03	4.01E+01	9.53E-05	8.97E-05	4.01E+01	3.64E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		709	209	2.74E-03	2.37E-03	3.33E-02	4.75E-05	3.88E-04	1.74E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	6.19E-05	5.34E-05	7.52E-04	1.07E-06	8.76E-06	3.93E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	2.24E-06	2.87E-06	3.03E-05	6.94E-08	5.52E-07	2.42E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	6.38E-05	1.01E-03	3.49E-04	1.61E-06	3.81E-05	3.51E-05	1.43E-01	9.76E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	4.53E-05	5.64E-04	3.27E-04	1.52E-06	2.21E-05	2.04E-05	1.51E-01	7.94E-06	-	1.52E-01	1.38E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	3.35E-05	5.00E-04	1.86E-04	6.83E-07	1.94E-05	1.79E-05	6.96E-02	4.50E-06	-	6.97E-02	6.33E-02
	Chipping	Brush chipper	250 hp	0.8673	19	3.96E-05	3.75E-04	1.82E-04	1.08E-06	1.15E-05	1.06E-05	9.64E-02	3.57E-06	-	9.65E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	4.53E-05	5.64E-04	3.27E-04	1.52E-06	2.21E-05	2.04E-05	1.51E-01	7.94E-06	-	1.52E-01	1.38E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.34E-05	8.46E-04	2.92E-04	1.34E-06	3.19E-05	2.94E-05	1.20E-01	8.17E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.80E-05	3.36E-04	3.95E-04	6.46E-07	1.04E-05	9.61E-06	5.00E-02	4.33E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.13E-04	3.95E-04	4.67E-04	6.31E-07	2.68E-05	2.46E-05	4.88E-02	1.02E-05	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	3.02E-05	4.25E-04	5.58E-05	4.72E-07	9.82E-06	5.86E-06	9.46E-02	2.25E-07	2.12E-07	9.47E-02	8.59E-02
		Excavator	300 hp	4	19	6.77E-05	8.99E-04	5.55E-04	2.75E-06	2.92E-05	2.69E-05	2.80E-01	1.37E-05	-	2.81E-01	2.54E-01
		Front end loader	180 hp	4	19	7.34E-05	1.08E-03	4.60E-04	2.41E-06	3.61E-05	3.32E-05	2.14E-01	1.16E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	1.60E-04	2.54E-03	8.77E-04	4.03E-06	9.57E-05	8.81E-05	3.59E-01	2.45E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	8.55E-07	1.04E-05	9.84E-06	1.75E-08	6.93E-07	6.38E-07	1.49E-03	1.03E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.58E-03	4.54E-02	3.26E-02	6.20E-05	2.42E-03	2.23E-03	5.51E+00	4.32E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	3.58E-03	4.54E-02	3.26E-02	6.20E-05	2.42E-03	2.23E-03	5.51E+00	4.32E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	5.34E-05	8.46E-04	2.92E-04	1.34E-06	3.19E-05	2.94E-05	1.20E-01	8.17E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	21	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	21	3.10E-04	3.93E-03	2.83E-03	5.37E-06	2.10E-04	1.93E-04	4.77E-01	3.74E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	21	4.87E-05	5.25E-05	6.75E-04	5.33E-07	4.22E-06	1.82E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	1.10E-01	9.28E-01	9.09E-01	1.78E-03	5.60E-02	5.15E-02	1.52E+02	9.93E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	4.92E-03	7.47E-02	3.90E-02	1.47E-04	2.75E-03	2.53E-03	1.46E+01	9.50E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	4.92E-03	7.47E-02	3.90E-02	1.47E-04	2.75E-03	2.53E-03	1.46E+01	9.50E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	4.92E-03	7.47E-02	3.90E-02	1.47E-04	2.75E-03	2.53E-03	1.46E+01	9.50E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	4.92E-03	7.47E-02	3.90E-02	1.47E-04	2.75E-03	2.53E-03	1.46E+01	9.50E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	2.31E-06	2.97E-06	3.13E-05	7.17E-08	5.71E-07	2.50E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	2.59E-05	3.44E-04	2.12E-04	1.05E-06	1.12E-05	1.03E-05	1.07E-01	5.23E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	2.31E-06	2.97E-06	3.13E-05	7.17E-08	5.71E-07	2.50E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	209	4.15E-03	6.79E-02	2.31E-02	1.20E-04	2.18E-03	2.00E-03	1.06E+01	5.89E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	5.12E-05	7.21E-04	9.47E-05	7.99E-07	1.67E-05	9.93E-06	1.60E-01	3.81E-07	3.59E-07	1.60E-01	1.46E-01
		Excavator	430 hp	4.445	22	1.08E-04	1.43E-03	8.85E-04	4.38E-06	4.65E-05	4.28E-05	4.46E-01	2.18E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	4.94E-04	9.37E-03	2.64E-03	9.08E-06	2.74E-04	2.52E-04	9.03E-01	6.32E-05	-	9.05E-01	8.21E-01
	Drilling	Rotary drill	475 hp	7.3333	128	2.06E-04	2.99E-03	1.92E-03	1.06E-05	9.24E-05	8.50E-05	1.08E+00	2.60E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	128	2.84E-05	2.45E-05	3.44E-04	4.92E-07	4.01E-06	1.80E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	128	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	128	1.03E-03	5.45E-03	5.29E-03	9.49E-06	2.91E-04	2.68E-04	7.34E-01	9.25E-05	-	7.36E-01	6.68E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	128	2.06E-03	3.07E-02	8.89E-03	3.98E-05	1.24E-03	1.14E-03	4.05E+00	2.32E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	128	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
		Water truck	3000 gal	507	128	3.83E-03	5.39E-02	7.08E-03	5.98E-05	1.25E-03	7.43E-04	1.20E+01	2.85E-05	2.68E-05	1.20E+01	1.09E+01
	Landfill	Crane 260'	375 hp	30.0107	128	1.03E-03	1.54E-02	4.44E-03	1.99E-05	6.18E-04	5.69E-04	2.03E+00	1.16E-04	-	2.03E+00	1.84E+00
					Total	**1.68E-01**	**1.70E+00**	**1.28E+00**	**3.08E-03**	**8.35E-02**	**7.48E-02**	**3.23E+02**	**1.88E-02**	**1.56E-03**	**3.24E+02**	**2.94E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Daily Onsi
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 2

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	209	3.55E-03	3.07E-03	4.32E-02	6.16E-05	5.03E-04	2.26E-04
Dust Control		Water truck	5000 gal	1696	209	2.45E-01	3.45E+00	4.53E-01	3.83E-03	7.97E-02	4.75E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	209	5.25E-02	4.53E-02	6.37E-01	9.10E-04	7.43E-03	3.33E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.30E-02	1.12E-02	1.58E-01	2.26E-04	1.84E-03	8.27E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	4.71E-04	6.04E-04	6.38E-03	1.46E-05	1.16E-04	5.09E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	1.34E-02	2.13E-01	7.36E-02	3.38E-04	8.03E-03	7.38E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	9.53E-03	1.19E-01	6.89E-02	3.21E-04	4.66E-03	4.28E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	7.05E-03	1.05E-01	3.91E-02	1.44E-04	4.09E-03	3.76E-03
	Chipping	Brush chipper	250 hp	0.8673	19	8.33E-03	7.89E-02	3.83E-02	2.28E-04	2.43E-03	2.23E-03
		Front end loader	540 hp	0.8673	19	9.53E-03	1.19E-01	6.89E-02	3.21E-04	4.66E-03	4.28E-03
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.12E-02	1.78E-01	6.16E-02	2.83E-04	6.72E-03	6.18E-03
		Front end loader	49 hp	4	19	1.01E-02	7.08E-02	8.32E-02	1.36E-04	2.20E-03	2.02E-03
		Roller	47 hp	4	19	2.37E-02	8.32E-02	9.84E-02	1.33E-04	5.64E-03	5.19E-03
		Water truck	3000 gal	4	19	6.36E-03	8.95E-02	1.18E-02	9.93E-05	2.07E-03	1.23E-03
		Excavator	300 hp	4	19	1.42E-02	1.89E-01	1.17E-01	5.79E-04	6.15E-03	5.65E-03
		Front end loader	180 hp	4	19	1.55E-02	2.26E-01	9.67E-02	5.08E-04	7.59E-03	6.98E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	3.37E-02	5.34E-01	1.85E-01	8.49E-04	2.02E-02	1.85E-02
		Loader/backhoe	75 hp	0.0923	19	1.80E-04	2.19E-03	2.07E-03	3.68E-06	1.46E-04	1.34E-04
		Crane 94'	155 hp	155	19	7.54E-01	9.55E+00	6.87E+00	1.31E-02	5.10E-01	4.70E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
		Crane 94'	155 hp	155	19	7.54E-01	9.55E+00	6.87E+00	1.31E-02	5.10E-01	4.70E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	1.12E-02	1.78E-01	6.16E-02	2.83E-04	6.72E-03	6.18E-03
	Dewatering	Concrete saw	13 hp	8	21	6.71E-02	4.96E-02	2.57E+00	1.25E-04	3.68E-02	3.67E-02
		Crane 80'	130 hp	16	21	5.90E-02	7.48E-01	5.38E-01	1.02E-03	4.00E-02	3.68E-02
		Flatbed truck		8	21	9.27E-03	1.00E-02	1.29E-01	1.01E-04	8.04E-04	3.47E-04
		Generator	80 hp	5856	244	1.80E+00	1.52E+01	1.49E+01	2.92E-02	9.18E-01	8.45E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	1.04E+00	1.57E+01	8.21E+00	3.10E-02	5.79E-01	5.33E-01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	1.04E+00	1.57E+01	8.21E+00	3.10E-02	5.79E-01	5.33E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.04E+00	1.57E+01	8.21E+00	3.10E-02	5.79E-01	5.33E-01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	1.04E+00	1.57E+01	8.21E+00	3.10E-02	5.79E-01	5.33E-01
	Armoring	1 ton pickup truck		1.0667	19	4.87E-04	6.24E-04	6.59E-03	1.51E-05	1.20E-04	5.26E-05
		Excavator	430 hp	1.0667	19	5.45E-03	7.24E-02	4.47E-02	2.21E-04	2.35E-03	2.16E-03
		1 ton pickup truck		1.0667	19	4.87E-04	6.24E-04	6.59E-03	1.51E-05	1.20E-04	5.26E-05
	Maintenance	Grader	215 hp	144	209	7.94E-02	1.30E+00	4.41E-01	2.29E-03	4.17E-02	3.84E-02
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	9.31E-03	1.31E-01	1.72E-02	1.45E-04	3.03E-03	1.81E-03
		Excavator	430 hp	4.445	22	1.96E-02	2.60E-01	1.61E-01	7.97E-04	8.46E-03	7.78E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	8.97E-02	1.70E+00	4.81E-01	1.65E-03	4.97E-02	4.58E-02
	Drilling	Rotary drill	475 hp	7.3333	128	6.44E-03	9.35E-02	5.99E-02	3.32E-04	2.89E-03	2.66E-03
		3/4 ton Pickup truck		7.3333	128	8.86E-04	7.65E-04	1.08E-02	1.54E-05	1.25E-04	5.63E-05
	Cut with Diamond wire	3/4 ton Pickup truck		48	128	5.80E-03	5.01E-03	7.05E-02	1.01E-04	8.21E-04	3.68E-04
		Diamond cutting saw	50 hp	48	128	3.20E-02	1.70E-01	1.65E-01	2.97E-04	9.09E-03	8.36E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	128	6.44E-02	9.60E-01	2.78E-01	1.24E-03	3.87E-02	3.56E-02
		3/4 ton Pickup truck		60.0214	128	7.25E-03	6.26E-03	8.81E-02	1.26E-04	1.03E-03	4.61E-04
		Water truck	3000 gal	507	128	1.20E-01	1.68E+00	2.21E-01	1.87E-03	3.89E-02	2.32E-02
	Landfill	Crane 260'	375 hp	30.0107	128	3.22E-02	4.80E-01	1.39E-01	6.21E-04	1.93E-02	1.78E-02
					Total	**8.72E+00**	**1.11E+02**	**7.12E+01**	**2.04E-01**	**4.76E+00**	**4.31E+00**
					Daily Onsi						
					Rindge	9	110	71	0	5	4
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2019

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.148	1.214	0.746	0.005	0.038	0.035	403.250	0.013	0.000
		Front end loader	540 hp	0.8673	19	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Front end loader	49 hp	4	19	0.199	1.450	1.811	0.003	0.032	0.030	231.302	0.018	0.000
		Roller	47 hp	4	19	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Water truck	3000 gal	4	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	300 hp	4	19	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Front end loader	180 hp	4	19	0.080	1.085	0.567	0.003	0.036	0.033	270.061	0.013	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Loader/backhoe	75 hp	0.0923	19	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
		Crane 94'	155 hp	155	19	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		1 ton pickup truck		155	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		1 ton pickup truck		155	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.070	2.268	117.560	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		Flatbed truck		8	23	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.172	1.509	1.744	0.003	0.081	0.075	294.384	0.016	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Armoring	1 ton pickup truck		1.0667	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		1 ton pickup truck		1.0667	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.113	1.791	0.661	0.004	0.057	0.052	312.002	0.015	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	430 hp	4.445	22	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.142	2.744	0.804	0.003	0.078	0.072	298.249	0.019	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		3/4 ton Pickup truck		20	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.049	0.613	0.500	0.003	0.021	0.019	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.306	1.918	1.917	0.004	0.082	0.076	277.562	0.028	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		3/4 ton Pickup truck		60.0214	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	507	126	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		Horizontal boring drill	10 hp	55	126	0.295	2.329	1.909	0.005	0.146	0.135	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		Air compressor	50 hp	40	126	0.837	1.059	50.665	0.004	0.024	0.023	307.059	0.048	0.067
		3/4 ton Pickup truck		20	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2021 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	210	1.44E-04	1.37E-04	1.77E-03	3.22E-06	2.58E-05	1.14E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.31E-02	9.34E-02	2.48E-02	1.99E-04	3.45E-03	1.83E-03	3.98E+01	9.53E-05	8.97E-05	3.98E+01	3.61E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	2.13E-03	2.03E-03	2.62E-02	4.76E-05	3.81E-04	1.68E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	4.82E-05	4.58E-05	5.91E-04	1.07E-06	8.60E-06	3.79E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	1.57E-06	2.36E-06	2.17E-05	6.96E-08	5.42E-07	2.33E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	5.76E-05	8.81E-04	3.34E-04	1.61E-06	3.32E-05	3.05E-05	1.43E-01	8.71E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	4.19E-05	4.93E-04	3.14E-04	1.52E-06	1.91E-05	1.76E-05	1.51E-01	7.17E-06	-	1.52E-01	1.38E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	2.97E-05	4.16E-04	1.73E-04	6.83E-07	1.64E-05	1.51E-05	6.96E-02	4.05E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	3.53E-05	2.90E-04	1.78E-04	1.08E-06	9.07E-06	8.35E-06	9.64E-02	3.18E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	4.19E-05	4.93E-04	3.14E-04	1.52E-06	1.91E-05	1.76E-05	1.51E-01	7.17E-06	-	1.52E-01	1.38E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	4.82E-05	7.37E-04	2.79E-04	1.34E-06	2.77E-05	2.55E-05	1.20E-01	7.29E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.30E-05	3.13E-04	3.91E-04	6.46E-07	6.99E-06	6.43E-06	5.00E-02	3.88E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	9.22E-05	3.72E-04	4.49E-04	6.31E-07	2.13E-05	1.96E-05	4.88E-02	8.32E-06	-	4.90E-02	4.44E-02
		Water truck	3000 gal	4	19	3.08E-05	2.20E-04	5.86E-05	4.69E-07	8.14E-06	4.31E-06	9.39E-02	2.25E-07	2.12E-07	9.40E-02	8.53E-02
		Excavator	300 hp	4	19	5.97E-05	6.73E-04	5.47E-04	2.75E-06	2.25E-05	2.07E-05	2.80E-01	1.23E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	6.32E-05	8.61E-04	4.50E-04	2.41E-06	2.87E-05	2.64E-05	2.14E-01	1.04E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.45E-04	2.21E-03	8.37E-04	4.03E-06	8.32E-05	7.66E-05	3.59E-01	2.19E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	6.88E-07	8.42E-06	9.78E-06	1.75E-08	4.97E-07	4.57E-07	1.49E-03	8.84E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.14E-03	3.90E-02	3.26E-02	6.20E-05	2.08E-03	1.91E-03	5.51E+00	3.72E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	3.14E-03	3.90E-02	3.26E-02	6.20E-05	2.08E-03	1.91E-03	5.51E+00	3.72E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	4.82E-05	7.37E-04	2.79E-04	1.34E-06	2.77E-05	2.55E-05	1.20E-01	7.29E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.73E-02
		Crane 80'	130 hp	16	23	2.72E-04	3.38E-03	2.82E-03	5.37E-06	1.80E-04	1.66E-04	4.77E-01	3.22E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	3.47E-05	3.98E-05	4.78E-04	5.33E-07	4.15E-06	1.76E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	8.88E-02	7.79E-01	9.00E-01	1.78E-03	4.19E-02	3.86E-02	1.52E+02	8.02E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	4.42E-03	6.32E-02	3.64E-02	1.47E-04	2.32E-03	2.14E-03	1.46E+01	8.55E-04	-	1.47E+01	1.33E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	4.42E-03	6.32E-02	3.64E-02	1.47E-04	2.32E-03	2.14E-03	1.46E+01	8.55E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	4.42E-03	6.32E-02	3.64E-02	1.47E-04	2.32E-03	2.14E-03	1.46E+01	8.55E-04	-	1.47E+01	1.33E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	4.42E-03	6.32E-02	3.64E-02	1.47E-04	2.32E-03	2.14E-03	1.46E+01	8.55E-04	-	1.47E+01	1.33E+01
	Armoring	**1 ton pickup truck**		1.0667	19	1.62E-06	2.43E-06	2.25E-05	7.19E-08	5.60E-07	2.41E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	2.28E-05	2.57E-04	2.09E-04	1.05E-06	8.61E-06	7.92E-06	1.07E-01	4.70E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	1.62E-06	2.43E-06	2.25E-05	7.19E-08	5.60E-07	2.41E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	3.86E-03	6.11E-02	2.26E-02	1.20E-04	1.94E-03	1.78E-03	1.06E+01	5.29E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	5.23E-05	3.73E-04	9.93E-05	7.94E-07	1.38E-05	7.31E-06	1.59E-01	3.81E-07	3.59E-07	1.59E-01	1.45E-01
		Excavator	430 hp	4.445	22	9.51E-05	1.07E-03	8.71E-04	4.38E-06	3.59E-05	3.30E-05	4.46E-01	1.96E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	4.29E-04	8.31E-03	2.44E-03	9.08E-06	2.36E-04	2.17E-04	9.03E-01	5.68E-05	-	9.05E-01	8.21E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	1.95E-03	2.73E-02	1.13E-02	4.47E-05	1.07E-03	9.87E-04	4.56E+00	2.65E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	2.43E-04	3.41E-03	1.42E-03	5.59E-06	1.34E-04	1.23E-04	5.70E-01	3.31E-05	-	5.70E-01	5.18E-01
		3/4 ton Pickup truck		20	20	6.02E-05	5.72E-05	7.39E-04	1.34E-06	1.08E-05	4.74E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	8.65E-04	1.09E-02	8.89E-03	4.93E-05	3.65E-04	3.36E-04	5.02E+00	1.10E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	1.02E-04	9.73E-05	1.26E-03	2.28E-06	1.83E-05	8.06E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	1.44E-04	1.37E-04	1.77E-03	3.22E-06	2.58E-05	1.14E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	8.10E-04	5.07E-03	5.07E-03	9.49E-06	2.18E-04	2.01E-04	7.34E-01	7.31E-05	-	7.36E-01	6.68E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	1.74E-03	2.46E-02	8.43E-03	3.98E-05	9.90E-04	9.11E-04	4.05E+00	2.10E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	1.22E-04	1.46E-03	6.88E-04	3.25E-06	5.44E-05	5.01E-05	3.32E-01	1.56E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.91E-03	2.79E-02	7.42E-03	5.94E-05	1.03E-03	5.47E-04	1.19E+01	2.85E-05	2.68E-05	1.19E+01	1.08E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	8.72E-04	1.23E-02	4.21E-03	1.99E-05	4.95E-04	4.55E-04	2.03E+00	1.05E-04	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	1.42E-03	2.01E-02	6.88E-03	3.25E-05	8.08E-04	7.44E-04	3.31E+00	1.71E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.79E-04	1.41E-03	1.16E-03	2.95E-06	8.86E-05	8.15E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	5.81E-04	8.20E-03	2.81E-03	1.32E-05	3.30E-04	3.04E-04	1.35E+00	7.00E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.85E-03	2.33E-03	1.12E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	1.05E-04	1.48E-04	7.25E-01	6.58E-01
		3/4 ton Pickup truck		20	126	6.02E-05	5.72E-05	7.39E-04	1.34E-06	1.08E-05	4.74E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**1.50E-01**	**1.44E+00**	**1.40E+00**	**3.23E-03**	**6.81E-02**	**6.06E-02**	**3.41E+02**	**1.73E-02**	**1.85E-03**	**3.42E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	2.75E-03	2.62E-03	3.38E-02	6.14E-05	4.92E-04	2.17E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.49E-01	1.78E+00	4.73E-01	3.78E-03	6.58E-02	3.48E-02
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	4.07E-02	3.86E-02	4.99E-01	9.07E-04	7.26E-03	3.20E-03
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	1.01E-02	9.64E-03	1.24E-01	2.26E-04	1.81E-03	7.98E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.30E-04	4.96E-04	4.58E-03	1.46E-05	1.14E-04	4.90E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	1.21E-02	1.86E-01	7.02E-02	3.38E-04	6.98E-03	6.42E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	8.82E-03	1.04E-01	6.62E-02	3.21E-04	4.02E-03	3.70E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	6.26E-03	8.77E-02	3.65E-02	1.44E-04	3.45E-03	3.17E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	7.43E-03	6.11E-02	3.75E-02	2.28E-04	1.91E-03	1.76E-03
		Front end loader	540 hp	0.8673	19	8.82E-03	1.04E-01	6.62E-02	3.21E-04	4.02E-03	3.70E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.01E-02	1.55E-01	5.88E-02	2.83E-04	5.84E-03	5.37E-03
		Front end loader	49 hp	4	19	9.05E-03	6.59E-02	8.24E-02	1.36E-04	1.47E-03	1.35E-03
		Roller	47 hp	4	19	1.94E-02	7.83E-02	9.45E-02	1.33E-04	4.49E-03	4.13E-03
		Water truck	3000 gal	4	19	6.49E-03	4.64E-02	1.23E-02	9.87E-05	1.71E-03	9.08E-04
		Excavator	300 hp	4	19	1.26E-02	1.42E-01	1.15E-01	5.79E-04	4.74E-03	4.36E-03
		Front end loader	180 hp	4	19	1.33E-02	1.81E-01	9.48E-02	5.08E-04	6.04E-03	5.56E-03
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	3.04E-02	4.66E-01	1.76E-01	8.49E-04	1.75E-02	1.61E-02
		Loader/backhoe	75 hp	0.0923	19	1.45E-04	1.77E-03	2.06E-03	3.68E-06	1.05E-04	9.62E-05
		Crane 94'	155 hp	155	19	6.62E-01	8.21E+00	6.86E+00	1.31E-02	4.38E-01	4.03E-01
		1 ton pickup truck		155	19	4.96E-02	7.44E-02	6.87E-01	2.20E-03	1.71E-02	7.36E-03
		Crane 94'	155 hp	155	20	6.29E-01	7.80E+00	6.52E+00	1.24E-02	4.16E-01	3.83E-01
		1 ton pickup truck		155	20	4.71E-02	7.07E-02	6.53E-01	2.09E-03	1.63E-02	6.99E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	9.64E-03	1.47E-01	5.58E-02	2.69E-04	5.55E-03	5.11E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.12E-02	4.52E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	4.73E-02	5.87E-01	4.91E-01	9.33E-04	3.13E-02	2.88E-02
		Flatbed truck		8	23	6.03E-03	6.93E-03	8.32E-02	9.26E-05	7.22E-04	3.06E-04
		Generator	80 hp	5856	244	1.46E+00	1.28E+01	1.48E+01	2.92E-02	6.87E-01	6.32E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	9.31E-01	1.33E+01	7.67E+00	3.10E-02	4.89E-01	4.49E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	9.31E-01	1.33E+01	7.67E+00	3.10E-02	4.89E-01	4.49E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	9.31E-01	1.33E+01	7.67E+00	3.10E-02	4.89E-01	4.49E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	9.31E-01	1.33E+01	7.67E+00	3.10E-02	4.89E-01	4.49E-01
	Armoring	**1 ton pickup truck**		1.0667	19	3.41E-04	5.12E-04	4.73E-03	1.51E-05	1.18E-04	5.06E-05
		Excavator	430 hp	1.0667	19	4.80E-03	5.41E-02	4.40E-02	2.21E-04	1.81E-03	1.67E-03
		1 ton pickup truck		1.0667	19	3.41E-04	5.12E-04	4.73E-03	1.51E-05	1.18E-04	5.06E-05
	Maintenance	**Grader**	215 hp	144	210	7.36E-02	1.16E+00	4.30E-01	2.28E-03	3.69E-02	3.39E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	9.50E-03	6.79E-02	1.80E-02	1.44E-04	2.51E-03	1.33E-03
		Excavator	430 hp	4.445	22	1.73E-02	1.95E-01	1.58E-01	7.97E-04	6.52E-03	6.00E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	7.79E-02	1.51E+00	4.43E-01	1.65E-03	4.29E-02	3.95E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	3.89E-01	5.45E+00	2.27E+00	8.95E-03	2.15E-01	1.97E-01
		Tractor/crawler/dozer	440 hp	5	20	4.87E-02	6.81E-01	2.84E-01	1.12E-03	2.68E-02	2.47E-02
		3/4 ton Pickup truck		20	20	1.20E-02	1.14E-02	1.48E-01	2.69E-04	2.15E-03	9.48E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.75E-02	3.47E-01	2.82E-01	1.57E-03	1.16E-02	1.07E-02
		3/4 ton Pickup truck		34.0003	126	3.25E-03	3.09E-03	3.99E-02	7.25E-05	5.80E-04	2.56E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	4.59E-03	4.36E-03	5.63E-02	1.02E-04	8.19E-04	3.61E-04
		Diamond cutting saw	50 hp	48	126	2.57E-02	1.61E-01	1.61E-01	3.01E-04	6.93E-03	6.37E-03
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	5.54E-02	7.81E-01	2.67E-01	1.26E-03	3.14E-02	2.89E-02
		3/4 ton Pickup truck		60.0214	126	5.74E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Load/Haul	**Front end loader**	350 hp	4	126	3.87E-03	4.63E-02	2.18E-02	1.03E-04	1.73E-03	1.59E-03
		Water truck	3000 gal	507	126	1.24E-01	8.86E-01	2.36E-01	1.89E-03	3.28E-02	1.74E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	2.77E-02	3.91E-01	1.34E-01	6.31E-04	1.57E-02	1.45E-02
	Micro-blast	**Crane 260'**	375 hp	49	126	4.52E-02	6.38E-01	2.18E-01	1.03E-03	2.57E-02	2.36E-02
		Horizontal boring drill	10 hp	55	126	5.68E-03	4.48E-02	3.67E-02	9.36E-05	2.81E-03	2.59E-03
		3/4 ton Pickup truck		60	126	5.73E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.85E-02	2.60E-01	8.91E-02	4.21E-04	1.05E-02	9.64E-03
		Air compressor	50 hp	40	126	5.86E-02	7.41E-02	3.55E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	1.91E-03	1.82E-03	2.35E-02	4.27E-05	3.41E-04	1.50E-04
					Total	**8.21E+00**	**9.92E+01**	**7.43E+01**	**2.17E-01**	**4.22E+00**	**3.82E+00**
					Daily Onsi						
					Rindge	8	99	74	0	4	4
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 4

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2023 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.068	0.697	0.590	0.003	0.027	0.025	293.384	0.013	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.085	1.062	0.554	0.002	0.044	0.040	234.962	0.012	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.132	0.923	0.735	0.005	0.029	0.027	403.250	0.012	0.000
		Front end loader	540 hp	0.8673	19	0.068	0.697	0.590	0.003	0.027	0.025	293.384	0.013	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
		Front end loader	49 hp	4	19	0.185	1.368	1.799	0.003	0.022	0.020	231.302	0.017	0.000
		Roller	47 hp	4	19	0.366	1.695	2.095	0.003	0.080	0.074	235.507	0.033	0.000
		Water truck	3000 gal	4	19	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
		Excavator	300 hp	4	19	0.039	0.341	0.410	0.002	0.012	0.011	211.854	0.008	0.000
		Front end loader	180 hp	4	19	0.063	0.745	0.558	0.003	0.025	0.023	270.061	0.012	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
		Loader/backhoe	75 hp	0.0923	19	0.073	0.894	1.278	0.002	0.044	0.041	195.356	0.010	0.000
		Crane 94'	155 hp	155	19	0.101	1.216	1.229	0.002	0.064	0.059	208.066	0.012	0.000
		1 ton pickup truck		155	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.101	1.216	1.229	0.002	0.064	0.059	208.066	0.012	0.000
		1 ton pickup truck		155	20	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.076	2.273	117.548	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.101	1.216	1.229	0.002	0.064	0.059	208.066	0.012	0.000
		Flatbed truck		8	23	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135
		Generator	80 hp	5856	244	0.147	1.295	1.736	0.003	0.062	0.057	294.384	0.013	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.065	0.800	0.662	0.003	0.030	0.027	280.790	0.015	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.065	0.800	0.662	0.003	0.030	0.027	280.790	0.015	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.065	0.800	0.662	0.003	0.030	0.027	280.790	0.015	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.065	0.800	0.662	0.003	0.030	0.027	280.790	0.015	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.039	0.341	0.410	0.002	0.012	0.011	211.854	0.008	0.000
		1 ton pickup truck		1.0667	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.096	1.406	0.651	0.004	0.046	0.042	312.002	0.014	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
		Excavator	430 hp	4.445	22	0.039	0.341	0.410	0.002	0.012	0.011	211.854	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.095	2.045	0.750	0.003	0.051	0.047	298.249	0.017	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.085	1.062	0.554	0.002	0.044	0.040	234.962	0.012	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.085	1.062	0.554	0.002	0.044	0.040	234.962	0.012	0.000
		3/4 ton Pickup truck		20	20	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.042	0.451	0.500	0.003	0.015	0.014	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.257	1.805	1.874	0.004	0.062	0.057	277.562	0.023	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
		3/4 ton Pickup truck		60.0214	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.065	0.675	0.432	0.002	0.025	0.023	214.821	0.009	0.000
		Water truck	3000 gal	507	126	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
		Horizontal boring drill	10 hp	55	126	0.252	2.115	1.909	0.005	0.113	0.104	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
		Air compressor	50 hp	40	126	0.782	0.953	52.049	0.004	0.024	0.023	307.059	0.045	0.064
		3/4 ton Pickup truck		20	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 4

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2023 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	210	1.08E-04	1.17E-04	1.39E-03	3.22E-06	2.54E-05	1.10E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.19E-02	4.65E-02	2.26E-02	1.97E-04	3.37E-03	1.75E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	1.60E-03	1.73E-03	2.05E-02	4.76E-05	3.76E-04	1.63E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	3.60E-05	3.90E-05	4.62E-04	1.07E-06	8.48E-06	3.67E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	1.08E-06	1.94E-06	1.58E-05	6.96E-08	5.35E-07	2.26E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	4.64E-05	6.48E-04	3.22E-04	1.61E-06	2.51E-05	2.31E-05	1.43E-01	7.85E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	3.50E-05	3.60E-04	3.04E-04	1.52E-06	1.39E-05	1.28E-05	1.51E-01	6.51E-06	-	1.52E-01	1.38E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	2.53E-05	3.15E-04	1.64E-04	6.83E-07	1.29E-05	1.19E-05	6.96E-02	3.67E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	3.15E-05	2.21E-04	1.76E-04	1.08E-06	6.88E-06	6.33E-06	9.64E-02	2.85E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	3.50E-05	3.60E-04	3.04E-04	1.52E-06	1.39E-05	1.28E-05	1.51E-01	6.51E-06	-	1.52E-01	1.38E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	3.88E-05	5.42E-04	2.70E-04	1.34E-06	2.10E-05	1.94E-05	1.20E-01	6.57E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.99E-05	2.96E-04	3.89E-04	6.46E-07	4.66E-06	4.29E-06	5.00E-02	3.60E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	7.59E-05	3.51E-04	4.34E-04	6.31E-07	1.66E-05	1.53E-05	4.88E-02	6.85E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.80E-05	1.10E-04	5.33E-05	4.65E-07	7.94E-06	4.13E-06	9.33E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	5.09E-05	4.51E-04	5.42E-04	2.75E-06	1.53E-05	1.40E-05	2.80E-01	1.11E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	4.98E-05	5.91E-04	4.43E-04	2.41E-06	1.98E-05	1.82E-05	2.14E-01	9.41E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.17E-04	1.63E-03	8.09E-04	4.03E-06	6.31E-05	5.81E-05	3.59E-01	1.97E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	5.56E-07	6.82E-06	9.75E-06	1.75E-08	3.37E-07	3.10E-07	1.49E-03	7.91E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	2.67E-03	3.22E-02	3.25E-02	6.20E-05	1.71E-03	1.57E-03	5.51E+00	3.23E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	19	1.63E-04	2.92E-04	2.37E-03	1.04E-05	8.03E-05	3.39E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	2.67E-03	3.22E-02	3.25E-02	6.20E-05	1.71E-03	1.57E-03	5.51E+00	3.23E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	20	1.63E-04	2.92E-04	2.37E-03	1.04E-05	8.03E-05	3.39E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	3.88E-05	5.42E-04	2.70E-04	1.34E-06	2.10E-05	1.94E-05	1.20E-01	6.57E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.53E-04	2.61E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	23	2.31E-04	2.79E-03	2.82E-03	5.37E-06	1.48E-04	1.36E-04	4.77E-01	2.79E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	2.44E-05	3.03E-05	3.45E-04	5.32E-07	4.11E-06	1.72E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	7.61E-02	6.69E-01	8.97E-01	1.78E-03	3.21E-02	2.95E-02	1.52E+02	6.87E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.39E-03	4.17E-02	3.45E-02	1.47E-04	1.55E-03	1.43E-03	1.46E+01	7.76E-04	-	1.47E+01	1.33E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.39E-03	4.17E-02	3.45E-02	1.47E-04	1.55E-03	1.43E-03	1.46E+01	7.76E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	3.39E-03	4.17E-02	3.45E-02	1.47E-04	1.55E-03	1.43E-03	1.46E+01	7.76E-04	-	1.47E+01	1.33E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.39E-03	4.17E-02	3.45E-02	1.47E-04	1.55E-03	1.43E-03	1.46E+01	7.76E-04	-	1.47E+01	1.33E+01
	Armoring	**1 ton pickup truck**		1.0667	19	1.12E-06	2.01E-06	1.63E-05	7.19E-08	5.53E-07	2.34E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.95E-05	1.72E-04	2.07E-04	1.05E-06	5.83E-06	5.37E-06	1.07E-01	4.26E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	1.12E-06	2.01E-06	1.63E-05	7.19E-08	5.53E-07	2.34E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	3.27E-03	4.80E-02	2.22E-02	1.20E-04	1.56E-03	1.43E-03	1.06E+01	4.78E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.75E-05	1.86E-04	9.03E-05	7.89E-07	1.35E-05	6.99E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.44E-01
		Excavator	430 hp	4.445	22	8.11E-05	7.19E-04	8.64E-04	4.38E-06	2.43E-05	2.24E-05	4.46E-01	1.78E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.88E-04	6.19E-03	2.27E-03	9.08E-06	1.54E-04	1.41E-04	9.03E-01	5.11E-05	-	9.04E-01	8.21E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	1.65E-03	2.06E-02	1.08E-02	4.47E-05	8.46E-04	7.78E-04	4.56E+00	2.40E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	2.07E-04	2.58E-03	1.34E-03	5.59E-06	1.06E-04	9.73E-05	5.70E-01	3.00E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	4.50E-05	4.88E-05	5.78E-04	1.34E-06	1.06E-05	4.59E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	7.47E-04	8.03E-03	8.89E-03	4.93E-05	2.70E-04	2.49E-04	5.02E+00	1.04E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	7.65E-05	8.30E-05	9.83E-04	2.28E-06	1.80E-05	7.81E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	1.08E-04	1.17E-04	1.39E-03	3.22E-06	2.54E-05	1.10E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	6.80E-04	4.78E-03	4.96E-03	9.49E-06	1.63E-04	1.50E-04	7.34E-01	6.14E-05	-	7.36E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	1.40E-03	1.79E-02	8.12E-03	3.98E-05	7.26E-04	6.68E-04	4.05E+00	1.91E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	1.35E-04	1.46E-04	1.73E-03	4.03E-06	3.18E-05	1.38E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	1.00E-04	1.04E-03	6.67E-04	3.25E-06	3.88E-05	3.57E-05	3.32E-01	1.42E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.55E-03	1.39E-02	6.75E-03	5.90E-05	1.01E-03	5.23E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	6.98E-04	8.97E-03	4.06E-03	1.99E-05	3.63E-04	3.34E-04	2.03E+00	9.53E-05	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	1.14E-03	1.46E-02	6.63E-03	3.25E-05	5.93E-04	5.45E-04	3.31E+00	1.56E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.53E-04	1.28E-03	1.16E-03	2.95E-06	6.88E-05	6.33E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	1.35E-04	1.46E-04	1.73E-03	4.03E-06	3.18E-05	1.38E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	4.65E-04	5.98E-03	2.71E-03	1.32E-05	2.42E-04	2.23E-04	1.35E+00	6.35E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.72E-03	2.10E-03	1.15E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	9.81E-05	1.41E-04	7.23E-01	6.56E-01
		3/4 ton Pickup truck		20	126	4.50E-05	4.88E-05	5.78E-04	1.34E-06	1.06E-05	4.59E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**1.27E-01**	**1.12E+00**	**1.37E+00**	**3.23E-03**	**5.26E-02**	**4.63E-02**	**3.40E+02**	**1.55E-02**	**1.85E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 4

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2023 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	2.06E-03	2.23E-03	2.64E-02	6.14E-05	4.84E-04	2.10E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.26E-01	8.85E-01	4.30E-01	3.76E-03	6.41E-02	3.33E-02
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	3.04E-02	3.29E-02	3.90E-01	9.07E-04	7.16E-03	3.10E-03
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	7.58E-03	8.22E-03	9.74E-02	2.26E-04	1.78E-03	7.73E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	2.28E-04	4.09E-04	3.33E-03	1.46E-05	1.13E-04	4.76E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	9.77E-03	1.36E-01	6.78E-02	3.38E-04	5.29E-03	4.87E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	7.36E-03	7.58E-02	6.41E-02	3.21E-04	2.93E-03	2.69E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	5.32E-03	6.63E-02	3.46E-02	1.44E-04	2.72E-03	2.50E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	6.64E-03	4.64E-02	3.70E-02	2.28E-04	1.45E-03	1.33E-03
		Front end loader	540 hp	0.8673	19	7.36E-03	7.58E-02	6.41E-02	3.21E-04	2.93E-03	2.69E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	8.18E-03	1.14E-01	5.68E-02	2.83E-04	4.43E-03	4.07E-03
		Front end loader	49 hp	4	19	8.40E-03	6.22E-02	8.18E-02	1.36E-04	9.82E-04	9.03E-04
		Roller	47 hp	4	19	1.60E-02	7.40E-02	9.14E-02	1.33E-04	3.49E-03	3.21E-03
		Water truck	3000 gal	4	19	5.90E-03	2.31E-02	1.12E-02	9.80E-05	1.67E-03	8.69E-04
		Excavator	300 hp	4	19	1.07E-02	9.50E-02	1.14E-01	5.79E-04	3.21E-03	2.96E-03
		Front end loader	180 hp	4	19	1.05E-02	1.25E-01	9.33E-02	5.08E-04	4.17E-03	3.84E-03
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	2.45E-02	3.43E-01	1.70E-01	8.49E-04	1.33E-02	1.22E-02
		Loader/backhoe	75 hp	0.0923	19	1.17E-04	1.44E-03	2.05E-03	3.68E-06	7.09E-05	6.52E-05
		Crane 94'	155 hp	155	19	5.62E-01	6.78E+00	6.85E+00	1.31E-02	3.59E-01	3.31E-01
		1 ton pickup truck		155	19	3.42E-02	6.14E-02	4.99E-01	2.20E-03	1.69E-02	7.14E-03
		Crane 94'	155 hp	155	20	5.34E-01	6.44E+00	6.51E+00	1.24E-02	3.41E-01	3.14E-01
		1 ton pickup truck		155	20	3.25E-02	5.83E-02	4.74E-01	2.09E-03	1.61E-02	6.79E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	7.77E-03	1.08E-01	5.39E-02	2.69E-04	4.21E-03	3.87E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	4.02E-02	4.85E-01	4.90E-01	9.33E-04	2.57E-02	2.36E-02
		Flatbed truck		8	23	4.25E-03	5.26E-03	6.00E-02	9.25E-05	7.15E-04	2.99E-04
		Generator	80 hp	5856	244	1.25E+00	1.10E+01	1.47E+01	2.92E-02	5.26E-01	4.84E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	7.14E-01	8.79E+00	7.27E+00	3.10E-02	3.27E-01	3.01E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	7.14E-01	8.79E+00	7.27E+00	3.10E-02	3.27E-01	3.01E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	7.14E-01	8.79E+00	7.27E+00	3.10E-02	3.27E-01	3.01E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	7.14E-01	8.79E+00	7.27E+00	3.10E-02	3.27E-01	3.01E-01
	Armoring	**1 ton pickup truck**		1.0667	19	2.36E-04	4.23E-04	3.44E-03	1.51E-05	1.16E-04	4.92E-05
		Excavator	430 hp	1.0667	19	4.10E-03	3.63E-02	4.36E-02	2.21E-04	1.23E-03	1.13E-03
		1 ton pickup truck		1.0667	19	2.36E-04	4.23E-04	3.44E-03	1.51E-05	1.16E-04	4.92E-05
	Maintenance	**Grader**	215 hp	144	210	6.23E-02	9.14E-01	4.23E-01	2.28E-03	2.96E-02	2.72E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.64E-03	3.38E-02	1.64E-02	1.43E-04	2.45E-03	1.27E-03
		Excavator	430 hp	4.445	22	1.47E-02	1.31E-01	1.57E-01	7.97E-04	4.42E-03	4.07E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	5.24E-02	1.13E+00	4.13E-01	1.65E-03	2.80E-02	2.57E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	3.31E-01	4.12E+00	2.15E+00	8.95E-03	1.69E-01	1.56E-01
		Tractor/crawler/dozer	440 hp	5	20	4.13E-02	5.15E-01	2.69E-01	1.12E-03	2.11E-02	1.95E-02
		3/4 ton Pickup truck		20	20	9.00E-03	9.76E-03	1.16E-01	2.69E-04	2.12E-03	9.18E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.37E-02	2.55E-01	2.82E-01	1.57E-03	8.58E-03	7.90E-03
		3/4 ton Pickup truck		34.0003	126	2.43E-03	2.63E-03	3.12E-02	7.25E-05	5.72E-04	2.48E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	3.43E-03	3.72E-03	4.40E-02	1.02E-04	8.07E-04	3.50E-04
		Diamond cutting saw	50 hp	48	126	2.16E-02	1.52E-01	1.57E-01	3.01E-04	5.19E-03	4.77E-03
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	4.43E-02	5.70E-01	2.58E-01	1.26E-03	2.30E-02	2.12E-02
		3/4 ton Pickup truck		60.0214	126	4.29E-03	4.65E-03	5.51E-02	1.28E-04	1.01E-03	4.38E-04
	Load/Haul	**Front end loader**	350 hp	4	126	3.18E-03	3.31E-02	2.12E-02	1.03E-04	1.23E-03	1.13E-03
		Water truck	3000 gal	507	126	1.13E-01	4.41E-01	2.14E-01	1.87E-03	3.20E-02	1.66E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	2.22E-02	2.85E-01	1.29E-01	6.31E-04	1.15E-02	1.06E-02
	Micro-blast	**Crane 260'**	375 hp	49	126	3.62E-02	4.65E-01	2.10E-01	1.03E-03	1.88E-02	1.73E-02
		Horizontal boring drill	10 hp	55	126	4.84E-03	4.07E-02	3.67E-02	9.36E-05	2.18E-03	2.01E-03
		3/4 ton Pickup truck		60	126	4.29E-03	4.65E-03	5.51E-02	1.28E-04	1.01E-03	4.37E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.48E-02	1.90E-01	8.59E-02	4.21E-04	7.68E-03	7.06E-03
		Air compressor	50 hp	40	126	5.48E-02	6.67E-02	3.64E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	1.43E-03	1.55E-03	1.84E-02	4.26E-05	3.36E-04	1.46E-04
					Total	**6.67E+00**	**7.17E+01**	**7.18E+01**	**2.17E-01**	**3.12E+00**	**2.81E+00**
					Daily Onsi						
					Rindge	7	71	72	0	3	3
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
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Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 5

Construction Start Year 2025
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2025 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.082	1.056	0.664	0.003	0.041	0.038	301.159	0.015	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.063	0.598	0.576	0.003	0.023	0.021	293.384	0.012	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.074	0.823	0.533	0.002	0.035	0.032	234.962	0.011	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.118	0.696	0.729	0.005	0.021	0.019	403.250	0.011	0.000
		Front end loader	540 hp	0.8673	19	0.063	0.598	0.576	0.003	0.023	0.021	293.384	0.012	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.082	1.056	0.664	0.003	0.041	0.038	301.159	0.015	0.000
		Front end loader	49 hp	4	19	0.176	1.310	1.792	0.003	0.014	0.013	231.302	0.016	0.000
		Roller	47 hp	4	19	0.312	1.610	2.047	0.003	0.061	0.056	235.507	0.028	0.000
		Water truck	3000 gal	4	19	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
		Excavator	300 hp	4	19	0.036	0.277	0.407	0.002	0.010	0.009	211.854	0.008	0.000
		Front end loader	180 hp	4	19	0.053	0.522	0.551	0.003	0.018	0.016	270.061	0.011	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.082	1.056	0.664	0.003	0.041	0.038	301.159	0.015	0.000
		Loader/backhoe	75 hp	0.0923	19	0.064	0.777	1.276	0.002	0.031	0.029	195.356	0.010	0.000
		Crane 94'	155 hp	155	19	0.080	0.911	1.229	0.002	0.048	0.044	208.066	0.011	0.000
		1 ton pickup truck		155	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
		Crane 94'	155 hp	155	20	0.080	0.911	1.229	0.002	0.048	0.044	208.066	0.011	0.000
		1 ton pickup truck		155	20	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.082	1.056	0.664	0.003	0.041	0.038	301.159	0.015	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.075	2.272	117.535	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.080	0.911	1.229	0.002	0.048	0.044	208.066	0.011	0.000
		Flatbed truck		8	23	1.975	2.645	28.336	0.061	0.463	0.191	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.128	1.141	1.731	0.003	0.046	0.042	294.384	0.012	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.059	0.662	0.636	0.003	0.024	0.022	280.790	0.014	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.059	0.662	0.636	0.003	0.024	0.022	280.790	0.014	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.059	0.662	0.636	0.003	0.024	0.022	280.790	0.014	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.059	0.662	0.636	0.003	0.024	0.022	280.790	0.014	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
		Excavator	430 hp	1.0667	19	0.036	0.277	0.407	0.002	0.010	0.009	211.854	0.008	0.000
		1 ton pickup truck		1.0667	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.078	1.045	0.643	0.004	0.034	0.031	312.002	0.013	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
		Excavator	430 hp	4.445	22	0.036	0.277	0.407	0.002	0.010	0.009	211.854	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.092	1.972	0.708	0.003	0.048	0.044	298.249	0.015	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.074	0.823	0.533	0.002	0.035	0.032	234.962	0.011	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.074	0.823	0.533	0.002	0.035	0.032	234.962	0.011	0.000
		3/4 ton Pickup truck		20	20	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.042	0.414	0.500	0.003	0.014	0.013	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.220	1.705	1.844	0.004	0.046	0.043	277.562	0.020	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.052	0.621	0.320	0.002	0.025	0.023	163.241	0.007	0.000
		3/4 ton Pickup truck		60.0214	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.058	0.518	0.422	0.002	0.019	0.017	214.821	0.008	0.000
		Water truck	3000 gal	507	126	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.052	0.621	0.320	0.002	0.025	0.023	163.241	0.007	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.052	0.621	0.320	0.002	0.025	0.023	163.241	0.007	0.000
		Horizontal boring drill	10 hp	55	126	0.245	1.999	1.909	0.005	0.097	0.089	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.052	0.621	0.320	0.002	0.025	0.023	163.241	0.007	0.000
		Air compressor	50 hp	40	126	0.736	0.891	53.516	0.004	0.024	0.023	307.059	0.042	0.062
		3/4 ton Pickup truck		20	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 5

Construction Start Year 2025
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2025 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	7.96E-05	9.96E-05	1.07E-03	3.25E-06	2.51E-05	1.07E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.22E-02	4.82E-02	2.31E-02	1.98E-04	3.39E-03	1.77E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	1.18E-03	1.47E-03	1.58E-02	4.80E-05	3.71E-04	1.58E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	2.65E-05	3.32E-05	3.56E-04	1.08E-06	8.37E-06	3.57E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	7.72E-07	1.61E-06	1.17E-05	7.02E-08	5.29E-07	2.20E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.91E-05	5.01E-04	3.15E-04	1.61E-06	1.95E-05	1.80E-05	1.43E-01	7.17E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	3.28E-05	3.09E-04	2.97E-04	1.52E-06	1.19E-05	1.10E-05	1.51E-01	5.96E-06	-	1.52E-01	1.38E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	2.18E-05	2.44E-04	1.58E-04	6.83E-07	1.02E-05	9.41E-06	6.96E-02	3.37E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.82E-05	1.66E-04	1.74E-04	1.08E-06	4.94E-06	4.55E-06	9.64E-02	2.54E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	3.28E-05	3.09E-04	2.97E-04	1.52E-06	1.19E-05	1.10E-05	1.51E-01	5.96E-06	-	1.52E-01	1.38E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	3.27E-05	4.19E-04	2.63E-04	1.34E-06	1.63E-05	1.50E-05	1.20E-01	6.00E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.79E-05	2.83E-04	3.87E-04	6.46E-07	2.96E-06	2.72E-06	5.00E-02	3.42E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	6.47E-05	3.34E-04	4.24E-04	6.31E-07	1.27E-05	1.17E-05	4.88E-02	5.84E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.87E-05	1.14E-04	5.45E-05	4.67E-07	7.99E-06	4.17E-06	9.33E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.81E-05	3.67E-04	5.39E-04	2.75E-06	1.30E-05	1.19E-05	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	4.21E-05	4.14E-04	4.38E-04	2.41E-06	1.39E-05	1.28E-05	2.14E-01	8.58E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	9.81E-05	1.26E-03	7.90E-04	4.03E-06	4.90E-05	4.51E-05	3.59E-01	1.80E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.85E-07	5.93E-06	9.74E-06	1.75E-08	2.40E-07	2.21E-07	1.49E-03	7.30E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	2.11E-03	2.41E-02	3.25E-02	6.20E-05	1.27E-03	1.17E-03	5.51E+00	2.86E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	19	1.16E-04	2.41E-04	1.76E-03	1.05E-05	7.94E-05	3.31E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	2.11E-03	2.41E-02	3.25E-02	6.20E-05	1.27E-03	1.17E-03	5.51E+00	2.86E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	20	1.16E-04	2.41E-04	1.76E-03	1.05E-05	7.94E-05	3.31E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	3.27E-05	4.19E-04	2.63E-04	1.34E-06	1.63E-05	1.50E-05	1.20E-01	6.00E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.82E-04	2.09E-03	2.82E-03	5.37E-06	1.10E-04	1.01E-04	4.77E-01	2.48E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	1.74E-05	2.33E-05	2.50E-04	5.36E-07	4.08E-06	1.69E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	6.62E-02	5.89E-01	8.94E-01	1.78E-03	2.38E-02	2.19E-02	1.52E+02	5.98E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	3.09E-03	3.45E-02	3.32E-02	1.47E-04	1.27E-03	1.17E-03	1.46E+01	7.12E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.09E-03	3.45E-02	3.32E-02	1.47E-04	1.27E-03	1.17E-03	1.46E+01	7.12E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	3.09E-03	3.45E-02	3.32E-02	1.47E-04	1.27E-03	1.17E-03	1.46E+01	7.12E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.09E-03	3.45E-02	3.32E-02	1.47E-04	1.27E-03	1.17E-03	1.46E+01	7.12E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	7.98E-07	1.66E-06	1.21E-05	7.25E-08	5.47E-07	2.28E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.84E-05	1.40E-04	2.06E-04	1.05E-06	4.96E-06	4.57E-06	1.07E-01	3.91E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	7.98E-07	1.66E-06	1.21E-05	7.25E-08	5.47E-07	2.28E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.65E-03	3.57E-02	2.20E-02	1.20E-04	1.15E-03	1.06E-03	1.06E+01	4.36E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.87E-05	1.93E-04	9.25E-05	7.91E-07	1.35E-05	7.08E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.44E-01
		Excavator	430 hp	4.445	22	7.66E-05	5.84E-04	8.58E-04	4.38E-06	2.07E-05	1.90E-05	4.46E-01	1.63E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.79E-04	5.97E-03	2.14E-03	9.08E-06	1.45E-04	1.33E-04	9.03E-01	4.64E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.43E-03	1.60E-02	1.03E-02	4.47E-05	6.70E-04	6.16E-04	4.56E+00	2.21E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.79E-04	2.00E-03	1.29E-03	5.59E-06	8.37E-05	7.70E-05	5.70E-01	2.76E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	3.32E-05	4.15E-05	4.46E-04	1.36E-06	1.05E-05	4.46E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.51E-04	7.36E-03	8.89E-03	4.93E-05	2.52E-04	2.32E-04	5.02E+00	1.03E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	5.64E-05	7.05E-05	7.57E-04	2.30E-06	1.78E-05	7.59E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	7.96E-05	9.96E-05	1.07E-03	3.25E-06	2.51E-05	1.07E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	5.81E-04	4.51E-03	4.88E-03	9.49E-06	1.23E-04	1.13E-04	7.34E-01	5.24E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.29E-03	1.54E-02	7.95E-03	3.98E-05	6.28E-04	5.78E-04	4.05E+00	1.74E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	9.95E-05	1.25E-04	1.34E-03	4.07E-06	3.14E-05	1.34E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.91E-05	8.00E-04	6.51E-04	3.25E-06	2.93E-05	2.70E-05	3.32E-01	1.30E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.64E-03	1.44E-02	6.91E-03	5.92E-05	1.01E-03	5.29E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	6.45E-04	7.70E-03	3.97E-03	1.99E-05	3.14E-04	2.89E-04	2.03E+00	8.70E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	1.05E-03	1.26E-02	6.49E-03	3.25E-05	5.13E-04	4.72E-04	3.31E+00	1.42E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.49E-04	1.21E-03	1.16E-03	2.95E-06	5.88E-05	5.41E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	9.95E-05	1.24E-04	1.34E-03	4.07E-06	3.14E-05	1.34E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	4.30E-04	5.13E-03	2.65E-03	1.32E-05	2.09E-04	1.93E-04	1.35E+00	5.80E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.62E-03	1.96E-03	1.18E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	9.23E-05	1.38E-04	7.22E-01	6.55E-01
		3/4 ton Pickup truck		20	126	3.32E-05	4.15E-05	4.46E-04	1.36E-06	1.05E-05	4.46E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**1.13E-01**	**9.66E-01**	**1.36E+00**	**3.23E-03**	**4.13E-02**	**3.59E-02**	**3.40E+02**	**1.42E-02**	**1.84E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 5

Construction Start Year 2025
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2025 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	1.52E-03	1.90E-03	2.04E-02	6.20E-05	4.78E-04	2.04E-04
Dust Control		Water truck	5000 gal	1696	210	2.32E-01	9.19E-01	4.41E-01	3.77E-03	6.46E-02	3.37E-02
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	2.24E-02	2.80E-02	3.01E-01	9.15E-04	7.06E-03	3.01E-03
measures	***Fish relocation***	3/4 ton pickup truck		16	19	5.59E-03	6.99E-03	7.50E-02	2.28E-04	1.76E-03	7.52E-04
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	1.63E-04	3.39E-04	2.47E-03	1.48E-05	1.11E-04	4.64E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	8.22E-03	1.05E-01	6.63E-02	3.38E-04	4.11E-03	3.78E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	6.90E-03	6.50E-02	6.26E-02	3.21E-04	2.52E-03	2.31E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.60E-03	5.14E-02	3.32E-02	1.44E-04	2.15E-03	1.98E-03
	Chipping	Brush chipper	250 hp	0.8673	19	5.94E-03	3.50E-02	3.67E-02	2.28E-04	1.04E-03	9.58E-04
		Front end loader	540 hp	0.8673	19	6.90E-03	6.50E-02	6.26E-02	3.21E-04	2.52E-03	2.31E-03
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	6.88E-03	8.82E-02	5.55E-02	2.83E-04	3.44E-03	3.17E-03
		Front end loader	49 hp	4	19	7.99E-03	5.96E-02	8.15E-02	1.36E-04	6.23E-04	5.73E-04
		Roller	47 hp	4	19	1.36E-02	7.02E-02	8.93E-02	1.33E-04	2.67E-03	2.46E-03
		Water truck	3000 gal	4	19	6.05E-03	2.40E-02	1.15E-02	9.82E-05	1.68E-03	8.79E-04
		Excavator	300 hp	4	19	1.01E-02	7.73E-02	1.13E-01	5.79E-04	2.73E-03	2.51E-03
		Front end loader	180 hp	4	19	8.86E-03	8.72E-02	9.21E-02	5.08E-04	2.93E-03	2.69E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	2.06E-02	2.65E-01	1.66E-01	8.49E-04	1.03E-02	9.50E-03
		Loader/backhoe	75 hp	0.0923	19	1.02E-04	1.25E-03	2.05E-03	3.68E-06	5.06E-05	4.65E-05
		Crane 94'	155 hp	155	19	4.44E-01	5.08E+00	6.85E+00	1.31E-02	2.67E-01	2.46E-01
		1 ton pickup truck		155	19	2.44E-02	5.08E-02	3.70E-01	2.22E-03	1.67E-02	6.97E-03
		Crane 94'	155 hp	155	20	4.21E-01	4.82E+00	6.51E+00	1.24E-02	2.54E-01	2.34E-01
		1 ton pickup truck		155	20	2.32E-02	4.83E-02	3.52E-01	2.11E-03	1.59E-02	6.62E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	6.54E-03	8.38E-02	5.27E-02	2.69E-04	3.27E-03	3.01E-03
	Dewatering	Concrete saw	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	3.17E-02	3.63E-01	4.90E-01	9.33E-04	1.91E-02	1.76E-02
		Flatbed truck		8	23	3.03E-03	4.06E-03	4.35E-02	9.32E-05	7.09E-04	2.94E-04
		Generator	80 hp	5856	244	1.09E+00	9.66E+00	1.47E+01	2.92E-02	3.90E-01	3.59E-01
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	6.50E-01	7.27E+00	6.98E+00	3.10E-02	2.67E-01	2.46E-01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	6.50E-01	7.27E+00	6.98E+00	3.10E-02	2.67E-01	2.46E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	6.50E-01	7.27E+00	6.98E+00	3.10E-02	2.67E-01	2.46E-01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	6.50E-01	7.27E+00	6.98E+00	3.10E-02	2.67E-01	2.46E-01
	Armoring	1 ton pickup truck		1.0667	19	1.68E-04	3.50E-04	2.55E-03	1.53E-05	1.15E-04	4.79E-05
		Excavator	430 hp	1.0667	19	3.87E-03	2.95E-02	4.34E-02	2.21E-04	1.04E-03	9.61E-04
		1 ton pickup truck		1.0667	19	1.68E-04	3.50E-04	2.55E-03	1.53E-05	1.15E-04	4.79E-05
	Maintenance	Grader	215 hp	144	210	5.05E-02	6.79E-01	4.18E-01	2.28E-03	2.19E-02	2.01E-02
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	8.85E-03	3.51E-02	1.68E-02	1.44E-04	2.46E-03	1.29E-03
		Excavator	430 hp	4.445	22	1.39E-02	1.06E-01	1.56E-01	7.97E-04	3.76E-03	3.46E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	5.06E-02	1.09E+00	3.90E-01	1.65E-03	2.63E-02	2.42E-02
	Platform	Tractor/crawler/dozer	440 hp	40	20	2.86E-01	3.19E+00	2.07E+00	8.95E-03	1.34E-01	1.23E-01
		Tractor/crawler/dozer	440 hp	5	20	3.57E-02	3.99E-01	2.58E-01	1.12E-03	1.67E-02	1.54E-02
		3/4 ton Pickup truck		20	20	6.63E-03	8.30E-03	8.91E-02	2.71E-04	2.09E-03	8.93E-04
	Drilling	Rotary drill	475 hp	34.0003	126	2.39E-02	2.34E-01	2.82E-01	1.57E-03	7.99E-03	7.35E-03
		3/4 ton Pickup truck		34.0003	126	1.79E-03	2.24E-03	2.40E-02	7.31E-05	5.65E-04	2.41E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.53E-03	3.16E-03	3.39E-02	1.03E-04	7.97E-04	3.40E-04
		Diamond cutting saw	50 hp	48	126	1.85E-02	1.43E-01	1.55E-01	3.01E-04	3.90E-03	3.59E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	4.10E-02	4.89E-01	2.52E-01	1.26E-03	1.99E-02	1.84E-02
		3/4 ton Pickup truck		60.0214	126	3.16E-03	3.95E-03	4.24E-02	1.29E-04	9.97E-04	4.25E-04
	Load/Haul	Front end loader	350 hp	4	126	2.83E-03	2.54E-02	2.07E-02	1.03E-04	9.31E-04	8.56E-04
		Water truck	3000 gal	507	126	1.16E-01	4.58E-01	2.19E-01	1.88E-03	3.22E-02	1.68E-02
	Landfill	Crane 260'	375 hp	30.0107	126	2.05E-02	2.44E-01	1.26E-01	6.31E-04	9.97E-03	9.18E-03
	Micro-blast	Crane 260'	375 hp	49	126	3.34E-02	3.99E-01	2.06E-01	1.03E-03	1.63E-02	1.50E-02
		Horizontal boring drill	10 hp	55	126	4.72E-03	3.85E-02	3.67E-02	9.36E-05	1.87E-03	1.72E-03
		3/4 ton Pickup truck		60	126	3.16E-03	3.95E-03	4.24E-02	1.29E-04	9.96E-04	4.25E-04
	Demolish spillway	Crane 260'	375 hp	20	126	1.36E-02	1.63E-01	8.41E-02	4.21E-04	6.65E-03	6.12E-03
		Air compressor	50 hp	40	126	5.15E-02	6.24E-02	3.75E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	1.05E-03	1.32E-03	1.41E-02	4.30E-05	3.32E-04	1.42E-04
					Total	**5.89E+00**	**5.90E+01**	**7.01E+01**	**2.17E-01**	**2.49E+00**	**2.23E+00**
					Daily Onsi						
					Rindge	6	59	70	0	2	2
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 6

Construction Start Year 2027
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2027 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.076	0.887	0.652	0.003	0.035	0.033	301.159	0.014	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.465	0.567	0.003	0.017	0.016	293.384	0.011	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.068	0.697	0.516	0.002	0.030	0.027	234.962	0.011	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.107	0.515	0.727	0.005	0.015	0.014	403.250	0.010	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.465	0.567	0.003	0.017	0.016	293.384	0.011	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.076	0.887	0.652	0.003	0.035	0.033	301.159	0.014	0.000
		Front end loader	49 hp	4	19	0.170	1.291	1.788	0.003	0.010	0.010	231.302	0.015	0.000
		Roller	47 hp	4	19	0.277	1.536	2.015	0.003	0.046	0.043	235.507	0.025	0.000
		Water truck	3000 gal	4	19	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.240	0.406	0.002	0.009	0.008	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.048	0.378	0.546	0.003	0.013	0.012	270.061	0.010	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.076	0.887	0.652	0.003	0.035	0.033	301.159	0.014	0.000
		Loader/backhoe	75 hp	0.0923	19	0.058	0.709	1.275	0.002	0.024	0.022	195.356	0.009	0.000
		Crane 94'	155 hp	155	19	0.068	0.738	1.229	0.002	0.038	0.035	208.066	0.010	0.000
		1 ton pickup truck		155	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.068	0.738	1.229	0.002	0.038	0.035	208.066	0.010	0.000
		1 ton pickup truck		155	20	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.076	0.887	0.652	0.003	0.035	0.033	301.159	0.014	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.073	2.271	117.522	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.068	0.738	1.229	0.002	0.038	0.035	208.066	0.010	0.000
		Flatbed truck		8	23	1.465	2.125	21.302	0.061	0.460	0.189	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.112	1.009	1.727	0.003	0.032	0.029	294.384	0.010	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.055	0.549	0.616	0.003	0.020	0.019	280.790	0.013	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.055	0.549	0.616	0.003	0.020	0.019	280.790	0.013	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.055	0.549	0.616	0.003	0.020	0.019	280.790	0.013	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.055	0.549	0.616	0.003	0.020	0.019	280.790	0.013	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.240	0.406	0.002	0.009	0.008	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.065	0.765	0.637	0.004	0.025	0.023	312.002	0.012	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.240	0.406	0.002	0.009	0.008	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.079	1.715	0.676	0.003	0.039	0.036	298.249	0.014	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.068	0.697	0.516	0.002	0.030	0.027	234.962	0.011	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.068	0.697	0.516	0.002	0.030	0.027	234.962	0.011	0.000
		3/4 ton Pickup truck		20	20	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.378	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.189	1.609	1.816	0.004	0.033	0.030	277.562	0.017	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.050	0.552	0.317	0.002	0.023	0.021	163.241	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.054	0.422	0.415	0.002	0.016	0.014	214.821	0.008	0.000
		Water truck	3000 gal	507	126	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.050	0.552	0.317	0.002	0.023	0.021	163.241	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.050	0.552	0.317	0.002	0.023	0.021	163.241	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.245	1.938	1.909	0.005	0.088	0.081	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.050	0.552	0.317	0.002	0.023	0.021	163.241	0.006	0.000
		Air compressor	50 hp	40	126	0.693	0.839	54.516	0.004	0.024	0.023	307.059	0.039	0.061
		3/4 ton Pickup truck		20	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 6

Construction Start Year 2027
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2027 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	5.97E-05	8.62E-05	8.41E-04	3.25E-06	2.49E-05	1.05E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.89E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	8.82E-04	1.27E-03	1.24E-02	4.80E-05	3.67E-04	1.55E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	1.99E-05	2.87E-05	2.80E-04	1.08E-06	8.29E-06	3.50E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	5.95E-07	1.37E-06	9.26E-06	7.02E-08	5.25E-07	2.17E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.59E-05	4.21E-04	3.09E-04	1.61E-06	1.68E-05	1.54E-05	1.43E-01	6.61E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	2.93E-05	2.40E-04	2.93E-04	1.52E-06	8.83E-06	8.13E-06	1.51E-01	5.52E-06	-	1.52E-01	1.38E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	2.03E-05	2.07E-04	1.53E-04	6.83E-07	8.77E-06	8.07E-06	6.96E-02	3.13E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.55E-05	1.23E-04	1.74E-04	1.08E-06	3.63E-06	3.34E-06	9.64E-02	2.30E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.93E-05	2.40E-04	2.93E-04	1.52E-06	8.83E-06	8.13E-06	1.51E-01	5.52E-06	-	1.52E-01	1.38E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	3.01E-05	3.52E-04	2.59E-04	1.34E-06	1.41E-05	1.29E-05	1.20E-01	5.53E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.68E-05	2.79E-04	3.86E-04	6.46E-07	2.24E-06	2.07E-06	5.00E-02	3.32E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	5.75E-05	3.18E-04	4.17E-04	6.31E-07	9.63E-06	8.86E-06	4.88E-02	5.19E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.90E-05	1.15E-04	5.51E-05	4.67E-07	8.02E-06	4.20E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.67E-05	3.17E-04	5.37E-04	2.75E-06	1.13E-05	1.04E-05	2.80E-01	9.56E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.82E-05	3.00E-04	4.33E-04	2.41E-06	1.04E-05	9.58E-06	2.14E-01	7.91E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	9.02E-05	1.06E-03	7.77E-04	4.03E-06	4.22E-05	3.88E-05	3.59E-01	1.66E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.46E-07	5.41E-06	9.73E-06	1.75E-08	1.80E-07	1.66E-07	1.49E-03	6.87E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.80E-03	1.95E-02	3.25E-02	6.20E-05	1.01E-03	9.27E-04	5.51E+00	2.57E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	19	8.93E-05	2.05E-04	1.39E-03	1.05E-05	7.89E-05	3.26E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.80E-03	1.95E-02	3.25E-02	6.20E-05	1.01E-03	9.27E-04	5.51E+00	2.57E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	20	8.93E-05	2.05E-04	1.39E-03	1.05E-05	7.89E-05	3.26E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	3.01E-05	3.52E-04	2.59E-04	1.34E-06	1.41E-05	1.29E-05	1.20E-01	5.53E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.56E-04	1.69E-03	2.82E-03	5.37E-06	8.72E-05	8.03E-05	4.77E-01	2.22E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	1.29E-05	1.87E-05	1.88E-04	5.36E-07	4.06E-06	1.67E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.77E-02	5.21E-01	8.92E-01	1.78E-03	1.63E-02	1.50E-02	1.52E+02	5.21E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	2.86E-03	2.86E-02	3.21E-02	1.47E-04	1.06E-03	9.75E-04	1.46E+01	6.60E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.86E-03	2.86E-02	3.21E-02	1.47E-04	1.06E-03	9.75E-04	1.46E+01	6.60E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.86E-03	2.86E-02	3.21E-02	1.47E-04	1.06E-03	9.75E-04	1.46E+01	6.60E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.86E-03	2.86E-02	3.21E-02	1.47E-04	1.06E-03	9.75E-04	1.46E+01	6.60E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	6.14E-07	1.41E-06	9.57E-06	7.25E-08	5.43E-07	2.24E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.79E-05	1.21E-04	2.05E-04	1.05E-06	4.33E-06	3.98E-06	1.07E-01	3.65E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	6.14E-07	1.41E-06	9.57E-06	7.25E-08	5.43E-07	2.24E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.23E-03	2.61E-02	2.17E-02	1.20E-04	8.59E-04	7.91E-04	1.06E+01	4.03E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.92E-05	1.96E-04	9.34E-05	7.91E-07	1.36E-05	7.11E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.44E-01
		Excavator	430 hp	4.445	22	7.44E-05	5.05E-04	8.56E-04	4.38E-06	1.80E-05	1.66E-05	4.46E-01	1.52E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.40E-04	5.20E-03	2.05E-03	9.08E-06	1.17E-04	1.08E-04	9.03E-01	4.26E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.33E-03	1.35E-02	1.00E-02	4.47E-05	5.74E-04	5.28E-04	4.56E+00	2.05E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.66E-04	1.69E-03	1.25E-03	5.59E-06	7.17E-05	6.60E-05	5.70E-01	2.56E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	2.49E-05	3.59E-05	3.50E-04	1.36E-06	1.04E-05	4.37E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.38E-04	6.73E-03	8.89E-03	4.93E-05	2.34E-04	2.16E-04	5.02E+00	1.02E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	4.23E-05	6.11E-05	5.95E-04	2.30E-06	1.76E-05	7.43E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	5.97E-05	8.62E-05	8.41E-04	3.25E-06	2.49E-05	1.05E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	4.99E-04	4.26E-03	4.80E-03	9.49E-06	8.68E-05	7.99E-05	7.34E-01	4.50E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.24E-03	1.37E-02	7.86E-03	3.98E-05	5.65E-04	5.20E-04	4.05E+00	1.60E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	7.46E-05	1.08E-04	1.05E-03	4.07E-06	3.11E-05	1.31E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.39E-05	6.52E-04	6.41E-04	3.25E-06	2.42E-05	2.23E-05	3.32E-01	1.21E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.68E-03	1.46E-02	6.99E-03	5.91E-05	1.02E-03	5.32E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	6.18E-04	6.85E-03	3.93E-03	1.99E-05	2.83E-04	2.60E-04	2.03E+00	7.98E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	1.01E-03	1.12E-02	6.41E-03	3.25E-05	4.61E-04	4.24E-04	3.31E+00	1.30E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.49E-04	1.17E-03	1.16E-03	2.95E-06	5.35E-05	4.92E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	7.46E-05	1.08E-04	1.05E-03	4.07E-06	3.11E-05	1.31E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	4.12E-04	4.56E-03	2.62E-03	1.32E-05	1.88E-04	1.73E-04	1.35E+00	5.32E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.53E-03	1.85E-03	1.20E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	8.69E-05	1.35E-04	7.21E-01	6.54E-01
		3/4 ton Pickup truck		20	126	2.49E-05	3.59E-05	3.50E-04	1.36E-06	1.04E-05	4.37E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**1.02E-01**	**8.45E-01**	**1.35E+00**	**3.23E-03**	**3.17E-02**	**2.71E-02**	**3.40E+02**	**1.30E-02**	**1.84E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 6

Construction Start Year 2027
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2027 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	1.14E-03	1.64E-03	1.60E-02	6.19E-05	4.74E-04	2.00E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.34E-01	9.32E-01	4.45E-01	3.77E-03	6.47E-02	3.39E-02
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	1.68E-02	2.43E-02	2.37E-01	9.15E-04	6.99E-03	2.95E-03
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	4.19E-03	6.05E-03	5.90E-02	2.28E-04	1.74E-03	7.36E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	1.25E-04	2.88E-04	1.95E-03	1.48E-05	1.11E-04	4.57E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	7.56E-03	8.85E-02	6.51E-02	3.38E-04	3.54E-03	3.25E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	6.17E-03	5.05E-02	6.16E-02	3.21E-04	1.86E-03	1.71E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.27E-03	4.35E-02	3.22E-02	1.44E-04	1.85E-03	1.70E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	5.37E-03	2.59E-02	3.66E-02	2.28E-04	7.64E-04	7.03E-04
		Front end loader	540 hp	0.8673	19	6.17E-03	5.05E-02	6.16E-02	3.21E-04	1.86E-03	1.71E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	6.33E-03	7.41E-02	5.45E-02	2.83E-04	2.96E-03	2.72E-03
		Front end loader	49 hp	4	19	7.74E-03	5.87E-02	8.13E-02	1.36E-04	4.73E-04	4.35E-04
		Roller	47 hp	4	19	1.21E-02	6.70E-02	8.79E-02	1.33E-04	2.03E-03	1.86E-03
		Water truck	3000 gal	4	19	6.11E-03	2.43E-02	1.16E-02	9.82E-05	1.69E-03	8.84E-04
		Excavator	300 hp	4	19	9.83E-03	6.68E-02	1.13E-01	5.79E-04	2.38E-03	2.19E-03
		Front end loader	180 hp	4	19	8.05E-03	6.31E-02	9.12E-02	5.08E-04	2.19E-03	2.02E-03
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.90E-02	2.22E-01	1.64E-01	8.49E-04	8.88E-03	8.17E-03
		Loader/backhoe	75 hp	0.0923	19	9.40E-05	1.14E-03	2.05E-03	3.68E-06	3.79E-05	3.49E-05
		Crane 94'	155 hp	155	19	3.78E-01	4.11E+00	6.85E+00	1.31E-02	2.12E-01	1.95E-01
		1 ton pickup truck		155	19	1.88E-02	4.32E-02	2.93E-01	2.22E-03	1.66E-02	6.85E-03
		Crane 94'	155 hp	155	20	3.60E-01	3.91E+00	6.51E+00	1.24E-02	2.02E-01	1.85E-01
		1 ton pickup truck		155	20	1.79E-02	4.10E-02	2.78E-01	2.11E-03	1.58E-02	6.51E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	6.01E-03	7.04E-02	5.18E-02	2.69E-04	2.81E-03	2.59E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.71E-02	2.94E-01	4.90E-01	9.33E-04	1.52E-02	1.40E-02
		Flatbed truck		8	23	2.25E-03	3.26E-03	3.27E-02	9.32E-05	7.06E-04	2.90E-04
		Generator	80 hp	5856	244	9.46E-01	8.54E+00	1.46E+01	2.92E-02	2.68E-01	2.46E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	6.02E-01	6.02E+00	6.76E+00	3.10E-02	2.23E-01	2.05E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	6.02E-01	6.02E+00	6.76E+00	3.10E-02	2.23E-01	2.05E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	6.02E-01	6.02E+00	6.76E+00	3.10E-02	2.23E-01	2.05E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	6.02E-01	6.02E+00	6.76E+00	3.10E-02	2.23E-01	2.05E-01
	Armoring	**1 ton pickup truck**		1.0667	19	1.29E-04	2.97E-04	2.01E-03	1.53E-05	1.14E-04	4.72E-05
		Excavator	430 hp	1.0667	19	3.76E-03	2.55E-02	4.32E-02	2.21E-04	9.11E-04	8.38E-04
		1 ton pickup truck		1.0667	19	1.29E-04	2.97E-04	2.01E-03	1.53E-05	1.14E-04	4.72E-05
	Maintenance	**Grader**	215 hp	144	210	4.24E-02	4.97E-01	4.14E-01	2.28E-03	1.64E-02	1.51E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.95E-03	3.56E-02	1.70E-02	1.44E-04	2.47E-03	1.29E-03
		Excavator	430 hp	4.445	22	1.35E-02	9.19E-02	1.56E-01	7.97E-04	3.28E-03	3.02E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.37E-02	9.45E-01	3.72E-01	1.65E-03	2.13E-02	1.96E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	2.65E-01	2.70E+00	2.00E+00	8.95E-03	1.15E-01	1.06E-01
		Tractor/crawler/dozer	440 hp	5	20	3.32E-02	3.38E-01	2.50E-01	1.12E-03	1.43E-02	1.32E-02
		3/4 ton Pickup truck		20	20	4.97E-03	7.18E-03	7.01E-02	2.71E-04	2.07E-03	8.74E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.34E-02	2.14E-01	2.82E-01	1.57E-03	7.44E-03	6.85E-03
		3/4 ton Pickup truck		34.0003	126	1.34E-03	1.94E-03	1.89E-02	7.31E-05	5.59E-04	2.36E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	1.89E-03	2.74E-03	2.67E-02	1.03E-04	7.89E-04	3.33E-04
		Diamond cutting saw	50 hp	48	126	1.58E-02	1.35E-01	1.53E-01	3.01E-04	2.76E-03	2.54E-03
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	3.92E-02	4.35E-01	2.49E-01	1.26E-03	1.79E-02	1.65E-02
		3/4 ton Pickup truck		60.0214	126	2.37E-03	3.42E-03	3.34E-02	1.29E-04	9.87E-04	4.16E-04
	Load/Haul	**Front end loader**	350 hp	4	126	2.66E-03	2.07E-02	2.03E-02	1.03E-04	7.69E-04	7.07E-04
		Water truck	3000 gal	507	126	1.17E-01	4.64E-01	2.22E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	1.96E-02	2.17E-01	1.25E-01	6.31E-04	8.97E-03	8.25E-03
	Micro-blast	**Crane 260'**	375 hp	49	126	3.20E-02	3.55E-01	2.04E-01	1.03E-03	1.46E-02	1.35E-02
		Horizontal boring drill	10 hp	55	126	4.72E-03	3.73E-02	3.67E-02	9.36E-05	1.70E-03	1.56E-03
		3/4 ton Pickup truck		60	126	2.37E-03	3.42E-03	3.34E-02	1.29E-04	9.87E-04	4.16E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.31E-02	1.45E-01	8.31E-02	4.21E-04	5.98E-03	5.50E-03
		Air compressor	50 hp	40	126	4.85E-02	5.87E-02	3.82E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	7.89E-04	1.14E-03	1.11E-02	4.30E-05	3.29E-04	1.39E-04
					Total	**5.35E+00**	**4.97E+01**	**6.88E+01**	**2.17E-01**	**2.04E+00**	**1.81E+00**
					Daily Onsi						
					Rindge	5	49	69	0	2	2
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 7

Construction Start Year 2029
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2029 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.644	0.003	0.030	0.028	301.159	0.013	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.562	0.003	0.016	0.014	293.384	0.010	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.502	0.002	0.026	0.024	234.962	0.010	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.099	0.388	0.726	0.005	0.013	0.012	403.250	0.009	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.562	0.003	0.016	0.014	293.384	0.010	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.644	0.003	0.030	0.028	301.159	0.013	0.000
		Front end loader	49 hp	4	19	0.168	1.278	1.786	0.003	0.008	0.008	231.302	0.015	0.000
		Roller	47 hp	4	19	0.253	1.471	1.992	0.003	0.035	0.032	235.507	0.023	0.000
		Water truck	3000 gal	4	19	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.542	0.003	0.011	0.010	270.061	0.009	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.644	0.003	0.030	0.028	301.159	0.013	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.274	0.002	0.020	0.018	195.356	0.009	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.009	0.000
		1 ton pickup truck		155	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.009	0.000
		1 ton pickup truck		155	20	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.644	0.003	0.030	0.028	301.159	0.013	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.073	2.271	117.507	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.009	0.000
		Flatbed truck		8	23	1.131	1.787	16.593	0.061	0.459	0.188	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.099	0.901	1.722	0.003	0.022	0.020	294.384	0.009	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.600	0.003	0.018	0.017	280.790	0.012	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.600	0.003	0.018	0.017	280.790	0.012	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.600	0.003	0.018	0.017	280.790	0.012	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.600	0.003	0.018	0.017	280.790	0.012	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.633	0.004	0.021	0.019	312.002	0.011	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.653	0.003	0.036	0.033	298.249	0.013	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.502	0.002	0.026	0.024	234.962	0.010	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.502	0.002	0.026	0.024	234.962	0.010	0.000
		3/4 ton Pickup truck		20	20	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.165	1.539	1.793	0.004	0.022	0.021	277.562	0.015	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.314	0.002	0.021	0.019	163.241	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.411	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.314	0.002	0.021	0.019	163.241	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.314	0.002	0.021	0.019	163.241	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.314	0.002	0.021	0.019	163.241	0.006	0.000
		Air compressor	50 hp	40	126	0.657	0.796	54.990	0.004	0.024	0.023	307.059	0.037	0.060
		3/4 ton Pickup truck		20	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 7

Construction Start Year 2029
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2029 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	4.46E-05	7.53E-05	6.55E-04	3.25E-06	2.47E-05	1.03E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.91E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	6.59E-04	1.11E-03	9.68E-03	4.80E-05	3.64E-04	1.52E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	1.49E-05	2.51E-05	2.18E-04	1.08E-06	8.22E-06	3.44E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	4.70E-07	1.17E-06	7.47E-06	7.02E-08	5.23E-07	2.15E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	3.05E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	6.15E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.90E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	5.17E-06	-	1.52E-01	1.38E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.49E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.93E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.37E-05	9.28E-05	1.74E-04	1.08E-06	3.03E-06	2.78E-06	9.64E-02	2.14E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.90E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	5.17E-06	-	1.52E-01	1.38E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	2.75E-05	2.87E-04	2.55E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	5.14E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.63E-05	2.76E-04	3.86E-04	6.46E-07	1.81E-06	1.66E-06	5.00E-02	3.27E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	5.25E-05	3.05E-04	4.13E-04	6.31E-07	7.27E-06	6.69E-06	4.88E-02	4.74E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.16E-04	5.52E-05	4.67E-07	8.02E-06	4.20E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	9.15E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.30E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	7.37E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	8.24E-05	8.62E-04	7.66E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.54E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.72E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.56E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.25E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	2.32E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	19	7.05E-05	1.76E-04	1.12E-03	1.05E-05	7.85E-05	3.22E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.25E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	2.32E-04	-	5.52E+00	5.00E+00
		1 ton pickup truck		155	20	7.05E-05	1.76E-04	1.12E-03	1.05E-05	7.85E-05	3.22E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.75E-05	2.87E-04	2.55E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	5.14E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	2.01E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	9.98E-06	1.58E-05	1.46E-04	5.35E-07	4.05E-06	1.66E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.09E-02	4.65E-01	8.89E-01	1.78E-03	1.13E-02	1.04E-02	1.52E+02	4.59E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.13E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	6.17E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.13E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	6.17E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.13E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	6.17E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.13E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	6.17E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	4.85E-07	1.21E-06	7.72E-06	7.25E-08	5.40E-07	2.22E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.75E-05	1.09E-04	2.05E-04	1.05E-06	3.94E-06	3.63E-06	1.07E-01	3.50E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	4.85E-07	1.21E-06	7.72E-06	7.25E-08	5.40E-07	2.22E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.07E-03	2.15E-02	2.16E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.77E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.93E-05	1.96E-04	9.36E-05	7.91E-07	1.36E-05	7.12E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.46E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.98E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.95E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.25E-03	1.17E-02	9.74E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.92E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.22E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.40E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	1.86E-05	3.14E-05	2.73E-04	1.35E-06	1.03E-05	4.30E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	3.16E-05	5.33E-05	4.64E-04	2.30E-06	1.75E-05	7.30E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	4.46E-05	7.53E-05	6.55E-04	3.25E-06	2.47E-05	1.03E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	4.36E-04	4.07E-03	4.74E-03	9.49E-06	5.92E-05	5.45E-05	7.34E-01	3.93E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.18E-03	1.21E-02	7.79E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.48E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	5.58E-05	9.41E-05	8.19E-04	4.07E-06	3.08E-05	1.29E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.25E-05	5.72E-04	6.35E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.13E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.68E-03	1.47E-02	7.00E-03	5.91E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	5.90E-04	6.07E-03	3.90E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	7.39E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	9.64E-04	9.91E-03	6.36E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.21E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	5.58E-05	9.41E-05	8.19E-04	4.06E-06	3.08E-05	1.29E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	3.93E-04	4.04E-03	2.60E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.92E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.45E-03	1.76E-03	1.21E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	8.25E-05	1.32E-04	7.20E-01	6.53E-01
		3/4 ton Pickup truck		20	126	1.86E-05	3.14E-05	2.73E-04	1.35E-06	1.03E-05	4.30E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**9.35E-02**	**7.61E-01**	**1.34E+00**	**3.23E-03**	**2.56E-02**	**2.15E-02**	**3.40E+02**	**1.21E-02**	**1.84E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 7

Construction Start Year 2029
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2029 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	8.50E-04	1.43E-03	1.25E-02	6.19E-05	4.70E-04	1.96E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.36E-01	4.46E-01	3.77E-03	6.48E-02	3.39E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	1.26E-02	2.12E-02	1.84E-01	9.15E-04	6.94E-03	2.90E-03
	Fish relocation	3/4 ton pickup truck		16	19	3.13E-03	5.28E-03	4.60E-02	2.28E-04	1.73E-03	7.24E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	9.89E-05	2.47E-04	1.57E-03	1.48E-05	1.10E-04	4.52E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.91E-03	7.23E-02	6.43E-02	3.38E-04	2.99E-03	2.75E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.10E-02	3.21E-04	1.70E-03	1.56E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.03E-03	3.77E-02	3.13E-02	1.44E-04	1.62E-03	1.49E-03
	Chipping	Brush chipper	250 hp	0.8673	19	4.99E-03	1.95E-02	3.65E-02	2.28E-04	6.37E-04	5.86E-04
		Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.10E-02	3.21E-04	1.70E-03	1.56E-03
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.79E-03	6.05E-02	5.38E-02	2.83E-04	2.50E-03	2.30E-03
		Front end loader	49 hp	4	19	7.63E-03	5.81E-02	8.12E-02	1.36E-04	3.80E-04	3.50E-04
		Roller	47 hp	4	19	1.10E-02	6.42E-02	8.69E-02	1.33E-04	1.53E-03	1.41E-03
		Water truck	3000 gal	4	19	6.12E-03	2.44E-02	1.16E-02	9.82E-05	1.69E-03	8.84E-04
		Excavator	300 hp	4	19	9.61E-03	6.01E-02	1.13E-01	5.79E-04	2.17E-03	2.00E-03
		Front end loader	180 hp	4	19	7.92E-03	5.22E-02	9.06E-02	5.08E-04	1.84E-03	1.69E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	1.74E-02	1.82E-01	1.61E-01	8.49E-04	7.51E-03	6.91E-03
		Loader/backhoe	75 hp	0.0923	19	9.07E-05	1.08E-03	2.05E-03	3.68E-06	3.13E-05	2.88E-05
		Crane 94'	155 hp	155	19	3.63E-01	3.77E+00	6.85E+00	1.31E-02	1.94E-01	1.79E-01
		1 ton pickup truck		155	19	1.48E-02	3.70E-02	2.36E-01	2.22E-03	1.65E-02	6.78E-03
		Crane 94'	155 hp	155	20	3.45E-01	3.59E+00	6.51E+00	1.24E-02	1.85E-01	1.70E-01
		1 ton pickup truck		155	20	1.41E-02	3.52E-02	2.24E-01	2.11E-03	1.57E-02	6.44E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	5.50E-03	5.75E-02	5.11E-02	2.69E-04	2.38E-03	2.19E-03
	Dewatering	Concrete saw	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.60E-02	2.70E-01	4.90E-01	9.33E-04	1.39E-02	1.28E-02
		Flatbed truck		8	23	1.73E-03	2.74E-03	2.54E-02	9.31E-05	7.04E-04	2.88E-04
		Generator	80 hp	5856	244	8.34E-01	7.63E+00	1.46E+01	2.92E-02	1.85E-01	1.70E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.58E+00	3.10E-02	2.00E-01	1.84E-01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.58E+00	3.10E-02	2.00E-01	1.84E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.58E+00	3.10E-02	2.00E-01	1.84E-01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.58E+00	3.10E-02	2.00E-01	1.84E-01
	Armoring	1 ton pickup truck		1.0667	19	1.02E-04	2.55E-04	1.63E-03	1.53E-05	1.14E-04	4.67E-05
		Excavator	430 hp	1.0667	19	3.67E-03	2.30E-02	4.32E-02	2.21E-04	8.30E-04	7.64E-04
		1 ton pickup truck		1.0667	19	1.02E-04	2.55E-04	1.63E-03	1.53E-05	1.14E-04	4.67E-05
	Maintenance	Grader	215 hp	144	210	3.95E-02	4.10E-01	4.11E-01	2.28E-03	1.37E-02	1.26E-02
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.96E-03	3.57E-02	1.70E-02	1.44E-04	2.47E-03	1.29E-03
		Excavator	430 hp	4.445	22	1.32E-02	8.26E-02	1.55E-01	7.97E-04	2.99E-03	2.75E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.20E-02	9.07E-01	3.59E-01	1.65E-03	1.97E-02	1.82E-02
	Platform	Tractor/crawler/dozer	440 hp	40	20	2.51E-01	2.34E+00	1.95E+00	8.95E-03	1.01E-01	9.29E-02
		Tractor/crawler/dozer	440 hp	5	20	3.13E-02	2.93E-01	2.44E-01	1.12E-03	1.26E-02	1.16E-02
		3/4 ton Pickup truck		20	20	3.72E-03	6.27E-03	5.46E-02	2.71E-04	2.06E-03	8.59E-04
	Drilling	Rotary drill	475 hp	34.0003	126	2.34E-02	2.09E-01	2.82E-01	1.57E-03	7.31E-03	6.72E-03
		3/4 ton Pickup truck		34.0003	126	1.00E-03	1.69E-03	1.47E-02	7.31E-05	5.55E-04	2.32E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.42E-03	2.39E-03	2.08E-02	1.03E-04	7.83E-04	3.27E-04
		Diamond cutting saw	50 hp	48	126	1.38E-02	1.29E-01	1.51E-01	3.01E-04	1.88E-03	1.73E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	3.75E-02	3.85E-01	2.47E-01	1.26E-03	1.62E-02	1.49E-02
		3/4 ton Pickup truck		60.0214	126	1.77E-03	2.99E-03	2.60E-02	1.29E-04	9.79E-04	4.09E-04
	Load/Haul	Front end loader	350 hp	4	126	2.62E-03	1.82E-02	2.01E-02	1.03E-04	6.78E-04	6.24E-04
		Water truck	3000 gal	507	126	1.17E-01	4.66E-01	2.22E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	1.87E-02	1.93E-01	1.24E-01	6.31E-04	8.08E-03	7.43E-03
	Micro-blast	Crane 260'	375 hp	49	126	3.06E-02	3.15E-01	2.02E-01	1.03E-03	1.32E-02	1.21E-02
		Horizontal boring drill	10 hp	55	126	4.61E-03	3.64E-02	3.67E-02	9.36E-05	1.57E-03	1.44E-03
		3/4 ton Pickup truck		60	126	1.77E-03	2.99E-03	2.60E-02	1.29E-04	9.79E-04	4.09E-04
	Demolish spillway	Crane 260'	375 hp	20	126	1.25E-02	1.28E-01	8.25E-02	4.21E-04	5.38E-03	4.95E-03
		Air compressor	50 hp	40	126	4.60E-02	5.57E-02	3.85E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	5.90E-04	9.96E-04	8.66E-03	4.30E-05	3.26E-04	1.36E-04
					Total	**5.08E+00**	**4.46E+01**	**6.78E+01**	**2.17E-01**	**1.79E+00**	**1.59E+00**
					Daily Onsi						
					Rindge	5	44	68	0	2	2
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021

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Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 8

Construction Start Year 2031
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2031 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.637	0.003	0.030	0.028	301.158	0.012	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.559	0.003	0.016	0.014	293.384	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.491	0.002	0.026	0.024	234.962	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.095	0.315	0.726	0.005	0.011	0.010	403.250	0.009	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.559	0.003	0.016	0.014	293.384	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.637	0.003	0.030	0.028	301.158	0.012	0.000
		Front end loader	49 hp	4	19	0.167	1.269	1.785	0.003	0.007	0.007	231.302	0.015	0.000
		Roller	47 hp	4	19	0.235	1.418	1.975	0.003	0.027	0.024	235.507	0.021	0.000
		Water truck	3000 gal	4	19	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.540	0.003	0.011	0.010	270.061	0.009	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.637	0.003	0.030	0.028	301.158	0.012	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.274	0.002	0.020	0.018	195.356	0.008	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.008	0.000
		1 ton pickup truck		155	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.008	0.000
		1 ton pickup truck		155	20	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.637	0.003	0.030	0.028	301.158	0.012	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.073	2.271	117.492	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.008	0.000
		Flatbed truck		8	23	0.873	1.543	12.845	0.061	0.457	0.187	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.089	0.826	1.718	0.003	0.016	0.014	294.384	0.008	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.586	0.003	0.018	0.017	280.790	0.011	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.586	0.003	0.018	0.017	280.790	0.011	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.586	0.003	0.018	0.017	280.790	0.011	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.586	0.003	0.018	0.017	280.790	0.011	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.629	0.004	0.021	0.019	312.002	0.010	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.635	0.003	0.036	0.033	298.249	0.012	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.491	0.002	0.026	0.024	234.962	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.491	0.002	0.026	0.024	234.962	0.009	0.000
		3/4 ton Pickup truck		20	20	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.149	1.505	1.777	0.004	0.016	0.015	277.562	0.013	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.313	0.002	0.021	0.019	163.241	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.409	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.313	0.002	0.021	0.019	163.241	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.313	0.002	0.021	0.019	163.241	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.313	0.002	0.021	0.019	163.241	0.006	0.000
		Air compressor	50 hp	40	126	0.633	0.764	55.206	0.004	0.024	0.023	307.059	0.036	0.059
		3/4 ton Pickup truck		20	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 8

Construction Start Year 2031
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2031 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	3.18E-05	6.58E-05	4.90E-04	3.25E-06	2.45E-05	1.02E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.93E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	4.69E-04	9.72E-04	7.24E-03	4.80E-05	3.62E-04	1.50E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	1.06E-05	2.19E-05	1.63E-04	1.08E-06	8.17E-06	3.39E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	3.89E-07	1.03E-06	6.29E-06	7.02E-08	5.21E-07	2.13E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	3.02E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	5.77E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.89E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.90E-06	-	1.52E-01	1.37E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.46E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.76E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.26E-05	7.53E-05	1.74E-04	1.08E-06	2.57E-06	2.36E-06	9.64E-02	2.04E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.89E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.90E-06	-	1.52E-01	1.37E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	2.75E-05	2.87E-04	2.53E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.83E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.61E-05	2.74E-04	3.86E-04	6.46E-07	1.55E-06	1.43E-06	5.00E-02	3.26E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	4.87E-05	2.94E-04	4.09E-04	6.31E-07	5.49E-06	5.05E-06	4.88E-02	4.39E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.16E-04	5.52E-05	4.67E-07	8.02E-06	4.20E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	8.92E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.28E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	6.97E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	8.24E-05	8.62E-04	7.58E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.45E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.72E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.34E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.25E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	2.12E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	5.84E-05	1.55E-04	9.44E-04	1.05E-05	7.82E-05	3.20E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.25E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	2.12E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	5.84E-05	1.55E-04	9.44E-04	1.05E-05	7.82E-05	3.20E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.75E-05	2.87E-04	2.53E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.83E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	1.83E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	7.70E-06	1.36E-05	1.13E-04	5.34E-07	4.03E-06	1.65E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.62E-02	4.27E-01	8.87E-01	1.78E-03	8.07E-03	7.42E-03	1.52E+02	4.17E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.06E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.81E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.06E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.81E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.06E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.81E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.06E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.81E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	4.02E-07	1.06E-06	6.50E-06	7.25E-08	5.38E-07	2.20E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.75E-05	1.09E-04	2.05E-04	1.05E-06	3.94E-06	3.63E-06	1.07E-01	3.41E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	4.02E-07	1.06E-06	6.50E-06	7.25E-08	5.38E-07	2.20E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.07E-03	2.15E-02	2.15E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.56E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.93E-05	1.97E-04	9.36E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.42E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.92E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.69E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.25E-03	1.17E-02	9.52E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.81E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.19E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.26E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	1.32E-05	2.74E-05	2.04E-04	1.35E-06	1.02E-05	4.23E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	2.25E-05	4.66E-05	3.47E-04	2.30E-06	1.74E-05	7.19E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	3.18E-05	6.58E-05	4.90E-04	3.25E-06	2.45E-05	1.02E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.94E-04	3.98E-03	4.70E-03	9.49E-06	4.32E-05	3.98E-05	7.34E-01	3.56E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.18E-03	1.21E-02	7.76E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.39E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	3.97E-05	8.23E-05	6.13E-04	4.06E-06	3.06E-05	1.27E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.25E-05	5.72E-04	6.32E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.07E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.47E-02	7.00E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	5.90E-04	6.07E-03	3.88E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	6.95E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	9.64E-04	9.91E-03	6.33E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.13E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	3.97E-05	8.23E-05	6.13E-04	4.06E-06	3.06E-05	1.27E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	3.93E-04	4.04E-03	2.59E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.63E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.39E-03	1.68E-03	1.22E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.94E-05	1.30E-04	7.19E-01	6.52E-01
		3/4 ton Pickup truck		20	126	1.32E-05	2.74E-05	2.04E-04	1.35E-06	1.02E-05	4.23E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**8.84E-02**	**7.22E-01**	**1.33E+00**	**3.23E-03**	**2.24E-02**	**1.85E-02**	**3.40E+02**	**1.14E-02**	**1.83E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 8

Construction Start Year 2031
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2031 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	6.05E-04	1.25E-03	9.34E-03	6.19E-05	4.67E-04	1.93E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.39E-01	4.46E-01	3.77E-03	6.48E-02	3.39E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	8.94E-03	1.85E-02	1.38E-01	9.14E-04	6.89E-03	2.86E-03
	Fish relocation	3/4 ton pickup truck		16	19	2.23E-03	4.62E-03	3.44E-02	2.28E-04	1.72E-03	7.13E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	8.19E-05	2.17E-04	1.32E-03	1.48E-05	1.10E-04	4.48E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.91E-03	7.23E-02	6.36E-02	3.38E-04	2.99E-03	2.75E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.07E-02	3.21E-04	1.70E-03	1.56E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.03E-03	3.77E-02	3.06E-02	1.44E-04	1.62E-03	1.49E-03
	Chipping	Brush chipper	250 hp	0.8673	19	4.77E-03	1.59E-02	3.65E-02	2.28E-04	5.40E-04	4.97E-04
		Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.07E-02	3.21E-04	1.70E-03	1.56E-03
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.79E-03	6.05E-02	5.32E-02	2.83E-04	2.50E-03	2.30E-03
		Front end loader	49 hp	4	19	7.61E-03	5.77E-02	8.12E-02	1.36E-04	3.26E-04	3.00E-04
		Roller	47 hp	4	19	1.03E-02	6.19E-02	8.62E-02	1.33E-04	1.16E-03	1.06E-03
		Water truck	3000 gal	4	19	6.12E-03	2.45E-02	1.16E-02	9.83E-05	1.69E-03	8.85E-04
		Excavator	300 hp	4	19	9.61E-03	6.01E-02	1.13E-01	5.79E-04	2.17E-03	2.00E-03
		Front end loader	180 hp	4	19	7.92E-03	5.22E-02	9.01E-02	5.08E-04	1.84E-03	1.69E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	1.74E-02	1.82E-01	1.60E-01	8.49E-04	7.51E-03	6.91E-03
		Loader/backhoe	75 hp	0.0923	19	9.07E-05	1.08E-03	2.05E-03	3.68E-06	3.13E-05	2.88E-05
		Crane 94'	155 hp	155	19	3.63E-01	3.77E+00	6.85E+00	1.31E-02	1.94E-01	1.79E-01
		1 ton pickup truck		155	19	1.23E-02	3.26E-02	1.99E-01	2.22E-03	1.65E-02	6.73E-03
		Crane 94'	155 hp	155	20	3.45E-01	3.59E+00	6.51E+00	1.24E-02	1.85E-01	1.70E-01
		1 ton pickup truck		155	20	1.17E-02	3.09E-02	1.89E-01	2.11E-03	1.56E-02	6.39E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	5.50E-03	5.75E-02	5.05E-02	2.69E-04	2.38E-03	2.19E-03
	Dewatering	Concrete saw	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.60E-02	2.70E-01	4.90E-01	9.33E-04	1.39E-02	1.28E-02
		Flatbed truck		8	23	1.34E-03	2.37E-03	1.97E-02	9.29E-05	7.02E-04	2.86E-04
		Generator	80 hp	5856	244	7.57E-01	6.99E+00	1.45E+01	2.92E-02	1.32E-01	1.22E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.44E+00	3.10E-02	2.00E-01	1.84E-01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.44E+00	3.10E-02	2.00E-01	1.84E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.44E+00	3.10E-02	2.00E-01	1.84E-01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.44E+00	3.10E-02	2.00E-01	1.84E-01
	Armoring	1 ton pickup truck		1.0667	19	8.46E-05	2.24E-04	1.37E-03	1.53E-05	1.13E-04	4.63E-05
		Excavator	430 hp	1.0667	19	3.67E-03	2.30E-02	4.32E-02	2.21E-04	8.30E-04	7.64E-04
		1 ton pickup truck		1.0667	19	8.46E-05	2.24E-04	1.37E-03	1.53E-05	1.13E-04	4.63E-05
	Maintenance	Grader	215 hp	144	210	3.95E-02	4.10E-01	4.09E-01	2.28E-03	1.37E-02	1.26E-02
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.96E-03	3.58E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.32E-02	8.26E-02	1.55E-01	7.97E-04	2.99E-03	2.75E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.20E-02	9.07E-01	3.49E-01	1.65E-03	1.97E-02	1.82E-02
	Platform	Tractor/crawler/dozer	440 hp	40	20	2.51E-01	2.34E+00	1.90E+00	8.95E-03	1.01E-01	9.29E-02
		Tractor/crawler/dozer	440 hp	5	20	3.13E-02	2.93E-01	2.38E-01	1.12E-03	1.26E-02	1.16E-02
		3/4 ton Pickup truck		20	20	2.65E-03	5.49E-03	4.09E-02	2.71E-04	2.04E-03	8.46E-04
	Drilling	Rotary drill	475 hp	34.0003	126	2.34E-02	2.09E-01	2.82E-01	1.57E-03	7.31E-03	6.72E-03
		3/4 ton Pickup truck		34.0003	126	7.14E-04	1.48E-03	1.10E-02	7.30E-05	5.51E-04	2.28E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.01E-03	2.09E-03	1.56E-02	1.03E-04	7.78E-04	3.22E-04
		Diamond cutting saw	50 hp	48	126	1.25E-02	1.26E-01	1.49E-01	3.01E-04	1.37E-03	1.26E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	3.75E-02	3.85E-01	2.46E-01	1.26E-03	1.62E-02	1.49E-02
		3/4 ton Pickup truck		60.0214	126	1.26E-03	2.61E-03	1.95E-02	1.29E-04	9.73E-04	4.03E-04
	Load/Haul	Front end loader	350 hp	4	126	2.62E-03	1.82E-02	2.00E-02	1.03E-04	6.78E-04	6.24E-04
		Water truck	3000 gal	507	126	1.17E-01	4.68E-01	2.22E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	1.87E-02	1.93E-01	1.23E-01	6.31E-04	8.08E-03	7.43E-03
	Micro-blast	Crane 260'	375 hp	49	126	3.06E-02	3.15E-01	2.01E-01	1.03E-03	1.32E-02	1.21E-02
		Horizontal boring drill	10 hp	55	126	4.61E-03	3.64E-02	3.67E-02	9.36E-05	1.57E-03	1.44E-03
		3/4 ton Pickup truck		60	126	1.26E-03	2.61E-03	1.95E-02	1.29E-04	9.72E-04	4.03E-04
	Demolish spillway	Crane 260'	375 hp	20	126	1.25E-02	1.28E-01	8.21E-02	4.21E-04	5.38E-03	4.95E-03
		Air compressor	50 hp	40	126	4.43E-02	5.35E-02	3.86E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	4.20E-04	8.71E-04	6.49E-03	4.30E-05	3.24E-04	1.34E-04
					Total	**4.99E+00**	**4.40E+01**	**6.69E+01**	**2.17E-01**	**1.74E+00**	**1.54E+00**
					Daily Onsi						
					Rindge	5	44	67	0	2	2
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021

10

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 9

Construction Start Year 2033
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2033 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.631	0.003	0.030	0.028	301.159	0.012	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.557	0.003	0.016	0.014	293.384	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.482	0.002	0.026	0.024	234.962	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.092	0.268	0.726	0.005	0.009	0.009	403.250	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.557	0.003	0.016	0.014	293.384	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.631	0.003	0.030	0.028	301.159	0.012	0.000
		Front end loader	49 hp	4	19	0.167	1.264	1.786	0.003	0.007	0.006	231.302	0.015	0.000
		Roller	47 hp	4	19	0.221	1.381	1.962	0.003	0.020	0.019	235.508	0.020	0.000
		Water truck	3000 gal	4	19	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.538	0.003	0.011	0.010	270.061	0.008	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.631	0.003	0.030	0.028	301.159	0.012	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.273	0.002	0.020	0.018	195.356	0.008	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	20	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.631	0.003	0.030	0.028	301.159	0.012	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.072	2.271	117.478	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		Flatbed truck		8	23	0.723	1.394	10.684	0.061	0.457	0.186	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.084	0.784	1.716	0.003	0.011	0.010	294.384	0.008	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.575	0.003	0.018	0.017	280.790	0.011	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.575	0.003	0.018	0.017	280.790	0.011	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.575	0.003	0.018	0.017	280.790	0.011	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.575	0.003	0.018	0.017	280.790	0.011	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.626	0.004	0.021	0.019	312.002	0.010	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.620	0.003	0.036	0.033	298.249	0.012	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.482	0.002	0.026	0.024	234.962	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.482	0.002	0.026	0.024	234.962	0.009	0.000
		3/4 ton Pickup truck		20	20	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.140	1.480	1.768	0.004	0.012	0.011	277.562	0.013	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		3/4 ton Pickup truck		60.0214	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.408	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Air compressor	50 hp	40	126	0.619	0.743	55.359	0.004	0.024	0.023	307.059	0.035	0.058
		3/4 ton Pickup truck		20	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056

Total Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 9

Construction Start Year 2033
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2033 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	210	2.48E-05	5.98E-05	3.96E-04	3.25E-06	2.44E-05	1.00E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.23E-02	4.94E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	3.66E-04	8.83E-04	5.85E-03	4.80E-05	3.60E-04	1.48E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	8.25E-06	1.99E-05	1.32E-04	1.08E-06	8.13E-06	3.35E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.48E-07	9.50E-07	5.69E-06	7.02E-08	5.20E-07	2.12E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	2.99E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	5.46E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	2.92E-05	2.17E-04	2.88E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.71E-06	-	1.52E-01	1.37E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.43E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.62E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	2.19E-05	6.40E-05	1.74E-04	1.08E-06	2.23E-06	2.05E-06	9.64E-02	1.98E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.88E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.71E-06	-	1.52E-01	1.37E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	2.75E-05	2.87E-04	2.51E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.57E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.61E-05	2.73E-04	3.86E-04	6.46E-07	1.40E-06	1.29E-06	5.00E-02	3.26E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	4.58E-05	2.86E-04	4.07E-04	6.31E-07	4.22E-06	3.88E-06	4.88E-02	4.13E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	8.79E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.27E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	6.70E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	8.24E-05	8.62E-04	7.52E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.37E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.72E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.20E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.25E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.96E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	5.22E-05	1.43E-04	8.54E-04	1.05E-05	7.80E-05	3.18E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.25E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.96E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	5.22E-05	1.43E-04	8.54E-04	1.05E-05	7.80E-05	3.18E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	2.75E-05	2.87E-04	2.51E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.57E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	1.70E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	6.38E-06	1.23E-05	9.42E-05	5.34E-07	4.03E-06	1.64E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.35E-02	4.05E-01	8.86E-01	1.78E-03	5.88E-03	5.41E-03	1.52E+02	3.92E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	2.78E-03	2.55E-02	3.00E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.52E-04	-	1.47E+01	1.33E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	2.78E-03	2.55E-02	3.00E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.52E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	3.00E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.52E-04	-	1.47E+01	1.33E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	2.78E-03	2.55E-02	3.00E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.52E-04	-	1.47E+01	1.33E+01
	Armoring	**1 ton pickup truck**		1.0667	19	3.59E-07	9.81E-07	5.88E-06	7.25E-08	5.37E-07	2.19E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.75E-05	1.09E-04	2.05E-04	1.05E-06	3.94E-06	3.63E-06	1.07E-01	3.36E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.59E-07	9.81E-07	5.88E-06	7.25E-08	5.37E-07	2.19E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	2.07E-03	2.15E-02	2.14E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.42E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.38E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.40E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.88E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.49E-05	-	9.04E-01	8.20E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	1.25E-03	1.17E-02	9.34E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.72E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.17E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.15E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	1.03E-05	2.49E-05	1.65E-04	1.35E-06	1.02E-05	4.18E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	1.75E-05	4.24E-05	2.81E-04	2.30E-06	1.73E-05	7.11E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	2.48E-05	5.98E-05	3.96E-04	3.25E-06	2.44E-05	1.00E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.70E-04	3.92E-03	4.68E-03	9.49E-06	3.19E-05	2.93E-05	7.34E-01	3.34E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	1.18E-03	1.21E-02	7.75E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.34E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	3.10E-05	7.48E-05	4.96E-04	4.06E-06	3.05E-05	1.26E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	8.25E-05	5.72E-04	6.29E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.03E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	5.90E-04	6.07E-03	3.87E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	6.68E-05	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	9.64E-04	9.91E-03	6.33E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.09E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	3.09E-05	7.47E-05	4.95E-04	4.06E-06	3.05E-05	1.26E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	3.93E-04	4.04E-03	2.58E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.45E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.36E-03	1.64E-03	1.22E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.77E-05	1.29E-04	7.19E-01	6.52E-01
		3/4 ton Pickup truck		20	126	1.03E-05	2.49E-05	1.65E-04	1.35E-06	1.02E-05	4.18E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**8.55E-02**	**7.01E-01**	**1.33E+00**	**3.23E-03**	**2.02E-02**	**1.65E-02**	**3.40E+02**	**1.09E-02**	**1.83E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 9

Construction Start Year	2033
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2033 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	4.72E-04	1.14E-03	7.55E-03	6.19E-05	4.64E-04	1.91E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.35E-01	9.42E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	6.97E-03	1.68E-02	1.11E-01	9.14E-04	6.86E-03	2.82E-03
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	1.74E-03	4.20E-03	2.78E-02	2.28E-04	1.71E-03	7.05E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	7.32E-05	2.00E-04	1.20E-03	1.48E-05	1.09E-04	4.46E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.91E-03	7.23E-02	6.30E-02	3.38E-04	2.99E-03	2.75E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	6.14E-03	4.58E-02	6.05E-02	3.21E-04	1.70E-03	1.56E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.03E-03	3.77E-02	3.00E-02	1.44E-04	1.62E-03	1.49E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	4.61E-03	1.35E-02	3.65E-02	2.28E-04	4.70E-04	4.32E-04
		Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.05E-02	3.21E-04	1.70E-03	1.56E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	5.79E-03	6.05E-02	5.27E-02	2.83E-04	2.50E-03	2.30E-03
		Front end loader	49 hp	4	19	7.61E-03	5.75E-02	8.12E-02	1.36E-04	2.96E-04	2.72E-04
		Roller	47 hp	4	19	9.64E-03	6.03E-02	8.56E-02	1.33E-04	8.88E-04	8.17E-04
		Water truck	3000 gal	4	19	6.13E-03	2.45E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	9.61E-03	6.01E-02	1.13E-01	5.79E-04	2.17E-03	2.00E-03
		Front end loader	180 hp	4	19	7.92E-03	5.22E-02	8.98E-02	5.08E-04	1.84E-03	1.69E-03
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.74E-02	1.82E-01	1.58E-01	8.49E-04	7.51E-03	6.91E-03
		Loader/backhoe	75 hp	0.0923	19	9.07E-05	1.08E-03	2.05E-03	3.68E-06	3.13E-05	2.88E-05
		Crane 94'	155 hp	155	19	3.63E-01	3.77E+00	6.85E+00	1.31E-02	1.94E-01	1.79E-01
		1 ton pickup truck		155	19	1.10E-02	3.00E-02	1.80E-01	2.22E-03	1.64E-02	6.69E-03
		Crane 94'	155 hp	155	20	3.45E-01	3.59E+00	6.51E+00	1.24E-02	1.85E-01	1.70E-01
		1 ton pickup truck		155	20	1.04E-02	2.85E-02	1.71E-01	2.11E-03	1.56E-02	6.36E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	5.50E-03	5.75E-02	5.01E-02	2.69E-04	2.38E-03	2.19E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.60E-02	2.70E-01	4.90E-01	9.33E-04	1.39E-02	1.28E-02
		Flatbed truck		8	23	1.11E-03	2.14E-03	1.64E-02	9.29E-05	7.00E-04	2.85E-04
		Generator	80 hp	5856	244	7.13E-01	6.64E+00	1.45E+01	2.92E-02	9.63E-02	8.86E-02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.32E+00	3.10E-02	2.00E-01	1.84E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.32E+00	3.10E-02	2.00E-01	1.84E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.32E+00	3.10E-02	2.00E-01	1.84E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.32E+00	3.10E-02	2.00E-01	1.84E-01
	Armoring	**1 ton pickup truck**		1.0667	19	7.56E-05	2.07E-04	1.24E-03	1.53E-05	1.13E-04	4.61E-05
		Excavator	430 hp	1.0667	19	3.67E-03	2.30E-02	4.32E-02	2.21E-04	8.30E-04	7.64E-04
		1 ton pickup truck		1.0667	19	7.56E-05	2.07E-04	1.24E-03	1.53E-05	1.13E-04	4.61E-05
	Maintenance	**Grader**	215 hp	144	210	3.95E-02	4.10E-01	4.07E-01	2.28E-03	1.37E-02	1.26E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.98E-03	3.59E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.32E-02	8.26E-02	1.56E-01	7.97E-04	2.99E-03	2.75E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.20E-02	9.07E-01	3.41E-01	1.65E-03	1.97E-02	1.82E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	2.51E-01	2.34E+00	1.87E+00	8.95E-03	1.01E-01	9.29E-02
		Tractor/crawler/dozer	440 hp	5	20	3.13E-02	2.93E-01	2.34E-01	1.12E-03	1.26E-02	1.16E-02
		3/4 ton Pickup truck		20	20	2.06E-03	4.98E-03	3.30E-02	2.71E-04	2.03E-03	8.37E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.34E-02	2.09E-01	2.82E-01	1.57E-03	7.31E-03	6.72E-03
		3/4 ton Pickup truck		34.0003	126	5.57E-04	1.34E-03	8.91E-03	7.31E-05	5.48E-04	2.26E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	7.86E-04	1.90E-03	1.26E-02	1.03E-04	7.74E-04	3.19E-04
		Diamond cutting saw	50 hp	48	126	1.17E-02	1.24E-01	1.49E-01	3.01E-04	1.01E-03	9.31E-04
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	3.75E-02	3.85E-01	2.46E-01	1.26E-03	1.62E-02	1.49E-02
		3/4 ton Pickup truck		60.0214	126	9.83E-04	2.37E-03	1.57E-02	1.29E-04	9.68E-04	3.99E-04
	Load/Haul	**Front end loader**	350 hp	4	126	2.62E-03	1.82E-02	2.00E-02	1.03E-04	6.78E-04	6.24E-04
		Water truck	3000 gal	507	126	1.17E-01	4.69E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	1.87E-02	1.93E-01	1.23E-01	6.31E-04	8.08E-03	7.43E-03
	Micro-blast	**Crane 260'**	375 hp	49	126	3.06E-02	3.15E-01	2.01E-01	1.03E-03	1.32E-02	1.21E-02
		Horizontal boring drill	10 hp	55	126	4.61E-03	3.64E-02	3.67E-02	9.36E-05	1.57E-03	1.44E-03
		3/4 ton Pickup truck		60	126	9.82E-04	2.37E-03	1.57E-02	1.29E-04	9.67E-04	3.98E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.25E-02	1.28E-01	8.20E-02	4.21E-04	5.38E-03	4.95E-03
		Air compressor	50 hp	40	126	4.33E-02	5.20E-02	3.87E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	3.27E-04	7.91E-04	5.24E-03	4.30E-05	3.22E-04	1.33E-04
					Total	**4.93E+00**	**4.36E+01**	**6.63E+01**	**2.17E-01**	**1.70E+00**	**1.50E+00**
					Daily Onsi						
					Rindge	5	43	66	0	2	1
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 10

Construction Start Year	2035
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2035 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.627	0.003	0.030	0.028	301.158	0.011	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.474	0.002	0.026	0.024	234.962	0.008	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.089	0.236	0.726	0.005	0.008	0.008	403.250	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.627	0.003	0.030	0.028	301.158	0.011	0.000
		Front end loader	49 hp	4	19	0.167	1.261	1.787	0.003	0.006	0.006	231.302	0.015	0.000
		Roller	47 hp	4	19	0.210	1.359	1.952	0.003	0.016	0.015	235.507	0.019	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.537	0.003	0.011	0.010	270.061	0.008	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.627	0.003	0.030	0.028	301.158	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.273	0.002	0.020	0.018	195.356	0.008	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.627	0.003	0.030	0.028	301.158	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.072	2.271	117.463	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.081	0.757	1.716	0.003	0.009	0.008	294.384	0.007	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.566	0.003	0.018	0.017	280.790	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.566	0.003	0.018	0.017	280.790	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.566	0.003	0.018	0.017	280.790	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.566	0.003	0.018	0.017	280.790	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.624	0.004	0.021	0.019	312.002	0.010	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.609	0.003	0.036	0.033	298.249	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.474	0.002	0.026	0.024	234.962	0.008	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.474	0.002	0.026	0.024	234.962	0.008	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.136	1.463	1.765	0.004	0.009	0.009	277.562	0.012	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.407	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Air compressor	50 hp	40	126	0.615	0.730	55.449	0.004	0.024	0.023	307.059	0.035	0.058
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
				Total										

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 10

Construction Start Year 2035
Speed of Onsite Trucks 10 mph

						GWP		1	21	310					
		Equipment	Equipment	Total	Days per	Annual Emissions - 2035 (tons per year)									Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	3.05E-04	8.20E-04	4.96E-03	4.80E-05	3.58E-04	1.47E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
	Fish relocation	3/4 ton pickup truck		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	2.97E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	5.21E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.40E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.51E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.13E-05	5.64E-05	1.74E-04	1.08E-06	1.98E-06	1.83E-06	9.64E-02	1.92E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.75E-05	2.87E-04	2.49E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.62E-05	2.72E-04	3.86E-04	6.46E-07	1.33E-06	1.22E-06	5.00E-02	3.26E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	4.36E-05	2.82E-04	4.05E-04	6.31E-07	3.35E-06	3.08E-06	4.88E-02	3.93E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	8.70E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.26E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	6.53E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	8.24E-05	8.62E-04	7.46E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.31E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.72E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.12E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.75E-05	2.87E-04	2.49E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	1.61E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.21E-02	3.91E-01	8.86E-01	1.78E-03	4.55E-03	4.19E-03	1.52E+02	3.80E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.95E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.95E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.95E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.95E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.75E-05	1.09E-04	2.05E-04	1.05E-06	3.94E-06	3.63E-06	1.07E-01	3.32E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.07E-03	2.15E-02	2.13E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.32E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.39E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.84E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.32E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.25E-03	1.17E-02	9.19E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.64E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.15E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.06E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	1.46E-05	3.93E-05	2.38E-04	2.30E-06	1.72E-05	7.04E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.59E-04	3.87E-03	4.67E-03	9.49E-06	2.46E-05	2.26E-05	7.34E-01	3.24E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.18E-03	1.21E-02	7.75E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.30E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.25E-05	5.72E-04	6.28E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.01E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	5.90E-04	6.07E-03	3.88E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	6.51E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	9.64E-04	9.91E-03	6.33E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.06E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	3.93E-04	4.04E-03	2.58E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.34E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.36E-03	1.61E-03	1.22E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.72E-05	1.28E-04	7.18E-01	6.52E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
				Total		**8.40E-02**	**6.86E-01**	**1.32E+00**	**3.23E-03**	**1.88E-02**	**1.53E-02**	**3.40E+02**	**1.07E-02**	**1.83E-03**	**3.41E+02**	**3.10E+02**

Daily Onsite Emissions
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 10

Construction Start Year	2035
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2035 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		709	210	5.80E-03	1.56E-02	9.44E-02	9.14E-04	6.83E-03	2.80E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.91E-03	7.23E-02	6.26E-02	3.38E-04	2.99E-03	2.75E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	6.14E-03	4.58E-02	6.04E-02	3.21E-04	1.70E-03	1.56E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.03E-03	3.77E-02	2.96E-02	1.44E-04	1.62E-03	1.49E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	4.49E-03	1.19E-02	3.65E-02	2.28E-04	4.18E-04	3.84E-04
		Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.04E-02	3.21E-04	1.70E-03	1.56E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	5.79E-03	6.05E-02	5.24E-02	2.83E-04	2.50E-03	2.30E-03
		Front end loader	49 hp	4	19	7.62E-03	5.73E-02	8.13E-02	1.36E-04	2.80E-04	2.58E-04
		Roller	47 hp	4	19	9.17E-03	5.93E-02	8.52E-02	1.33E-04	7.05E-04	6.49E-04
		Water truck	3000 gal	4	19	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	9.61E-03	6.01E-02	1.13E-01	5.79E-04	2.17E-03	2.00E-03
		Front end loader	180 hp	4	19	7.92E-03	5.22E-02	8.97E-02	5.08E-04	1.84E-03	1.69E-03
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	1.74E-02	1.82E-01	1.57E-01	8.49E-04	7.51E-03	6.91E-03
		Loader/backhoe	75 hp	0.0923	19	9.07E-05	1.08E-03	2.05E-03	3.68E-06	3.13E-05	2.88E-05
		Crane 94'	155 hp	155	19	3.63E-01	3.77E+00	6.85E+00	1.31E-02	1.94E-01	1.79E-01
		1 ton pickup truck		155	19	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	3.45E-01	3.59E+00	6.51E+00	1.24E-02	1.85E-01	1.70E-01
		1 ton pickup truck		155	20	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	5.50E-03	5.75E-02	4.97E-02	2.69E-04	2.38E-03	2.19E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.13E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.60E-02	2.70E-01	4.90E-01	9.33E-04	1.39E-02	1.28E-02
		Flatbed truck		8	23	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	6.90E-01	6.41E+00	1.45E+01	2.92E-02	7.46E-02	6.86E-02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.21E+00	3.10E-02	2.00E-01	1.84E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.21E+00	3.10E-02	2.00E-01	1.84E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.21E+00	3.10E-02	2.00E-01	1.84E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.21E+00	3.10E-02	2.00E-01	1.84E-01
	Armoring	**1 ton pickup truck**		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
		Excavator	430 hp	1.0667	19	3.67E-03	2.30E-02	4.32E-02	2.21E-04	8.30E-04	7.64E-04
		1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
	Maintenance	**Grader**	215 hp	144	210	3.95E-02	4.10E-01	4.06E-01	2.28E-03	1.37E-02	1.26E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.32E-02	8.26E-02	1.56E-01	7.97E-04	2.99E-03	2.75E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.20E-02	9.07E-01	3.35E-01	1.65E-03	1.97E-02	1.82E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	2.51E-01	2.34E+00	1.84E+00	8.95E-03	1.01E-01	9.29E-02
		Tractor/crawler/dozer	440 hp	5	20	3.13E-02	2.93E-01	2.30E-01	1.12E-03	1.26E-02	1.16E-02
		3/4 ton Pickup truck		20	20	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.34E-02	2.09E-01	2.82E-01	1.57E-03	7.31E-03	6.72E-03
		3/4 ton Pickup truck		34.0003	126	4.64E-04	1.25E-03	7.54E-03	7.31E-05	5.46E-04	2.23E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	1.14E-02	1.23E-01	1.48E-01	3.01E-04	7.80E-04	7.17E-04
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	3.75E-02	3.85E-01	2.46E-01	1.26E-03	1.62E-02	1.49E-02
		3/4 ton Pickup truck		60.0214	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	**Front end loader**	350 hp	4	126	2.62E-03	1.82E-02	1.99E-02	1.03E-04	6.78E-04	6.24E-04
		Water truck	3000 gal	507	126	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	1.87E-02	1.93E-01	1.23E-01	6.31E-04	8.08E-03	7.43E-03
	Micro-blast	**Crane 260'**	375 hp	49	126	3.06E-02	3.15E-01	2.01E-01	1.03E-03	1.32E-02	1.21E-02
		Horizontal boring drill	10 hp	55	126	4.61E-03	3.64E-02	3.67E-02	9.36E-05	1.57E-03	1.44E-03
		3/4 ton Pickup truck		60	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.25E-02	1.28E-01	8.20E-02	4.21E-04	5.38E-03	4.95E-03
		Air compressor	50 hp	40	126	4.30E-02	5.11E-02	3.88E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
				Total		**4.91E+00**	**4.34E+01**	**6.58E+01**	**2.17E-01**	**1.68E+00**	**1.48E+00**
				Daily Onsite Emissions							
				Rindge		5	43	66	0	2	1
				Surfrider		0	0	0	0	0	0
				Topanga		0	0	0	0	0	0
				Zuma		0	0	0	0	0	0
				Landfill		0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther K	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 11

Construction Start Year 2037
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2037 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.623	0.003	0.030	0.028	301.158	0.011	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.467	0.002	0.026	0.024	234.962	0.008	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.088	0.215	0.726	0.005	0.008	0.007	403.250	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.623	0.003	0.030	0.028	301.158	0.011	0.000
		Front end loader	49 hp	4	19	0.168	1.259	1.787	0.003	0.006	0.006	231.302	0.015	0.000
		Roller	47 hp	4	19	0.202	1.345	1.946	0.003	0.013	0.012	235.507	0.019	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.536	0.003	0.011	0.010	270.061	0.008	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.623	0.003	0.030	0.028	301.158	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.273	0.002	0.020	0.018	195.356	0.008	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.623	0.003	0.030	0.028	301.158	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.072	2.271	117.450	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.229	0.002	0.035	0.032	208.066	0.007	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.080	0.739	1.715	0.003	0.007	0.007	294.384	0.007	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.558	0.003	0.018	0.017	280.790	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.558	0.003	0.018	0.017	280.790	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.558	0.003	0.018	0.017	280.790	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.558	0.003	0.018	0.017	280.790	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.623	0.004	0.021	0.019	312.002	0.010	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.599	0.003	0.036	0.033	298.249	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.467	0.002	0.026	0.024	234.962	0.008	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.467	0.002	0.026	0.024	234.962	0.008	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.134	1.449	1.762	0.004	0.008	0.007	277.562	0.012	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.407	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Air compressor	50 hp	40	126	0.613	0.723	55.206	0.004	0.024	0.023	307.059	0.035	0.058
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056

Total Daily Onsite Emissions (lb/day)

Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 11

Construction Start Year 2037
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2037 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	3.05E-04	8.20E-04	4.96E-03	4.80E-05	3.58E-04	1.47E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	2.95E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	5.21E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.39E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.51E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.09E-05	5.14E-05	1.74E-04	1.08E-06	1.82E-06	1.68E-06	9.64E-02	1.92E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	2.75E-05	2.87E-04	2.47E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.62E-05	2.72E-04	3.86E-04	6.46E-07	1.30E-06	1.19E-06	5.00E-02	3.26E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	4.19E-05	2.79E-04	4.03E-04	6.31E-07	2.73E-06	2.51E-06	4.88E-02	3.93E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	8.70E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.26E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	6.53E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	8.24E-05	8.62E-04	7.42E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.31E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.71E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.12E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.75E-05	2.87E-04	2.47E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	1.61E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.13E-02	3.82E-01	8.86E-01	1.78E-03	3.80E-03	3.49E-03	1.52E+02	3.80E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.91E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.91E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.91E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.91E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Armoring	1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.75E-05	1.09E-04	2.05E-04	1.05E-06	3.94E-06	3.63E-06	1.07E-01	3.32E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.07E-03	2.15E-02	2.13E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.32E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.39E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.82E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.32E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.25E-03	1.17E-02	9.07E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.64E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.13E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.06E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	1.46E-05	3.93E-05	2.38E-04	2.30E-06	1.72E-05	7.04E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.56E-04	3.83E-03	4.66E-03	9.49E-06	1.99E-05	1.83E-05	7.34E-01	3.24E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.18E-03	1.21E-02	7.75E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.30E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.25E-05	5.72E-04	6.28E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.01E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	5.90E-04	6.07E-03	3.88E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	6.51E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	9.64E-04	9.91E-03	6.33E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.06E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	3.93E-04	4.04E-03	2.58E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.34E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.35E-03	1.59E-03	1.22E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.72E-05	1.28E-04	7.18E-01	6.52E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**8.32E-02**	**6.77E-01**	**1.32E+00**	**3.23E-03**	**1.81E-02**	**1.46E-02**	**3.40E+02**	**1.07E-02**	**1.83E-03**	**3.41E+02**	**3.10E+02**

Daily Onsi
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 11

Construction Start Year	2037
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2037 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	5.80E-03	1.56E-02	9.44E-02	9.14E-04	6.83E-03	2.80E-03
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.91E-03	7.23E-02	6.22E-02	3.38E-04	2.99E-03	2.75E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	6.14E-03	4.58E-02	6.04E-02	3.21E-04	1.70E-03	1.56E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.03E-03	3.77E-02	2.92E-02	1.44E-04	1.62E-03	1.49E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	4.41E-03	1.08E-02	3.65E-02	2.28E-04	3.84E-04	3.53E-04
		Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.04E-02	3.21E-04	1.70E-03	1.56E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	5.79E-03	6.05E-02	5.20E-02	2.83E-04	2.50E-03	2.30E-03
		Front end loader	49 hp	4	19	7.62E-03	5.73E-02	8.13E-02	1.36E-04	2.73E-04	2.51E-04
		Roller	47 hp	4	19	8.82E-03	5.87E-02	8.49E-02	1.33E-04	5.74E-04	5.28E-04
		Water truck	3000 gal	4	19	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	9.61E-03	6.01E-02	1.13E-01	5.79E-04	2.17E-03	2.00E-03
		Front end loader	180 hp	4	19	7.92E-03	5.22E-02	8.96E-02	5.08E-04	1.84E-03	1.69E-03
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.74E-02	1.82E-01	1.56E-01	8.49E-04	7.51E-03	6.91E-03
		Loader/backhoe	75 hp	0.0923	19	9.07E-05	1.08E-03	2.05E-03	3.68E-06	3.13E-05	2.88E-05
		Crane 94'	155 hp	155	19	3.63E-01	3.77E+00	6.85E+00	1.31E-02	1.94E-01	1.79E-01
		1 ton pickup truck		155	19	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	3.45E-01	3.59E+00	6.51E+00	1.24E-02	1.85E-01	1.70E-01
		1 ton pickup truck		155	20	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	5.50E-03	5.75E-02	4.94E-02	2.69E-04	2.38E-03	2.19E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.12E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.60E-02	2.70E-01	4.90E-01	9.33E-04	1.39E-02	1.28E-02
		Flatbed truck		8	23	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	6.78E-01	6.26E+00	1.45E+01	2.92E-02	6.23E-02	5.73E-02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.13E+00	3.10E-02	2.00E-01	1.84E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.13E+00	3.10E-02	2.00E-01	1.84E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.13E+00	3.10E-02	2.00E-01	1.84E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.13E+00	3.10E-02	2.00E-01	1.84E-01
	Armoring	**1 ton pickup truck**		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
		Excavator	430 hp	1.0667	19	3.67E-03	2.30E-02	4.32E-02	2.21E-04	8.30E-04	7.64E-04
		1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
	Maintenance	**Grader**	215 hp	144	210	3.95E-02	4.10E-01	4.05E-01	2.28E-03	1.37E-02	1.26E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.32E-02	8.26E-02	1.56E-01	7.97E-04	2.99E-03	2.75E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.20E-02	9.07E-01	3.30E-01	1.65E-03	1.97E-02	1.82E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	2.51E-01	2.34E+00	1.81E+00	8.95E-03	1.01E-01	9.29E-02
		Tractor/crawler/dozer	440 hp	5	20	3.13E-02	2.93E-01	2.27E-01	1.12E-03	1.26E-02	1.16E-02
		3/4 ton Pickup truck		20	20	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.34E-02	2.09E-01	2.82E-01	1.57E-03	7.31E-03	6.72E-03
		3/4 ton Pickup truck		34.0003	126	4.64E-04	1.25E-03	7.54E-03	7.31E-05	5.46E-04	2.23E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	1.13E-02	1.22E-01	1.48E-01	3.01E-04	6.33E-04	5.82E-04
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	3.75E-02	3.85E-01	2.46E-01	1.26E-03	1.62E-02	1.49E-02
		3/4 ton Pickup truck		60.0214	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	**Front end loader**	350 hp	4	126	2.62E-03	1.82E-02	1.99E-02	1.03E-04	6.78E-04	6.24E-04
		Water truck	3000 gal	507	126	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	1.87E-02	1.93E-01	1.23E-01	6.31E-04	8.08E-03	7.43E-03
	Micro-blast	**Crane 260'**	375 hp	49	126	3.06E-02	3.15E-01	2.01E-01	1.03E-03	1.32E-02	1.21E-02
		Horizontal boring drill	10 hp	55	126	4.61E-03	3.64E-02	3.67E-02	9.36E-05	1.57E-03	1.44E-03
		3/4 ton Pickup truck		60	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.25E-02	1.28E-01	8.20E-02	4.21E-04	5.38E-03	4.95E-03
		Air compressor	50 hp	40	126	4.29E-02	5.06E-02	3.86E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
					Total	**4.89E+00**	**4.32E+01**	**6.54E+01**	**2.17E-01**	**1.67E+00**	**1.47E+00**
					Daily Onsi						
					Rindge	5	43	65	0	2	1
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 12 through 21

Construction Start Year 2039
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2039 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.620	0.003	0.030	0.028	301.158	0.011	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.462	0.002	0.026	0.024	234.962	0.008	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.086	0.203	0.727	0.005	0.007	0.007	403.250	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.620	0.003	0.030	0.028	301.158	0.011	0.000
		Front end loader	49 hp	4	19	0.168	1.259	1.788	0.003	0.006	0.006	231.302	0.015	0.000
		Roller	47 hp	4	19	0.197	1.334	1.942	0.003	0.011	0.010	235.507	0.019	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.536	0.003	0.011	0.010	270.061	0.008	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.620	0.003	0.030	0.028	301.158	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.273	0.002	0.020	0.018	195.356	0.008	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.230	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.230	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.620	0.003	0.030	0.028	301.158	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.072	2.270	117.436	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.230	0.002	0.035	0.032	208.066	0.007	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.079	0.729	1.715	0.003	0.007	0.006	294.384	0.007	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.552	0.003	0.018	0.017	280.790	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.552	0.003	0.018	0.017	280.790	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.552	0.003	0.018	0.017	280.790	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.552	0.003	0.018	0.017	280.790	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.622	0.004	0.021	0.019	312.002	0.010	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.592	0.003	0.036	0.033	298.249	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.462	0.002	0.026	0.024	234.962	0.008	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.462	0.002	0.026	0.024	234.962	0.008	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.134	1.440	1.763	0.004	0.007	0.006	277.562	0.012	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.407	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Air compressor	50 hp	40	126	0.613	0.723	55.276	0.004	0.024	0.023	307.059	0.035	0.058
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
					Total									
					Daily Onsite Emissions (lb/day)									
					Rindge									
					Surfrider									
					Topanga									
					Zuma									
					Landfill									

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 12 through 21

Construction Start Year 2039
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2039 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	3.05E-04	8.20E-04	4.96E-03	4.80E-05	3.58E-04	1.47E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	2.94E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	5.21E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.37E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.51E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	2.07E-05	4.85E-05	1.74E-04	1.08E-06	1.73E-06	1.59E-06	9.64E-02	1.92E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	2.75E-05	2.87E-04	2.46E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.62E-05	2.72E-04	3.86E-04	6.46E-07	1.29E-06	1.19E-06	5.00E-02	3.26E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	4.08E-05	2.76E-04	4.02E-04	6.31E-07	2.26E-06	2.08E-06	4.88E-02	3.93E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	8.70E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.26E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	6.53E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	8.24E-05	8.62E-04	7.38E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.31E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.71E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.12E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	2.75E-05	2.87E-04	2.46E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	1.61E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.10E-02	3.76E-01	8.86E-01	1.78E-03	3.38E-03	3.11E-03	1.52E+02	3.80E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	2.78E-03	2.55E-02	2.88E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	2.78E-03	2.55E-02	2.88E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.88E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	2.78E-03	2.55E-02	2.88E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Armoring	**1 ton pickup truck**		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.75E-05	1.09E-04	2.05E-04	1.05E-06	3.94E-06	3.63E-06	1.07E-01	3.32E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	2.07E-03	2.15E-02	2.12E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.32E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.39E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.79E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.32E-05	-	9.04E-01	8.20E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	1.25E-03	1.17E-02	8.97E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.64E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.12E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.06E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	1.46E-05	3.93E-05	2.38E-04	2.30E-06	1.72E-05	7.04E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.56E-04	3.81E-03	4.66E-03	9.49E-06	1.74E-05	1.60E-05	7.34E-01	3.24E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	1.18E-03	1.21E-02	7.75E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.30E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	8.25E-05	5.72E-04	6.28E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.01E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	5.90E-04	6.07E-03	3.88E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	6.51E-05	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	9.64E-04	9.91E-03	6.33E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.06E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	3.93E-04	4.04E-03	2.58E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.34E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.35E-03	1.59E-03	1.22E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.72E-05	1.28E-04	7.18E-01	6.52E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
					Total	**8.29E-02**	**6.72E-01**	**1.32E+00**	**3.23E-03**	**1.77E-02**	**1.42E-02**	**3.40E+02**	**1.07E-02**	**1.83E-03**	**3.41E+02**	**3.10E+02**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 12 through 21

Construction Start Year	2039
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2039 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	5.80E-03	1.56E-02	9.44E-02	9.14E-04	6.83E-03	2.80E-03
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.91E-03	7.23E-02	6.19E-02	3.38E-04	2.99E-03	2.75E-03
		Chain saw		1.7209	19	2.45E-02	3.83E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	6.14E-03	4.58E-02	6.04E-02	3.21E-04	1.70E-03	1.56E-03
		Tractor/crawler/dozer	310 hp	0.8673	19	4.03E-03	3.77E-02	2.88E-02	1.44E-04	1.62E-03	1.49E-03
	Chipping	**Brush chipper**	250 hp	0.8673	19	4.35E-03	1.02E-02	3.66E-02	2.28E-04	3.64E-04	3.35E-04
		Front end loader	540 hp	0.8673	19	6.14E-03	4.58E-02	6.04E-02	3.21E-04	1.70E-03	1.56E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	5.79E-03	6.05E-02	5.18E-02	2.83E-04	2.50E-03	2.30E-03
		Front end loader	49 hp	4	19	7.62E-03	5.73E-02	8.13E-02	1.36E-04	2.72E-04	2.51E-04
		Roller	47 hp	4	19	8.58E-03	5.82E-02	8.47E-02	1.33E-04	4.75E-04	4.37E-04
		Water truck	3000 gal	4	19	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	9.61E-03	6.01E-02	1.13E-01	5.79E-04	2.17E-03	2.00E-03
		Front end loader	180 hp	4	19	7.92E-03	5.22E-02	8.96E-02	5.08E-04	1.84E-03	1.69E-03
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.74E-02	1.82E-01	1.55E-01	8.49E-04	7.51E-03	6.91E-03
		Loader/backhoe	75 hp	0.0923	19	9.07E-05	1.08E-03	2.05E-03	3.68E-06	3.13E-05	2.88E-05
		Crane 94'	155 hp	155	19	3.63E-01	3.77E+00	6.86E+00	1.31E-02	1.94E-01	1.79E-01
		1 ton pickup truck		155	19	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	3.45E-01	3.59E+00	6.51E+00	1.24E-02	1.85E-01	1.70E-01
		1 ton pickup truck		155	20	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	5.50E-03	5.75E-02	4.92E-02	2.69E-04	2.38E-03	2.19E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.12E-02	4.53E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.60E-02	2.70E-01	4.90E-01	9.33E-04	1.39E-02	1.28E-02
		Flatbed truck		8	23	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	6.72E-01	6.17E+00	1.45E+01	2.92E-02	5.54E-02	5.10E-02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.07E+00	3.10E-02	2.00E-01	1.84E-01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.07E+00	3.10E-02	2.00E-01	1.84E-01
		Tractor/crawler/dozer	600 hp	78.8462	19	5.85E-01	5.36E+00	6.07E+00	3.10E-02	2.00E-01	1.84E-01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	5.85E-01	5.36E+00	6.07E+00	3.10E-02	2.00E-01	1.84E-01
	Armoring	**1 ton pickup truck**		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
		Excavator	430 hp	1.0667	19	3.67E-03	2.30E-02	4.32E-02	2.21E-04	8.30E-04	7.64E-04
		1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
	Maintenance	**Grader**	215 hp	144	210	3.95E-02	4.10E-01	4.05E-01	2.28E-03	1.37E-02	1.26E-02
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.32E-02	8.26E-02	1.56E-01	7.97E-04	2.99E-03	2.75E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	4.20E-02	9.07E-01	3.26E-01	1.65E-03	1.97E-02	1.82E-02
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	2.51E-01	2.34E+00	1.79E+00	8.95E-03	1.01E-01	9.29E-02
		Tractor/crawler/dozer	440 hp	5	20	3.13E-02	2.93E-01	2.24E-01	1.12E-03	1.26E-02	1.16E-02
		3/4 ton Pickup truck		20	20	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	2.34E-02	2.09E-01	2.82E-01	1.57E-03	7.31E-03	6.72E-03
		3/4 ton Pickup truck		34.0003	126	4.64E-04	1.25E-03	7.54E-03	7.31E-05	5.46E-04	2.23E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	1.13E-02	1.21E-01	1.48E-01	3.01E-04	5.52E-04	5.08E-04
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	3.75E-02	3.85E-01	2.46E-01	1.26E-03	1.62E-02	1.49E-02
		3/4 ton Pickup truck		60.0214	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	**Front end loader**	350 hp	4	126	2.62E-03	1.82E-02	1.99E-02	1.03E-04	6.78E-04	6.24E-04
		Water truck	3000 gal	507	126	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	1.87E-02	1.93E-01	1.23E-01	6.31E-04	8.08E-03	7.43E-03
	Micro-blast	**Crane 260'**	375 hp	49	126	3.06E-02	3.15E-01	2.01E-01	1.03E-03	1.32E-02	1.21E-02
		Horizontal boring drill	10 hp	55	126	4.61E-03	3.64E-02	3.67E-02	9.36E-05	1.57E-03	1.44E-03
		3/4 ton Pickup truck		60	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.25E-02	1.28E-01	8.20E-02	4.21E-04	5.38E-03	4.95E-03
		Air compressor	50 hp	40	126	4.29E-02	5.06E-02	3.87E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
					Total	**4.89E+00**	**4.31E+01**	**6.51E+01**	**2.17E-01**	**1.66E+00**	**1.47E+00**
					Daily Onsi						
					Rindge	5	43	65	0	2	1
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	0	0	0	0	0

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year 2066
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2066 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		1229.3333	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.069	0.724	0.619	0.003	0.030	0.028	301.158	0.011	0.000
		Chain saw		1.7209	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.065	0.604	0.460	0.002	0.026	0.024	234.962	0.008	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.086	0.199	0.727	0.005	0.007	0.007	403.250	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.057	0.421	0.556	0.003	0.016	0.014	293.384	0.009	0.000
Landscaping	*Fish Passage*	Excavator	454 hp	24	20	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Loader/backhoe	75 hp	24	20	0.056	0.672	1.273	0.002	0.020	0.018	195.356	0.008	0.000
		Tractor/crawler/dozer	440 hp	24	20	0.065	0.604	0.460	0.002	0.026	0.024	234.962	0.008	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.069	0.724	0.619	0.003	0.030	0.028	301.158	0.011	0.000
		Front end loader	49 hp	4	19	0.168	1.259	1.788	0.003	0.006	0.006	231.302	0.015	0.000
		Roller	47 hp	4	19	0.195	1.329	1.941	0.003	0.010	0.009	235.507	0.019	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.047	0.313	0.536	0.003	0.011	0.010	270.061	0.008	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.069	0.724	0.619	0.003	0.030	0.028	301.158	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.056	0.672	1.273	0.002	0.020	0.018	195.356	0.008	0.000
		Crane 94'	155 hp	155	19	0.065	0.677	1.230	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.065	0.677	1.230	0.002	0.035	0.032	208.066	0.007	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.069	0.724	0.619	0.003	0.030	0.028	301.158	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.072	2.270	117.429	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.065	0.677	1.230	0.002	0.035	0.032	208.066	0.007	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.079	0.726	1.716	0.003	0.006	0.006	294.384	0.007	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.550	0.003	0.018	0.017	280.790	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.550	0.003	0.018	0.017	280.790	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.550	0.003	0.018	0.017	280.790	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.489	0.550	0.003	0.018	0.017	280.790	0.010	0.000
	Maintenance	Grader	215 hp	144	210	0.061	0.631	0.622	0.004	0.021	0.019	312.002	0.010	0.000
	Dismantling	Tractor/crawler/dozer	600 hp	157.6923	20	0.053	0.489	0.550	0.003	0.018	0.017	280.790	0.010	0.000
		Tractor/crawler/dozer	600 hp	157.6923	20	0.053	0.489	0.550	0.003	0.018	0.017	280.790	0.010	0.000
		1 ton pickup truck		0.9333	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	0.9333	20	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Excavator	300 hp	341.6667	20	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		1 ton pickup truck		0.9333	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
Rindge Dam & Spillway	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Demolition*		Excavator	430 hp	4.445	22	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.076	1.647	0.589	0.003	0.036	0.033	298.249	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.065	0.604	0.460	0.002	0.026	0.024	234.962	0.008	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.065	0.604	0.460	0.002	0.026	0.024	234.962	0.008	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
		3/4 ton Pickup truck		30.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.135	1.438	1.764	0.004	0.006	0.006	277.562	0.012	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.053	0.371	0.407	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Horizontal boring drill	10 hp	55	126	0.239	1.891	1.909	0.005	0.081	0.075	312.570	0.033	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.048	0.489	0.312	0.002	0.021	0.019	163.241	0.005	0.000
		Air compressor	50 hp	40	126	0.614	0.724	55.416	0.004	0.024	0.023	307.059	0.035	0.058
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Rindge Dam Concrete Arc	*Drilling*	Rotary drill	475 hp	120.7333	40	0.041	0.370	0.500	0.003	0.013	0.012	282.166	0.006	0.000
Foundation Demolition		3/4 ton Pickup truck		128.7333	40	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	34	40	0.053	0.371	0.407	0.002	0.014	0.013	214.821	0.007	0.000
		Water truck	3000 gal	15	40	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Fracture	Excavator	400 hp	540	40	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Excavator	300 hp	540	40	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Excavator	300 hp	270	40	0.035	0.216	0.406	0.002	0.008	0.007	211.854	0.007	0.000
		Tractor/crawler/dozer	440 hp	270	40	0.065	0.604	0.460	0.002	0.026	0.024	234.962	0.008	0.000
		3/4 ton Pickup truck		540	40	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year	2066
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2066 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Road Improvement Plan	*Asphalt Road*	Asphalt hopper	300 hp	442.5143	20	0.054	0.308	0.480	0.002	0.011	0.010	246.840	0.008	0.000
		Line Striper	23 hp	92.576	20	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
		Roller	70 hp	442.5143	20	0.068	0.874	1.421	0.003	0.037	0.034	222.777	0.009	0.000
		Vibratory roller	33 hp	442.5143	20	0.195	1.329	1.941	0.003	0.010	0.009	235.507	0.019	0.000
		Flatbed truck		92.576	20	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		3/4 ton Pickup truck		92.576	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
					Total									

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year 2066
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2066 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		1229.3333	210	5.28E-04	1.42E-03	8.59E-03	8.32E-05	6.21E-04	2.54E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.28E-05	3.43E-04	2.93E-04	1.61E-06	1.42E-05	1.31E-05	1.43E-01	5.21E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	1.16E-04	1.82E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	7.22E-06	6.24E-07	9.13E-04	8.28E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.92E-05	1.79E-04	1.36E-04	6.83E-07	7.71E-06	7.10E-06	6.96E-02	2.51E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.06E-05	4.76E-05	1.74E-04	1.08E-06	1.70E-06	1.56E-06	9.64E-02	1.92E-06	-	9.64E-02	8.75E-02
		Front end loader	540 hp	0.8673	19	2.92E-05	2.17E-04	2.87E-04	1.52E-06	8.07E-06	7.42E-06	1.51E-01	4.60E-06	-	1.52E-01	1.37E-01
Landscaping	***Fish Passage***	Excavator	454 hp	24	20	4.15E-04	2.59E-03	4.88E-03	2.50E-05	9.37E-05	8.62E-05	2.54E+00	7.90E-05	-	2.55E+00	2.31E+00
		Loader/backhoe	75 hp	24	20	1.12E-04	1.33E-03	2.53E-03	4.55E-06	3.87E-05	3.56E-05	3.88E-01	1.59E-05	-	3.88E-01	3.52E-01
		Tractor/crawler/dozer	440 hp	24	20	7.52E-04	7.03E-03	5.36E-03	2.68E-05	3.03E-04	2.79E-04	2.74E+00	9.86E-05	-	2.74E+00	2.48E+00
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	2.75E-05	2.87E-04	2.45E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	3.62E-05	2.72E-04	3.86E-04	6.46E-07	1.29E-06	1.19E-06	5.00E-02	3.26E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	4.04E-05	2.75E-04	4.02E-04	6.31E-07	2.07E-06	1.90E-06	4.88E-02	3.93E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	4.57E-05	2.85E-04	5.37E-04	2.75E-06	1.03E-05	9.49E-06	2.80E-01	8.70E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.76E-05	2.48E-04	4.26E-04	2.41E-06	8.73E-06	8.04E-06	2.14E-01	6.53E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	8.24E-05	8.62E-04	7.36E-04	4.03E-06	3.57E-05	3.28E-05	3.59E-01	1.31E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.31E-07	5.13E-06	9.71E-06	1.75E-08	1.49E-07	1.37E-07	1.49E-03	6.12E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.73E-03	1.79E-02	3.26E-02	6.20E-05	9.23E-04	8.49E-04	5.51E+00	1.86E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.75E-05	2.87E-04	2.45E-04	1.34E-06	1.19E-05	1.09E-05	1.20E-01	4.36E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.74E-02
		Crane 80'	130 hp	16	23	1.49E-04	1.55E-03	2.82E-03	5.37E-06	7.99E-05	7.35E-05	4.77E-01	1.61E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.09E-02	3.75E-01	8.86E-01	1.78E-03	3.25E-03	2.99E-03	1.52E+02	3.80E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.87E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.87E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.87E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.78E-03	2.55E-02	2.87E-02	1.47E-04	9.48E-04	8.72E-04	1.46E+01	5.28E-04	-	1.47E+01	1.33E+01
	Maintenance	Grader	215 hp	144	210	2.07E-03	2.15E-02	2.12E-02	1.20E-04	7.20E-04	6.62E-04	1.06E+01	3.32E-04	-	1.07E+01	9.67E+00
	Dismantling	Tractor/crawler/dozer	600 hp	157.6923	20	5.55E-03	5.10E-02	5.74E-02	2.94E-04	1.90E-03	1.74E-03	2.93E+01	1.06E-03	-	2.93E+01	2.66E+01
		Tractor/crawler/dozer	600 hp	157.6923	20	5.55E-03	5.10E-02	5.74E-02	2.94E-04	1.90E-03	1.74E-03	2.93E+01	1.06E-03	-	2.93E+01	2.66E+01
		1 ton pickup truck		0.9333	20	2.96E-07	8.14E-07	4.85E-06	6.34E-08	4.69E-07	1.91E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02	1.93E-02
		Excavator	430 hp	0.9333	20	1.53E-05	9.54E-05	1.80E-04	9.20E-07	3.45E-06	3.17E-06	9.37E-02	2.91E-06	-	9.38E-02	8.51E-02
		Excavator	300 hp	341.6667	20	3.90E-03	2.44E-02	4.59E-02	2.35E-04	8.81E-04	8.11E-04	2.39E+01	7.43E-04	-	2.40E+01	2.17E+01
		1 ton pickup truck		0.9333	20	2.96E-07	8.14E-07	4.85E-06	6.34E-08	4.69E-07	1.91E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02	1.93E-02
Rindge Dam & Spillway	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
Demolition*		Excavator	430 hp	4.445	22	7.27E-05	4.55E-04	8.55E-04	4.38E-06	1.64E-05	1.51E-05	4.46E-01	1.39E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	2.31E-04	4.99E-03	1.78E-03	9.08E-06	1.09E-04	9.99E-05	9.03E-01	3.32E-05	-	9.04E-01	8.20E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.25E-03	1.17E-02	8.93E-03	4.47E-05	5.05E-04	4.65E-04	4.56E+00	1.64E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.57E-04	1.46E-03	1.12E-03	5.59E-06	6.31E-05	5.81E-05	5.70E-01	2.06E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	7.37E-04	6.59E-03	8.90E-03	4.93E-05	2.30E-04	2.12E-04	5.02E+00	1.01E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		30.0003	126	1.29E-05	3.47E-05	2.10E-04	2.03E-06	1.52E-05	6.21E-06	6.73E-01	6.69E-05	3.49E-05	6.86E-01	6.22E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.56E-04	3.80E-03	4.67E-03	9.49E-06	1.67E-05	1.54E-05	7.34E-01	3.24E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.18E-03	1.21E-02	7.75E-03	3.98E-05	5.09E-04	4.68E-04	4.05E+00	1.30E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	8.25E-05	5.72E-04	6.28E-04	3.25E-06	2.14E-05	1.96E-05	3.32E-01	1.01E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	5.90E-04	6.07E-03	3.88E-03	1.99E-05	2.54E-04	2.34E-04	2.03E+00	6.51E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	9.64E-04	9.91E-03	6.33E-03	3.25E-05	4.15E-04	3.82E-04	3.31E+00	1.06E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	1.45E-04	1.15E-03	1.16E-03	2.95E-06	4.94E-05	4.55E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	3.93E-04	4.04E-03	2.58E-03	1.32E-05	1.70E-04	1.56E-04	1.35E+00	4.34E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.35E-03	1.60E-03	1.22E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.72E-05	1.28E-04	7.18E-01	6.52E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
Rindge Dam Concrete Arc	***Drilling***	Rotary drill	475 hp	120.7333	40	2.62E-03	2.34E-02	3.16E-02	1.75E-04	8.17E-04	7.52E-04	1.78E+01	3.60E-04	-	1.78E+01	1.62E+01
Foundation Demolition		3/4 ton Pickup truck		128.7333	40	5.53E-05	1.49E-04	9.00E-04	8.72E-06	6.51E-05	2.66E-05	2.89E+00	2.87E-04	1.50E-04	2.94E+00	2.67E+00
	Load/Haul	Front end loader	350 hp	34	40	7.01E-04	4.86E-03	5.34E-03	2.77E-05	1.81E-04	1.67E-04	2.82E+00	8.55E-05	-	2.82E+00	2.56E+00
		Water truck	3000 gal	15	40	1.09E-04	4.38E-04	2.07E-04	1.75E-06	3.01E-05	1.58E-05	3.50E-01	8.43E-07	7.94E-07	3.50E-01	3.17E-01
	Fracture	Excavator	400 hp	540	40	8.22E-03	5.14E-02	9.67E-02	4.95E-04	1.86E-03	1.71E-03	5.04E+01	1.57E-03	-	5.05E+01	4.58E+01
		Excavator	300 hp	540	40	6.16E-03	3.85E-02	7.25E-02	3.71E-04	1.39E-03	1.28E-03	3.78E+01	1.17E-03	-	3.79E+01	3.43E+01
		Excavator	300 hp	270	40	3.08E-03	1.93E-02	3.62E-02	1.86E-04	6.97E-04	6.41E-04	1.89E+01	5.87E-04	-	1.89E+01	1.72E+01
		Tractor/crawler/dozer	440 hp	270	40	8.46E-03	7.91E-02	6.03E-02	3.02E-04	3.41E-03	3.14E-03	3.08E+01	1.11E-03	-	3.08E+01	2.79E+01
		3/4 ton Pickup truck		540	40	2.32E-04	6.25E-04	3.77E-03	3.66E-05	2.73E-04	1.12E-04	1.21E+01	1.20E-03	6.29E-04	1.23E+01	1.12E+01

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year 2066
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2066 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Road Improvement Plan	*Asphalt Road*	Asphalt hopper	300 hp	442.5143	20	7.94E-03	4.50E-02	7.02E-02	3.55E-04	1.61E-03	1.48E-03	3.61E+01	1.20E-03	-	3.61E+01	3.28E+01
		Line Striper	23 hp	92.576	20	2.59E-04	7.75E-04	2.00E-02	6.07E-06	4.87E-05	4.86E-05	6.11E-01	1.47E-05	5.00E-05	6.27E-01	5.69E-01
		Roller	70 hp	442.5143	20	2.32E-03	2.98E-02	4.85E-02	8.92E-05	1.25E-03	1.15E-03	7.61E+00	3.12E-04	-	7.61E+00	6.91E+00
		Vibratory roller	33 hp	442.5143	20	3.13E-03	2.14E-02	3.12E-02	4.90E-05	1.61E-04	1.48E-04	3.79E+00	3.05E-04	-	3.80E+00	3.44E+00
		Flatbed truck		92.576	20	6.43E-05	1.33E-04	9.54E-04	6.19E-06	4.65E-05	1.89E-05	2.08E+00	4.70E-04	2.18E-04	2.16E+00	1.96E+00
		3/4 ton Pickup truck		92.576	20	3.98E-05	1.07E-04	6.47E-04	6.27E-06	4.68E-05	1.92E-05	2.08E+00	2.07E-04	1.08E-04	2.12E+00	1.92E+00
					Total	**1.43E-01**	**1.12E+00**	**1.97E+00**	**6.26E-03**	**3.48E-02**	**2.96E-02**	**6.66E+02**	**2.37E-02**	**3.59E-03**	**6.68E+02**	**6.06E+02**

Daily Onsi
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Emission Factors - 2016 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Emission Factors - 2017 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		**3/4 ton pickup truck**		96	22.2	73.8	52	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	210	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
Environmental protection measures	***WQ Testing***	**3/4 ton pickup truck**		80	0.0	80.0	0	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
	Biologist	**3/4 ton pickup truck**		1213	0.0	1,213.0	0	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	0	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		0.7652	0.8	0.0	52	0	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
	Gravel	**Grader**	135 hp	11.1111	11.1	0.0	52	0	0.273	3.372	1.893	0.004	0.189	0.174	320.916	0.028	0.000	0.256	3.132	1.891	0.004	0.176	0.162	320.916	0.027	0.000
		Vibratory roller	85 hp	16	16.0	0.0	52	0	0.195	2.178	1.500	0.003	0.160	0.148	222.777	0.027	0.000	0.180	2.030	1.489	0.003	0.147	0.135	222.777	0.025	0.000
		Tractor/crawler/dozer	310 hp	3.2593	3.3	0.0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.341	2.469	132.341	0.006	1.896	1.892	226.175	0.190	0.196	3.339	2.468	132.332	0.006	1.896	1.892	226.176	0.190	0.196
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	0.164	1.895	1.307	0.002	0.146	0.134	195.356	0.018	0.000	0.152	1.772	1.300	0.002	0.133	0.123	195.356	0.016	0.000
		Flatbed truck		4	4.0	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
Clear & Grub - Sediment Removal Area	***Clear Brush***	**1 ton pickup truck**		15.1316	0.0	15.1	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	94 hp	15.1316	0.0	15.1	0	42	0.150	1.798	1.915	0.003	0.131	0.121	278.045	0.028	0.000	0.139	1.673	1.904	0.003	0.118	0.109	278.045	0.026	0.000
		Front end loader	210 hp	15.1316	0.0	15.1	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
		Dump truck	10cy	15.1316	0.0	15.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	15.1316	0.0	15.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	15.1316	0.0	15.1	0	42	0.105	1.115	0.439	0.002	0.035	0.033	224.028	0.009	0.000	0.098	0.993	0.427	0.002	0.032	0.029	224.028	0.009	0.000
		Front end loader	210 hp	6.9575	0.0	7.0	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	14.375	0.0	14.4	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		14.3753	0.0	14.4	0	42	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	**Front end loader**	540 hp	7.245	0.0	7.2	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	7.245	0.0	7.2	0	42	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	**Brush chipper**	250 hp	7.245	0.0	7.2	0	42	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	7.245	0.0	7.2	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
Clear & Grub - Access Rd & Cofferdam	***Clear Brush***	**1 ton pickup truck**		8.0263	0.0	8.0	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	94 hp	8.0263	0.0	8.0	0	42	0.150	1.798	1.915	0.003	0.131	0.121	278.045	0.028	0.000	0.139	1.673	1.904	0.003	0.118	0.109	278.045	0.026	0.000
		Front end loader	210 hp	8.0263	0.0	8.0	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
		Dump truck	10cy	8.0263	0.0	8.0	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	8.0263	0.0	8.0	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	8.0263	0.0	8.0	0	42	0.105	1.115	0.439	0.002	0.035	0.033	224.028	0.009	0.000	0.098	0.993	0.427	0.002	0.032	0.029	224.028	0.009	0.000
		Front end loader	210 hp	3.6905	0.0	3.7	0	42	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	Cutting	**1 ton pickup truck**		4.575	0.0	4.6	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.625	0.0	7.6	0	42	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Chain saw		7.6252	0.0	7.6	0	42	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	**Front end loader**	540 hp	3.843	0.0	3.8	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
		Tractor/crawler/dozer	310 hp	3.843	0.0	3.8	0	42	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Chipping	**Brush chipper**	250 hp	3.843	0.0	3.8	0	42	0.205	2.269	0.800	0.005	0.068	0.063	403.250	0.018	0.000	0.190	2.015	0.785	0.005	0.061	0.056	403.250	0.017	0.000
		Front end loader	540 hp	3.843	0.0	3.8	0	42	0.111	1.509	0.692	0.003	0.059	0.055	293.384	0.018	0.000	0.110	1.465	0.669	0.003	0.058	0.053	293.384	0.017	0.000
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	190	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
		Front end loader	49 hp	4	0.0	4.0	0	190	0.293	1.770	1.893	0.003	0.086	0.079	231.302	0.026	0.000	0.261	1.691	1.864	0.003	0.071	0.066	231.302	0.024	0.000
		Roller	47 hp	4	0.0	4.0	0	190	0.723	2.105	2.430	0.003	0.173	0.160	235.507	0.065	0.000	0.660	2.035	2.367	0.003	0.158	0.145	235.507	0.060	0.000
		Water truck	3000 gal	4	0.0	4.0	0	190	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	300 hp	4	0.0	4.0	0	190	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		Front end loader	180 hp	4	0.0	4.0	0	190	0.118	1.851	0.609	0.003	0.063	0.058	270.061	0.017	0.000	0.111	1.720	0.596	0.003	0.059	0.054	270.061	0.016	0.000
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	190	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	190	2.485	1.571	93.010	0.004	1.249	1.246	148.932	0.142	0.122	2.467	1.576	92.812	0.004	1.249	1.246	148.932	0.141	0.122
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	190	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	190	0.164	1.895	1.307	0.002	0.146	0.134	195.356	0.018	0.000	0.152	1.772	1.300	0.002	0.133	0.123	195.356	0.016	0.000
		Crane 94'	155 hp	155	0.0	155.0	0	20	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		1 ton pickup truck		155	0.0	155.0	0	20	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	20	0.159	2.593	0.807	0.003	0.100	0.092	301.158	0.024	0.000	0.152	2.470	0.781	0.003	0.094	0.087	301.158	0.023	0.000
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	3.075	2.272	117.599	0.006	1.685	1.681	200.981	0.175	0.188	3.075	2.272	117.591	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	0.0	16.0	0	171	0.177	2.272	1.239	0.002	0.123	0.113	208.066	0.020	0.000	0.166	2.120	1.236	0.002	0.114	0.105	208.066	0.019	0.000
		Flatbed truck		8	0.0	8.0	0	171	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	2.138	1.453	103.697	0.005	0.092	0.092	175.214	0.122	0.147	2.040	1.414	103.256	0.005	0.092	0.092	175.214	0.116	0.145
		Generator	80 hp	5856	0.0	5,856.0	0	244	0.307	2.304	1.800	0.003	0.163	0.150	294.384	0.028	0.000	0.274	2.126	1.786	0.003	0.144	0.132	294.384	0.025	0.000
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Push	**Tractor/crawler/dozer**	600 hp	738.4615	0.0	738.5	0	171	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Build road	**Tractor/crawler/dozer**	600 hp	761.5384	0.0	761.5	0	171	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Cut	**Tractor/crawler/dozer**	600 hp	20.4616	0.0	20.5	0	171	0.123	2.026	0.854	0.003	0.075	0.069	280.790	0.021	0.000	0.115	1.870	0.814	0.003	0.068	0.063	280.790	0.020	0.000
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	171	0.273	3.372	1.893	0.004	0.189	0.174	320.916	0.028	0.000	0.256	3.132	1.891	0.004	0.176	0.162	320.916	0.027	0.000
	Graveling	**Asphalt distributor**	3000 gal	10	0.0	10.0	0	171	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Vibratory roller	85 hp	30.4607	0.0	30.5	0	171	0.195	2.178	1.500	0.003	0.160	0.148	222.777	0.027	0.000	0.180	2.030	1.489	0.003	0.147	0.135	222.777	0.025	0.000
		Tractor/crawler/dozer	310 hp	12.7423	0.0	12.7	0	171	0.141	2.264	0.716	0.002	0.088	0.081	234.962	0.018	0.000	0.136	2.157	0.683	0.002	0.083	0.077	234.962	0.017	0.000
	Armoring	**1 ton pickup truck**		8	0.0	8.0	0	171	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	430 hp	8	0.0	8.0	0	171	0.067	1.075	0.440	0.002	0.035	0.032	211.854	0.012	0.000	0.063	0.957	0.432	0.002	0.031	0.028	211.854	0.012	0.000
		1 ton pickup truck		8	0.0	8.0	0	171	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	191	0.135	2.314	0.714	0.004	0.075	0.069	312.002	0.020	0.000	0.134	2.258	0.697	0.004	0.074	0.068	312.002	0.019	0.000
FloodWall		**Crane 50'**	263 hp	992	0.0	992.0	0	171	0.105	1.627	0.402	0.002	0.067	0.062	163.241	0.011	0.000	0.098	1.507	0.385	0.002	0.061	0.056	163.241	0.010	0.000
		Pile hammer driver	325 hp	992	0.0	992.0	0	171	0.071	1.261	0.499	0.003	0.039	0.036	282.166	0.008	0.000	0.069	1.190	0.500	0.003	0.036	0.033	282.166	0.008	0.000
		Generator	7.5 hp	291.8009	0.0	291.8	0	171	2.138	1.453	103.697	0.005	0.092	0.092	175.214	0.122	0.147	2.040	1.414	103.256	0.005	0.092	0.092	175.214	0.116	0.145
		Concrete pump		157.0849	0.0	157.1	0	171	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048

Data from Alt4_EnvrAirQualityReport.pdf

	Total
Daily Onsite Emissions (lb/day)	
Rindge	
Surfrider	
Topanga	
Zuma	
Landfill	
Floodwall	

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 1

Construction Start Year: 2016
Speed of Onsite Trucks: 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Annual Emissions - 2016 (tons per year)										Metric Tons	Annual Emissions - 2017 (tons per year)										Metric Tons
					1	21	310									1	21	310								
					VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	1.23E-04	9.52E-05	1.47E-03	1.50E-06	1.25E-05	5.81E-06	4.97E-01	4.94E-05	2.58E-05	5.06E-01	4.59E-01	3.69E-04	2.94E-04	4.43E-03	4.99E-06	4.13E-05	1.89E-05	1.66E+00	1.65E-04	8.60E-05	1.69E+00	1.53E+00
Dust Control		**Water truck**	5000 gal	2320	4.57E-03	7.40E-02	8.21E-03	6.36E-05	1.63E-03	1.08E-03	1.27E+01	3.01E-05	2.83E-05	1.27E+01	1.15E+01	1.37E-02	2.25E-01	2.51E-02	2.12E-04	4.72E-03	2.93E-03	4.23E+01	1.00E-04	9.44E-05	4.24E+01	3.84E+01
Environmental protection measures	***WQ Testing***	**3/4 ton pickup truck**		80	-	-	-	-	-	-	-	-	-	-	-	4.00E-04	3.18E-04	4.80E-03	5.40E-06	4.47E-05	2.05E-05	1.80E+00	1.78E-04	9.31E-05	1.83E+00	1.66E+00
	Biologist	**3/4 ton pickup truck**		1213	-	-	-	-	-	-	-	-	-	-	-	6.06E-03	4.82E-03	7.27E-02	8.19E-05	6.78E-04	3.11E-04	2.72E+01	2.71E-03	1.41E-03	2.77E+01	2.51E+01
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	1.81E-06	1.79E-06	2.43E-05	3.11E-08	2.55E-07	1.16E-07	1.03E-02	1.02E-06	5.34E-07	1.05E-02	9.52E-03	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	3.35E-05	5.47E-04	1.70E-04	7.15E-07	2.11E-05	1.94E-05	6.35E-02	5.16E-06	-	6.36E-02	5.77E-02	-	-	-	-	-	-	-	-	-	-	-
		Chain saw		0.7652	5.17E-05	8.09E-07	9.34E-05	1.04E-08	1.47E-07	1.47E-07	2.53E-04	3.21E-06	2.77E-07	4.06E-04	3.68E-04	-	-	-	-	-	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.3857	2.56E-05	3.47E-04	1.59E-04	6.77E-07	1.36E-05	1.25E-05	6.74E-02	4.11E-06	-	6.74E-02	6.12E-02	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	1.86E-05	2.98E-04	9.44E-05	3.04E-07	1.16E-05	1.06E-05	3.10E-02	2.35E-06	-	3.10E-02	2.81E-02	-	-	-	-	-	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.3857	2.17E-05	2.41E-04	8.51E-05	4.82E-07	7.26E-06	6.68E-06	4.29E-02	1.96E-06	-	4.29E-02	3.89E-02	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	2.56E-05	3.47E-04	1.59E-04	6.77E-07	1.36E-05	1.25E-05	6.74E-02	4.11E-06	-	6.74E-02	6.12E-02	-	-	-	-	-	-	-	-	-	-	-
	Gravel	**Grader**	135 hp	11.1111	4.52E-04	5.57E-03	3.13E-03	5.97E-06	3.13E-04	2.88E-04	5.31E-01	4.70E-05	-	5.32E-01	4.82E-01	-	-	-	-	-	-	-	-	-	-	-
		Vibratory roller	85 hp	16	2.92E-04	3.27E-03	2.25E-03	3.92E-06	2.40E-04	2.21E-04	3.34E-01	4.06E-05	-	3.35E-01	3.04E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.2593	1.57E-04	2.52E-03	7.98E-04	2.57E-06	9.77E-05	8.99E-05	2.62E-01	1.99E-05	-	2.62E-01	2.38E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	5.58E-05	8.95E-04	2.83E-04	9.11E-07	3.47E-05	3.19E-05	9.29E-02	7.05E-06	-	9.30E-02	8.44E-02	-	-	-	-	-	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	6.92E-06	1.12E-04	1.24E-05	9.62E-08	2.47E-06	1.63E-06	1.93E-02	4.56E-08	4.29E-08	1.93E-02	1.75E-02	-	-	-	-	-	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.91E-05	8.72E-05	1.26E-03	5.89E-07	4.81E-06	2.16E-06	1.96E-01	4.44E-05	2.06E-05	2.04E-01	1.85E-01	-	-	-	-	-	-	-	-	-	-	-
		Auger drill	10 hp	8.75	3.22E-04	2.38E-04	1.28E-02	6.22E-07	1.83E-04	1.83E-04	2.18E-02	1.84E-05	1.89E-05	2.81E-02	2.55E-02	-	-	-	-	-	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	5.69E-05	6.58E-04	4.54E-04	7.96E-07	5.07E-05	4.66E-05	6.78E-02	6.20E-06	-	6.80E-02	6.17E-02	-	-	-	-	-	-	-	-	-	-	-
		Flatbed truck		4	4.07E-05	3.99E-05	5.76E-04	2.69E-07	2.20E-06	9.87E-07	8.98E-02	2.03E-05	9.41E-06	9.31E-02	8.45E-02	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area	***Clear Brush***	**1 ton pickup truck**		15.1316	-	-	-	-	-	-	-	-	-	-	-	4.97E-05	5.29E-05	6.67E-04	1.03E-06	8.30E-06	3.73E-06	3.40E-01	3.38E-05	1.76E-05	3.46E-01	3.14E-01
		Excavator	94 hp	15.1316	-	-	-	-	-	-	-	-	-	-	-	2.18E-04	2.62E-03	2.99E-03	5.11E-06	1.86E-04	1.71E-04	4.36E-01	4.06E-05	-	4.37E-01	3.96E-01
		Front end loader	210 hp	15.1316	-	-	-	-	-	-	-	-	-	-	-	3.90E-04	6.03E-03	2.09E-03	1.06E-05	2.05E-04	1.89E-04	9.46E-01	5.73E-05	-	9.47E-01	8.59E-01
		Dump truck	10cy	15.1316	-	-	-	-	-	-	-	-	-	-	-	1.16E-04	1.91E-03	2.12E-04	1.79E-06	4.01E-05	2.48E-05	3.59E-01	8.51E-07	8.01E-07	3.59E-01	3.26E-01
		Dump truck	10cy	15.1316	-	-	-	-	-	-	-	-	-	-	-	1.16E-04	1.91E-03	2.12E-04	1.79E-06	4.01E-05	2.48E-05	3.59E-01	8.51E-07	8.01E-07	3.59E-01	3.26E-01
		Brush chipper	275 hp	15.1316	-	-	-	-	-	-	-	-	-	-	-	4.51E-04	4.56E-03	1.96E-03	1.01E-05	1.46E-04	1.35E-04	1.03E+00	4.07E-05	-	1.03E+00	9.33E-01
		Front end loader	210 hp	6.9575	-	-	-	-	-	-	-	-	-	-	-	1.79E-04	2.77E-03	9.61E-04	4.89E-06	9.44E-05	8.68E-05	4.35E-01	2.63E-05	-	4.35E-01	3.95E-01
	Cutting	**1 ton pickup truck**		8.625	-	-	-	-	-	-	-	-	-	-	-	2.83E-05	3.01E-05	3.80E-04	5.85E-07	4.73E-06	2.12E-06	1.94E-01	1.92E-05	1.00E-05	1.97E-01	1.79E-01
		Tractor/crawler/dozer	250 hp	14.375	-	-	-	-	-	-	-	-	-	-	-	6.03E-04	9.78E-03	3.09E-03	1.34E-05	3.73E-04	3.44E-04	1.19E+00	9.15E-05	-	1.19E+00	1.08E+00
		Chain saw		14.3753	-	-	-	-	-	-	-	-	-	-	-	9.70E-04	1.52E-05	1.76E-03	1.95E-07	2.76E-06	2.76E-06	4.74E-03	6.03E-05	5.21E-06	7.63E-03	6.92E-03
	Brush Piling	**Front end loader**	540 hp	7.245	-	-	-	-	-	-	-	-	-	-	-	4.73E-04	6.32E-03	2.89E-03	1.27E-05	2.49E-04	2.30E-04	1.27E+00	7.34E-05	-	1.27E+00	1.15E+00
		Tractor/crawler/dozer	310 hp	7.245	-	-	-	-	-	-	-	-	-	-	-	3.38E-04	5.34E-03	1.69E-03	5.71E-06	2.07E-04	1.90E-04	5.82E-01	4.19E-05	-	5.83E-01	5.29E-01
	Chipping	**Brush chipper**	250 hp	7.245	-	-	-	-	-	-	-	-	-	-	-	3.80E-04	4.02E-03	1.57E-03	9.06E-06	1.22E-04	1.12E-04	8.05E-01	3.43E-05	-	8.06E-01	7.31E-01
		Front end loader	540 hp	7.245	-	-	-	-	-	-	-	-	-	-	-	4.73E-04	6.32E-03	2.89E-03	1.27E-05	2.49E-04	2.30E-04	1.27E+00	7.34E-05	-	1.27E+00	1.15E+00
Clear & Grub - Access Rd & Cofferdam	***Clear Brush***	**1 ton pickup truck**		8.0263	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.80E-05	3.54E-04	5.44E-07	4.40E-06	1.98E-06	1.80E-01	1.79E-05	9.34E-06	1.83E-01	1.66E-01
		Excavator	94 hp	8.0263	-	-	-	-	-	-	-	-	-	-	-	1.15E-04	1.39E-03	1.58E-03	2.71E-06	9.85E-05	9.07E-05	2.31E-01	2.15E-05	-	2.32E-01	2.10E-01
		Front end loader	210 hp	8.0263	-	-	-	-	-	-	-	-	-	-	-	2.07E-04	3.20E-03	1.11E-03	5.65E-06	1.09E-04	1.00E-04	5.02E-01	3.04E-05	-	5.02E-01	4.56E-01
		Dump truck	10cy	8.0263	-	-	-	-	-	-	-	-	-	-	-	6.17E-05	1.01E-03	1.13E-04	9.52E-07	2.12E-05	1.32E-05	1.90E-01	4.51E-07	4.25E-07	1.91E-01	1.73E-01
		Dump truck	10cy	8.0263	-	-	-	-	-	-	-	-	-	-	-	6.17E-05	1.01E-03	1.13E-04	9.52E-07	2.12E-05	1.32E-05	1.90E-01	4.51E-07	4.25E-07	1.91E-01	1.73E-01
		Brush chipper	275 hp	8.0263	-	-	-	-	-	-	-	-	-	-	-	2.39E-04	2.42E-03	1.04E-03	5.35E-06	7.76E-05	7.14E-05	5.45E-01	2.16E-05	-	5.46E-01	4.95E-01
		Front end loader	210 hp	3.6905	-	-	-	-	-	-	-	-	-	-	-	9.52E-05	1.47E-03	5.10E-04	2.60E-06	5.01E-05	4.61E-05	2.31E-01	1.40E-05	-	2.31E-01	2.10E-01
	Cutting	**1 ton pickup truck**		4.575	-	-	-	-	-	-	-	-	-	-	-	1.50E-05	1.60E-05	2.02E-04	3.10E-07	2.51E-06	1.13E-06	1.03E-01	1.02E-05	5.33E-06	1.05E-01	9.48E-02
		Tractor/crawler/dozer	250 hp	7.625	-	-	-	-	-	-	-	-	-	-	-	3.20E-04	5.19E-03	1.64E-03	7.12E-06	1.98E-04	1.82E-04	6.33E-01	4.86E-05	-	6.34E-01	5.75E-01
		Chain saw		7.6252	-	-	-	-	-	-	-	-	-	-	-	5.15E-04	8.07E-06	9.31E-04	1.04E-07	1.47E-06	1.46E-06	2.52E-03	3.20E-05	2.76E-06	4.05E-03	3.67E-03
	Brush Piling	**Front end loader**	540 hp	3.843	-	-	-	-	-	-	-	-	-	-	-	2.51E-04	3.35E-03	1.53E-03	6.75E-06	1.32E-04	1.22E-04	6.71E-01	3.89E-05	-	6.72E-01	6.10E-01
		Tractor/crawler/dozer	310 hp	3.843	-	-	-	-	-	-	-	-	-	-	-	1.79E-04	2.83E-03	8.96E-04	3.03E-06	1.10E-04	1.01E-04	3.09E-01	2.22E-05	-	3.09E-01	2.80E-01
	Chipping	**Brush chipper**	250 hp	3.843	-	-	-	-	-	-	-	-	-	-	-	2.01E-04	2.13E-03	8.32E-04	4.81E-06	6.47E-05	5.95E-05	4.27E-01	1.82E-05	-	4.27E-01	3.88E-01
		Front end loader	540 hp	3.843	-	-	-	-	-	-	-	-	-	-	-	2.51E-04	3.35E-03	1.53E-03	6.75E-06	1.32E-04	1.22E-04	6.71E-01	3.89E-05	-	6.72E-01	6.10E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	-	-	-	-	-	-	-	-	-	-	-	6.04E-05	9.80E-04	3.10E-04	1.34E-06	3.74E-05	3.44E-05	1.20E-01	9.17E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	-	-	-	-	-	-	-	-	-	-	-	5.63E-05	3.65E-04	4.03E-04	6.46E-07	1.54E-05	1.42E-05	5.00E-02	5.08E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	-	-	-	-	-	-	-	-	-	-	-	1.37E-04	4.22E-04	4.91E-04	6.31E-07	3.28E-05	3.01E-05	4.88E-02	1.23E-05	-	4.91E-02	4.45E-02
		Water truck	3000 gal	4	-	-	-	-	-	-	-	-	-	-	-	3.08E-05	5.04E-04	5.62E-05	4.74E-07	1.06E-05	6.56E-06	9.49E-02	2.25E-07	2.12E-07	9.50E-02	8.61E-02
		Excavator	300 hp	4	-	-	-	-	-	-	-	-	-	-	-	8.34E-05	1.27E-03	5.71E-04	2.75E-06	4.10E-05	3.77E-05	2.80E-01	1.53E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	-	-	-	-	-	-	-	-	-	-	-	8.84E-05	1.37E-03	4.73E-04	2.41E-06	4.65E-05	4.28E-05	2.14E-01	1.30E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	-	-	-	-	-	-	-	-	-	-	-	1.81E-04	2.94E-03	9.30E-04	4.03E-06	1.12E-04	1.03E-04	3.59E-01	2.75E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	-	-	-	-	-	-	-	-	-	-	-	7.40E-04	4.73E-04	2.78E-02	1.13E-06	3.74E-04	3.74E-04	4.47E-02	4.21E-05	3.65E-05	5.69E-02	5.16E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	273	-	-	-	-	-	-	-	-	-	-	-	6.48E-03	8.30E-02	4.84E-02	9.16E-05	4.48E-03	4.12E-03	8.14E+00	7.37E-04	-	8.16E+00	7.40E+00
		Loader/backhoe	75 hp	0.0923	-	-	-	-	-	-	-	-	-	-	-	1.16E-06	1.35E-05	9.92E-06	1.75E-08	1.02E-06	9.36E-07	1.49E-03	1.24E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	-	-	-	-	-	-	-	-	-	-	-	4.39E-03	5.62E-02	3.27E-02	6.20E-05	3.03E-03	2.79E-03	5.51E+00	4.99E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	-	-	-	-	-	-	-	-	-	-	-	5.09E-04	5.41E-04	6.83E-03	1.05E-05	8.50E-05	3.82E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	-	-	-	-	-	-	-	-	-	-	-	6.04E-05	9.80E-04	3.10E-04	1.34E-06	3.74E-05	3.44E-05	1.20E-01	9.17E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	-	-	-	-	-	-	-	-	-	-	-	3.53E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	-	-	-	-	-	-	-	-	-	-	-	3.80E-04	4.86E-03	2.83E-03	5.37E-06	2.63E-04	2.42E-04	4.77E-01	4.32E-05	-	4.78E-01	4.34E-01
		Flatbed truck		8	-	-	-	-	-	-	-	-	-	-	-	6.87E-05	6.95E-05	9.63E-04	5.38E-07	4.33E-06	1.91E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	7.5 hp	1.5873	-	-	-	-	-	-	-	-	-	-	-	2.68E-05	1.86E-05	1.35E-03	6.56E-08	1.21E-06	1.21E-06	2.30E-03	1.53E-06	1.91E-06	2.92E-03	2.65E-03
		Generator	80 hp	5856	-	-	-	-	-	-	-	-	-	-	-	1.41E-01	1.10E+00	9.22E-01	1.78E-03	7.43E-02	6.84E-02	1.52E+02	1.28E-02	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	9.79E-03	1.62E-01	6.82E-02	2.26E-04	5.95E-03	5.48E-03	2.24E+01	1.71E-03	-	2.25E+01	2.04E+01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.4615	-	-	-	-	-	-	-	-	-	-	-	5.61E-02	9.13E-01	3.98E-01	1.38E-03	3.34E-02	3.08E-02	1.37E+02	9.92E-03	-	1.37E+02	1.25E+02
	Push	**Tractor/crawler/dozer**	600 hp	738.4615	-	-	-	-	-	-	-	-	-	-	-	5.61E-02	9.13E-01	3.98E-01	1.38E-03	3.34E-02	3.08E-02	1.37E+02	9.92E-03	-	1.37E+02	1.25E+02
		Tractor/crawler/dozer	600 hp	738.4615	-	-	-	-	-	-	-	-	-	-	-	5.61E-02	9.13E-01	3.98E-01	1.38E-03	3.34E-02	3.08E-02	1.37E+02	9.92E-03	-	1.37E+02	1.25E+02
	Build road	**Tractor/crawler/dozer**	600 hp	761.5384	-	-	-	-	-	-	-	-	-	-	-	5.79E-02	9.42E-01	4.10E-01	1.42E-03	3.45E-02	3.17E-02	1.41E+02	1.02E-02	-	1.42E+02	1.28E+02
	Cut	**Tractor/crawler/dozer**	600 hp	20.4616	-	-	-	-	-	-	-	-	-	-	-	1.56E-03	2.53E-02	1.10E-02	3.82E-05	9.26E-04	8.52E-04	3.80E+00	2.75E-04	-	3.81E+00	3.45E+00
	Fine Grading	**Grader**	135 hp	8.889	-	-	-	-	-	-	-	-	-	-	-	3.38E-04	4.14E-03	2.50E-03	4.78E-06	2.33E-04	2.14E-04	4.24E-01	3.51E-05	-	4.25E-01	3.86E-01
	Graveling	**Asphalt distributor**	3000 gal	10	-	-	-	-	-	-	-	-	-	-	-	7.69E-05	1.26E-03	1.40E-04	1.19E-06	2.65E-05	1.64E-05	2.37E-01	5.62E-07	5.29E-07	2.37E-01	2.15E-01
		Vibratory roller	85 hp	30.4607	-	-	-	-	-	-	-	-	-	-	-	5.13E-04	5.79E-03	4.25E-03	7.46E-06	4.20E-04	3.86E-04	6.36E-01	7.16E-05	-	6.37E-01	5.78E-01
		Tractor/crawler/dozer	310 hp	12.7423	-	-	-	-	-	-	-	-	-	-	-	5.94E-04	9.39E-03	2.97E-03	1.00E-05	3.63E-04	3.34E-04	1.02E+00	7.37E-05	-	1.02E+00	9.30E-01
	Armoring	**1 ton pickup truck**		8	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
		Excavator	430 hp	8	-	-	-	-	-	-	-	-	-	-	-	2.39E-04	3.63E-03	1.64E-03	7.88E-06	1.17E-04	1.08E-04	8.03E-01	4.39E-05	-	8.04E-01	7.30E-01
		1 ton pickup truck		8	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
	Maintenance	**Grader**	215 hp	340	-	-	-	-	-	-	-	-	-	-	-	1.08E-02	1.82E-01	5.62E-02	2.83E-04	5.93E-03	5.46E-03	2.51E+01	1.56E-03	-	2.52E+01	2.28E+01
FloodWall		**Crane 50'**	263 hp	992	-	-	-	-	-	-	-	-	-	-	-	2.81E-02	4.33E-01	1.11E-01	4.61E-04	1.76E-02	1.62E-02	4.69E+01	2.97E-03	-	4.70E+01	4.26E+01
		Pile hammer driver	325 hp	992	-	-	-	-	-	-	-	-	-	-	-	2.45E-02	4.23E-01	1.78E-01	9.84E-04	1.29E-02	1.19E-02	1.00E+02	2.78E-03	-	1.00E+02	9.10E+01
		Generator	7.5 hp	291.8009	-	-	-	-	-	-	-	-	-	-	-	4.92E-03	3.41E-03	2.49E-01	1.21E-05	2.23E-04	2.22E-04	4.23E-01	2.80E-04	3.51E-04	5.37E-01	4.88E-01
		Concrete pump		157.0849	-	-	-	-	-	-	-	-	-	-	-	1.21E-03	1.98E-02	2.21E-03	1.86E-05	4.16E-04	2.58E-04	3.73E+00	8.83E-06	8.31E-06	3.73E+00	3.38E+00
					1.61E-02	**2.51E-01**	**1.00E-01**	**3.09E-04**	**8.59E-03**	**7.49E-03**	**3.75E+01**	**2.02E-03**	**1.04E-04**	**3.76E+01**	**3.41E+01**	**4.82E-01**	**6.35E+00**	**3.42E+00**	**9.80E-03**	**2.65E-01**	**2.42E-01**	**9.95E+02**	**6.68E-02**	**2.38E-03**	**9.97E+02**	**9.05E+02**

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 1

Construction Start Year	2016
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	9.46E-03	7.33E-03	1.13E-01	1.15E-04	9.64E-04	4.47E-04	7.03E-03	5.59E-03	8.43E-02	9.50E-05	7.87E-04	3.61E-04
Dust Control		**Water truck**	5000 gal	2320	3.52E-01	5.69E+00	6.31E-01	4.89E-03	1.26E-01	8.29E-02	2.61E-01	4.29E+00	4.77E-01	4.03E-03	9.00E-02	5.58E-02
Environmental protection measures	***WQ Testing***	**3/4 ton pickup truck**		80	-	-	-	-	-	-	7.62E-03	6.06E-03	9.14E-02	1.03E-04	8.52E-04	3.91E-04
	Biologist	**3/4 ton pickup truck**		1213	-	-	-	-	-	-	1.16E-01	9.18E-02	1.39E+00	1.56E-03	1.29E-02	5.93E-03
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	1.39E-04	1.38E-04	1.87E-03	2.40E-06	1.96E-05	8.94E-06	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	2.58E-03	4.21E-02	1.31E-02	5.50E-05	1.62E-03	1.49E-03	-	-	-	-	-	-
		Chain saw		0.7652	3.97E-03	6.23E-05	7.19E-03	8.00E-07	1.13E-05	1.13E-05	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.3857	1.97E-03	2.67E-02	1.22E-02	5.21E-05	1.05E-03	9.64E-04	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	1.43E-03	2.30E-02	7.26E-03	2.34E-05	8.89E-04	8.18E-04	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.3857	1.67E-03	1.86E-02	6.54E-03	3.71E-05	5.58E-04	5.14E-04	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	1.97E-03	2.67E-02	1.22E-02	5.21E-05	1.05E-03	9.64E-04	-	-	-	-	-	-
	Gravel	**Grader**	135 hp	11.1111	3.48E-02	4.29E-01	2.41E-01	4.59E-04	2.41E-02	2.22E-02	-	-	-	-	-	-
		Vibratory roller	85 hp	16	2.25E-02	2.51E-01	1.73E-01	3.01E-04	1.85E-02	1.70E-02	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.2593	1.21E-02	1.94E-01	6.14E-02	1.98E-04	7.51E-03	6.91E-03	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	4.29E-03	6.88E-02	2.18E-02	7.01E-05	2.67E-03	2.45E-03	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	5.32E-04	8.61E-03	9.56E-04	7.40E-06	1.90E-04	1.25E-04	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	6.85E-03	6.71E-03	9.70E-02	4.53E-05	3.70E-04	1.66E-04	-	-	-	-	-	-
		Auger drill	10 hp	8.75	2.48E-02	1.83E-02	9.82E-01	4.78E-05	1.41E-02	1.40E-02	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.38E-03	5.06E-02	3.49E-02	6.12E-05	3.90E-03	3.59E-03	-	-	-	-	-	-
		Flatbed truck		4	3.13E-03	3.07E-03	4.43E-02	2.07E-05	1.69E-04	7.59E-05	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area	***Clear Brush***	**1 ton pickup truck**		15.1316	-	-	-	-	-	-	4.73E-03	5.03E-03	6.35E-02	9.77E-05	7.90E-04	3.55E-04
		Excavator	94 hp	15.1316	-	-	-	-	-	-	2.07E-02	2.50E-01	2.84E-01	4.87E-04	1.77E-02	1.63E-02
		Front end loader	210 hp	15.1316	-	-	-	-	-	-	3.72E-02	5.74E-01	1.99E-01	1.01E-03	1.95E-02	1.80E-02
		Dump truck	10cy	15.1316	-	-	-	-	-	-	1.11E-02	1.82E-01	2.02E-02	1.71E-04	3.82E-03	2.36E-03
		Dump truck	10cy	15.1316	-	-	-	-	-	-	1.11E-02	1.82E-01	2.02E-02	1.71E-04	3.82E-03	2.36E-03
		Brush chipper	275 hp	15.1316	-	-	-	-	-	-	4.29E-02	4.34E-01	1.87E-01	9.61E-04	1.39E-02	1.28E-02
		Front end loader	210 hp	6.9575	-	-	-	-	-	-	1.71E-02	2.64E-01	9.15E-02	4.66E-04	8.99E-03	8.27E-03
	Cutting	**1 ton pickup truck**		8.625	-	-	-	-	-	-	2.70E-03	2.87E-03	3.62E-02	5.57E-05	4.50E-04	2.02E-04
		Tractor/crawler/dozer	250 hp	14.375	-	-	-	-	-	-	5.74E-02	9.32E-01	2.95E-01	1.28E-03	3.56E-02	3.27E-02
		Chain saw		14.3753	-	-	-	-	-	-	9.24E-02	1.45E-03	1.67E-01	1.86E-05	2.63E-04	2.63E-04
	Brush Piling	**Front end loader**	540 hp	7.245	-	-	-	-	-	-	4.51E-02	6.02E-01	2.75E-01	1.21E-03	2.38E-02	2.19E-02
		Tractor/crawler/dozer	310 hp	7.245	-	-	-	-	-	-	3.22E-02	5.08E-01	1.61E-01	5.44E-04	1.97E-02	1.81E-02
	Chipping	**Brush chipper**	250 hp	7.245	-	-	-	-	-	-	3.62E-02	3.83E-01	1.49E-01	8.63E-04	1.16E-02	1.07E-02
		Front end loader	540 hp	7.245	-	-	-	-	-	-	4.51E-02	6.02E-01	2.75E-01	1.21E-03	2.38E-02	2.19E-02
Clear & Grub - Access Rd & Cofferdam	***Clear Brush***	**1 ton pickup truck**		8.0263	-	-	-	-	-	-	2.51E-03	2.67E-03	3.37E-02	5.18E-05	4.19E-04	1.88E-04
		Excavator	94 hp	8.0263	-	-	-	-	-	-	1.10E-02	1.32E-01	1.51E-01	2.58E-04	9.39E-03	8.63E-03
		Front end loader	210 hp	8.0263	-	-	-	-	-	-	1.97E-02	3.04E-01	1.06E-01	5.38E-04	1.04E-02	9.54E-03
		Dump truck	10cy	8.0263	-	-	-	-	-	-	5.88E-03	9.64E-02	1.07E-02	9.06E-05	2.02E-03	1.25E-03
		Dump truck	10cy	8.0263	-	-	-	-	-	-	5.88E-03	9.64E-02	1.07E-02	9.06E-05	2.02E-03	1.25E-03
		Brush chipper	275 hp	8.0263	-	-	-	-	-	-	2.28E-02	2.30E-01	9.90E-02	5.10E-04	7.39E-03	6.80E-03
		Front end loader	210 hp	3.6905	-	-	-	-	-	-	9.07E-03	1.40E-01	4.85E-02	2.47E-04	4.77E-03	4.39E-03
	Cutting	**1 ton pickup truck**		4.575	-	-	-	-	-	-	1.43E-03	1.52E-03	1.92E-02	2.95E-05	2.39E-04	1.07E-04
		Tractor/crawler/dozer	250 hp	7.625	-	-	-	-	-	-	3.05E-02	4.94E-01	1.56E-01	6.78E-04	1.89E-02	1.74E-02
		Chain saw		7.6252	-	-	-	-	-	-	4.90E-02	7.68E-04	8.87E-02	9.87E-06	1.40E-04	1.39E-04
	Brush Piling	**Front end loader**	540 hp	3.843	-	-	-	-	-	-	2.39E-02	3.19E-01	1.46E-01	6.43E-04	1.26E-02	1.16E-02
		Tractor/crawler/dozer	310 hp	3.843	-	-	-	-	-	-	1.71E-02	2.70E-01	8.54E-02	2.88E-04	1.04E-02	9.60E-03
	Chipping	**Brush chipper**	250 hp	3.843	-	-	-	-	-	-	1.92E-02	2.03E-01	7.92E-02	4.58E-04	6.16E-03	5.67E-03
		Front end loader	540 hp	3.843	-	-	-	-	-	-	2.39E-02	3.19E-01	1.46E-01	6.43E-04	1.26E-02	1.16E-02
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	-	-	-	-	-	-	1.27E-03	2.06E-02	6.52E-03	2.83E-05	7.88E-04	7.25E-04
		Front end loader	49 hp	4	-	-	-	-	-	-	1.19E-03	7.69E-03	8.48E-03	1.36E-05	3.24E-04	2.98E-04
		Roller	47 hp	4	-	-	-	-	-	-	2.88E-03	8.88E-03	1.03E-02	1.33E-05	6.90E-04	6.35E-04
		Water truck	3000 gal	4	-	-	-	-	-	-	6.48E-04	1.06E-02	1.18E-03	9.99E-06	2.23E-04	1.38E-04
		Excavator	300 hp	4	-	-	-	-	-	-	1.76E-03	2.67E-02	1.20E-02	5.79E-05	8.62E-04	7.93E-04
		Front end loader	180 hp	4	-	-	-	-	-	-	1.86E-03	2.87E-02	9.97E-03	5.08E-05	9.79E-04	9.01E-04
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	-	-	-	-	-	-	3.81E-03	6.19E-02	1.96E-02	8.49E-05	2.36E-03	2.17E-03
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	-	-	-	-	-	-	1.56E-02	9.95E-03	5.86E-01	2.38E-05	7.88E-03	7.86E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	273	-	-	-	-	-	-	1.37E-01	1.75E+00	1.02E+00	1.93E-03	9.43E-02	8.68E-02
		Loader/backhoe	75 hp	0.0923	-	-	-	-	-	-	2.45E-05	2.85E-04	2.09E-04	3.68E-07	2.14E-05	1.97E-05
		Crane 94'	155 hp	155	-	-	-	-	-	-	8.78E-01	1.12E+01	6.55E+00	1.24E-02	6.06E-01	5.58E-01
		1 ton pickup truck		155	-	-	-	-	-	-	1.02E-01	1.08E-01	1.37E+00	2.10E-03	1.70E-02	7.64E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	-	-	-	-	-	-	1.21E-02	1.96E-01	6.20E-02	2.69E-04	7.48E-03	6.88E-03
	Dewatering	**Concrete saw**	13 hp	8	-	-	-	-	-	-	8.25E-03	6.09E-03	3.15E-01	1.54E-05	4.52E-03	4.51E-03
		Crane 80'	130 hp	16	-	-	-	-	-	-	8.89E-03	1.14E-01	6.63E-02	1.26E-04	6.14E-03	5.65E-03
		Flatbed truck		8	-	-	-	-	-	-	1.61E-03	1.62E-03	2.25E-02	1.26E-05	1.01E-04	4.47E-05
		Generator	7.5 hp	1.5873	-	-	-	-	-	-	6.26E-04	4.34E-04	3.17E-02	1.53E-06	2.83E-05	2.83E-05
		Generator	80 hp	5856	-	-	-	-	-	-	2.32E+00	1.80E+01	1.51E+01	2.92E-02	1.22E+00	1.12E+00
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	7.53E-01	1.24E+01	5.25E+00	1.73E-02	4.58E-01	4.21E-01	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.4615	-	-	-	-	-	-	1.31E+00	2.14E+01	9.30E+00	3.23E-02	7.82E-01	7.20E-01
	Push	**Tractor/crawler/dozer**	600 hp	738.4615	-	-	-	-	-	-	1.31E+00	2.14E+01	9.30E+00	3.23E-02	7.82E-01	7.20E-01
		Tractor/crawler/dozer	600 hp	738.4615	-	-	-	-	-	-	1.31E+00	2.14E+01	9.30E+00	3.23E-02	7.82E-01	7.20E-01
	Build road	**Tractor/crawler/dozer**	600 hp	761.5384	-	-	-	-	-	-	1.35E+00	2.20E+01	9.59E+00	3.33E-02	8.07E-01	7.42E-01
	Cut	**Tractor/crawler/dozer**	600 hp	20.4616	-	-	-	-	-	-	3.64E-02	5.92E-01	2.58E-01	8.94E-04	2.17E-02	1.99E-02
	Fine Grading	**Grader**	135 hp	8.889	-	-	-	-	-	-	7.91E-03	9.69E-02	5.85E-02	1.12E-04	5.44E-03	5.01E-03
	Graveling	**Asphalt distributor**	3000 gal	10	-	-	-	-	-	-	1.80E-03	2.95E-02	3.28E-03	2.77E-05	6.19E-04	3.84E-04
		Vibratory roller	85 hp	30.4607	-	-	-	-	-	-	1.20E-02	1.36E-01	9.94E-02	1.74E-04	9.82E-03	9.03E-03
		Tractor/crawler/dozer	310 hp	12.7423	-	-	-	-	-	-	1.39E-02	2.20E-01	6.95E-02	2.35E-04	8.50E-03	7.82E-03
	Armoring	**1 ton pickup truck**		8	-	-	-	-	-	-	6.14E-04	6.54E-04	8.25E-03	1.27E-05	1.03E-04	4.61E-05
		Excavator	430 hp	8	-	-	-	-	-	-	5.59E-03	8.49E-02	3.83E-02	1.84E-04	2.75E-03	2.53E-03
		1 ton pickup truck		8	-	-	-	-	-	-	6.14E-04	6.54E-04	8.25E-03	1.27E-05	1.03E-04	4.61E-05
	Maintenance	**Grader**	215 hp	340	-	-	-	-	-	-	2.26E-01	3.81E+00	1.18E+00	5.92E-03	1.24E-01	1.14E-01
FloodWall		**Crane 50'**	263 hp	992	-	-	-	-	-	-	6.57E-01	1.01E+01	2.59E+00	1.08E-02	4.12E-01	3.79E-01
		Pile hammer driver	325 hp	992	-	-	-	-	-	-	5.73E-01	9.89E+00	4.15E+00	2.30E-02	3.02E-01	2.78E-01
		Generator	7.5 hp	291.8009	-	-	-	-	-	-	1.15E-01	7.98E-02	5.83E+00	2.82E-04	5.21E-03	5.20E-03
		Concrete pump		157.0849	-	-	-	-	-	-	2.83E-02	4.63E-01	5.16E-02	4.36E-04	9.73E-03	6.03E-03
					1.24E+00	**1.93E+01**	**7.71E+00**	**2.38E-02**	**6.61E-01**	**5.76E-01**	**1.16E+01**	**1.55E+02**	**8.25E+01**	**2.37E-01**	**6.41E+00**	**5.85E+00**
Data from Alt4_EnvrAirQualityReport.pdf					1	19	8	0	1	1	10	135	70	0	6	5
					0	0	0	0	0	0	0	0	0	0	0	0
					0	0	0	0	0	0	0	0	0	0	0	0
					0	0	0	0	0	0	0	0	0	0	0	0
					0	0	0	0	0	0	0	0	0	0	0	0
					0	0	0	0	0	0	1	21	13	0	1	1

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2016
Birthday of Martin Luther King, Jr.	1/18/2016
Washington's Birthday	2/15/2016
Memorial Day	5/30/2016
Independence Day	7/4/2016
Labor Day	9/5/2016
Columbus Day	10/10/2016
Veterans Day	11/11/2016
Thanksgiving Day	11/24/2016
Christmas Day	12/26/2016
New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/10/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
	20

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2016
http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2017

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2018 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	210	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.099	1.282	0.650	0.003	0.051	0.047	293.384	0.016	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.177	1.778	0.772	0.005	0.054	0.050	403.250	0.016	0.000
		Front end loader	540 hp	3.696	19	0.099	1.282	0.650	0.003	0.051	0.047	293.384	0.016	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
		Front end loader	49 hp	4	19	0.239	1.620	1.844	0.003	0.059	0.054	231.302	0.022	0.000
		Roller	47 hp	4	19	0.600	1.968	2.309	0.003	0.143	0.132	235.507	0.054	0.000
		Water truck	3000 gal	4	19	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	300 hp	4	19	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Front end loader	180 hp	4	19	0.100	1.495	0.587	0.003	0.051	0.047	270.061	0.015	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
		Loader/backhoe	75 hp	0.0923	19	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
		Crane 94'	155 hp	155	19	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
		1 ton pickup truck		155	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
		1 ton pickup truck		155	20	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Dewatering	Concrete saw	13 hp	8	22	3.075	2.272	117.582	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	22	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
		Flatbed truck		8	22	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.242	1.957	1.773	0.003	0.126	0.116	294.384	0.022	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
	Armoring	1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Excavator	430 hp	2	19	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	340	210	0.130	2.154	0.685	0.004	0.070	0.064	312.002	0.018	0.000
Coarse Material (Gravel & Larger) - 167,000 cy after ramp building (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	663.5	78	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	663.5	78	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	663.5	78	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	102	11	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	102	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	102	11	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Beach Crew	1 ton pickup truck		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Water truck	3000 gal	25	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2018 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	*Material Excavation*	1 ton pickup truck		382.5	48	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	382.5	48	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	382.5	48	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	382.5	48	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Front end loader	350 hp	382.5	48	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
		Water truck	3000 gal	382.5	48	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	382.5	48	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	382.5	48	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	382.5	48	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Excavator	400 hp	382.5	48	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Beach Crew	1 ton pickup truck		382.5	48	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	600 hp	382.5	48	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	382.5	48	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	382.5	48	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Tractor/crawler/dozer	600 hp	382.5	48	0.105	1.644	0.779	0.003	0.061	0.056	280.790	0.019	0.000
		Water truck	3000 gal	382.5	30	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Demolition - Concrete Arc & Spillway	*Platform*	Tractor/crawler/dozer	440 hp	720	22	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
		Tractor/crawler/dozer	440 hp	90	22	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
		3/4 ton pickup truck		360	22	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	88.1333	128	0.056	0.877	0.500	0.003	0.026	0.024	282.166	0.007	0.000
		3/4 ton pickup truck		84.1333	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton pickup truck		376	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	376	128	0.445	2.137	2.053	0.004	0.125	0.115	277.562	0.040	0.000
	Lift/Load blocks	Crane 260'	375 hp	454.8767	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		3/4 ton pickup truck		454.8767	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	32	128	0.100	1.348	0.476	0.002	0.050	0.046	214.821	0.012	0.000
	Landfill	Crane 260'	375 hp	227.4384	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
	Micro-blast	Crane 260'	375 hp	60	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		Horizontal boring drill	10 hp	55	128	0.318	2.447	1.909	0.005	0.166	0.152	312.570	0.033	0.000
		3/4 ton pickup truck		60	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	100	128	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		Air compressor	50 hp	200	128	1.018	1.339	49.027	0.004	0.024	0.023	307.059	0.058	0.075
		3/4 ton pickup truck		100	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Demolition - Notch 5'	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	20	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	430 hp	4.445	20	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
		Tractor/crawler/dozer	850 hp	3.2327	20	0.173	3.243	0.914	0.003	0.096	0.089	298.249	0.022	0.000
	Drilling	Rotary drill	475 hp	7.3333	20	0.056	0.877	0.500	0.003	0.026	0.024	282.166	0.007	0.000
		3/4 ton Pickup truck		7.3333	20	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	20	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	20	0.445	2.137	2.053	0.004	0.125	0.115	277.562	0.040	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	20	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
		3/4 ton Pickup truck		60.0214	20	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Landfill	Crane 260'	375 hp	30.0107	20	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000

Total Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2018 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	210	4.30E-04	3.53E-04	5.18E-03	6.48E-06	5.31E-05	2.41E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	210	1.78E-02	2.69E-01	3.27E-02	2.75E-04	5.91E-03	3.60E-03	5.50E+01	1.30E-04	1.23E-04	5.50E+01	4.99E+01
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	210	5.51E-03	4.52E-03	6.64E-02	8.30E-05	6.80E-04	3.09E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	**3/4 ton pickup truck**		16	19	7.17E-05	5.88E-05	8.64E-04	1.08E-06	8.86E-06	4.02E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.17E-05	1.38E-05	1.57E-04	2.98E-07	2.38E-06	1.05E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.85E-04	4.58E-03	1.53E-03	6.85E-06	1.73E-04	1.60E-04	6.09E-01	4.41E-05	-	6.10E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	2.18E-04	2.82E-03	1.43E-03	6.49E-06	1.11E-04	1.02E-04	6.45E-01	3.56E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.54E-04	2.37E-03	8.24E-04	2.91E-06	9.18E-05	8.44E-05	2.97E-01	2.02E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	1.80E-04	1.81E-03	7.87E-04	4.62E-06	5.53E-05	5.09E-05	4.11E-01	1.63E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	2.18E-04	2.82E-03	1.43E-03	6.49E-06	1.11E-04	1.02E-04	6.45E-01	3.56E-05	-	6.46E-01	5.86E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	5.60E-05	9.00E-04	3.01E-04	1.34E-06	3.41E-05	3.13E-05	1.20E-01	8.65E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	5.15E-05	3.50E-04	3.98E-04	6.46E-07	1.27E-05	1.17E-05	5.00E-02	4.65E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.24E-04	4.08E-04	4.78E-04	6.31E-07	2.97E-05	2.73E-05	4.88E-02	1.12E-05	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	3.07E-05	4.64E-04	5.64E-05	4.74E-07	1.02E-05	6.20E-06	9.47E-02	2.25E-07	2.12E-07	9.48E-02	8.60E-02
		Excavator	300 hp	4	19	7.29E-05	1.04E-03	5.62E-04	2.75E-06	3.36E-05	3.09E-05	2.80E-01	1.45E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	7.91E-05	1.19E-03	4.66E-04	2.41E-06	4.02E-05	3.70E-05	2.14E-01	1.23E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.68E-04	2.70E-03	9.02E-04	4.03E-06	1.02E-04	9.40E-05	3.59E-01	2.60E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	9.77E-07	1.17E-05	9.87E-06	1.75E-08	8.28E-07	7.61E-07	1.49E-03	1.13E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.92E-03	5.00E-02	3.27E-02	6.20E-05	2.68E-03	2.46E-03	5.51E+00	4.65E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	3.92E-03	5.00E-02	3.27E-02	6.20E-05	2.68E-03	2.46E-03	5.51E+00	4.65E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	5.60E-05	9.00E-04	3.01E-04	1.34E-06	3.41E-05	3.13E-05	1.20E-01	8.65E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	22	3.53E-04	2.61E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	22	3.39E-04	4.33E-03	2.83E-03	5.37E-06	2.32E-04	2.13E-04	4.77E-01	4.03E-05	-	4.78E-01	4.34E-01
		Flatbed truck		8	22	5.78E-05	6.04E-05	8.03E-04	5.37E-07	4.27E-06	1.86E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	1.25E-01	1.01E+00	9.15E-01	1.78E-03	6.50E-02	5.98E-02	1.52E+02	1.13E-02	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.28E-02	2.01E-01	9.51E-02	3.45E-04	7.41E-03	6.81E-03	3.43E+01	2.35E-03	-	3.43E+01	3.11E+01
	Armoring	**1 ton pickup truck**		2	19	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	5.22E-05	7.42E-04	4.03E-04	1.97E-06	2.40E-05	2.21E-05	2.01E-01	1.04E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	**Grader**	215 hp	340	210	1.05E-02	1.74E-01	5.52E-02	2.83E-04	5.64E-03	5.19E-03	2.51E+01	1.47E-03	-	2.52E+01	2.28E+01
Coarse Material (Gravel & Larger) - 167,000 cy after ramp building (4/1-7/21)	***Material Excavation***	**1 ton pickup truck**		663.5	78	1.77E-03	2.08E-03	2.36E-02	4.49E-05	3.59E-04	1.59E-04	1.49E+01	1.48E-03	7.72E-04	1.52E+01	1.38E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Front end loader	350 hp	663.5	78	2.56E-02	3.45E-01	1.22E-01	5.40E-04	1.29E-02	1.19E-02	5.50E+01	3.01E-03	-	5.51E+01	4.99E+01
		Water truck	3000 gal	663.5	78	5.09E-03	7.70E-02	9.36E-03	7.86E-05	1.69E-03	1.03E-03	1.57E+01	3.73E-05	3.51E-05	1.57E+01	1.43E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.61E-02	2.29E-01	1.24E-01	6.08E-04	7.42E-03	6.83E-03	6.20E+01	3.20E-03	-	6.20E+01	5.63E+01
Sand to Surfrider Beach (32,400 cy) (9/3-18)	***Material Excavation***	**1 ton pickup truck**		102	11	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00	2.11E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	3.93E-03	5.31E-02	1.87E-02	8.30E-05	1.99E-03	1.83E-03	8.45E+00	4.63E-04	-	8.46E+00	7.68E+00
		Water truck	3000 gal	102	11	7.83E-04	1.18E-02	1.44E-03	1.21E-05	2.60E-04	1.58E-04	2.42E+00	5.73E-06	5.40E-06	2.42E+00	2.19E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.48E-03	3.52E-02	1.91E-02	9.35E-05	1.14E-03	1.05E-03	9.53E+00	4.92E-04	-	9.54E+00	8.65E+00
	Beach Crew	**1 ton pickup truck**		102	11	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00	2.11E+00
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Tractor/crawler/dozer	600 hp	102	11	7.07E-03	1.11E-01	5.25E-02	1.90E-04	4.09E-03	3.76E-03	1.89E+01	1.30E-03	-	1.90E+01	1.72E+01
		Water truck	3000 gal	25	11	1.92E-04	2.90E-03	3.53E-04	2.96E-06	6.37E-05	3.88E-05	5.92E-01	1.41E-06	1.32E-06	5.93E-01	5.38E-01

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2018 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	48	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00	7.93E+00
		Front end loader	350 hp	382.5	48	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	48	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	48	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	48	1.47E-02	1.99E-01	7.03E-02	3.11E-04	7.45E-03	6.85E-03	3.17E+01	1.74E-03	-	3.17E+01	2.88E+01
		Water truck	3000 gal	382.5	48	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00	8.23E+00
		Excavator	400 hp	382.5	48	9.30E-03	1.32E-01	7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
		Excavator	400 hp	382.5	48	9.30E-03	1.32E-01	7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
		Excavator	400 hp	382.5	48	9.30E-03	1.32E-01	7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
		Excavator	400 hp	382.5	48	9.30E-03	1.32E-01	7.17E-02	3.51E-04	4.28E-03	3.94E-03	3.57E+01	1.85E-03	-	3.58E+01	3.24E+01
	Beach Crew	**1 ton pickup truck**		382.5	48	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00	7.93E+00
		Tractor/crawler/dozer	600 hp	382.5	48	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Tractor/crawler/dozer	600 hp	382.5	48	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Tractor/crawler/dozer	600 hp	382.5	48	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Tractor/crawler/dozer	600 hp	382.5	48	2.65E-02	4.16E-01	1.97E-01	7.14E-04	1.53E-02	1.41E-02	7.10E+01	4.87E-03	-	7.11E+01	6.45E+01
		Water truck	3000 gal	382.5	30	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00	8.23E+00
Demolition - Concrete Arc & Spillway	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	4.26E-02	6.55E-01	2.28E-01	8.05E-04	2.54E-02	2.33E-02	8.21E+01	5.60E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	5.32E-03	8.19E-02	2.85E-02	1.01E-04	3.17E-03	2.92E-03	1.03E+01	6.99E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	1.61E-03	1.32E-03	1.94E-02	2.43E-05	1.99E-04	9.05E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	88.1333	128	2.58E-03	4.05E-02	2.31E-02	1.28E-04	1.21E-03	1.11E-03	1.30E+01	3.35E-04	-	1.30E+01	1.18E+01
		3/4 ton pickup truck		84.1333	128	3.77E-04	3.09E-04	4.54E-03	5.68E-06	4.66E-05	2.11E-05	1.89E+00	1.88E-04	9.79E-05	1.92E+00	1.74E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	1.69E-03	1.38E-03	2.03E-02	2.54E-05	2.08E-04	9.45E-05	8.44E+00	8.39E-04	4.38E-04	8.59E+00	7.79E+00
		Diamond cutting saw	50 hp	376	128	9.23E-03	4.43E-02	4.25E-02	7.44E-05	2.60E-03	2.39E-03	5.75E+00	8.33E-04	-	5.77E+00	5.23E+00
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	1.66E-02	2.51E-01	6.96E-02	3.01E-04	1.01E-02	9.32E-03	3.07E+01	1.85E-03	-	3.07E+01	2.79E+01
		3/4 ton pickup truck		454.8767	128	2.04E-03	1.67E-03	2.46E-02	3.07E-05	2.52E-04	1.14E-04	1.02E+01	1.01E-03	5.29E-04	1.04E+01	9.43E+00
	Load/Haul	**Front end loader**	350 hp	32	128	1.23E-03	1.66E-02	5.88E-03	2.60E-05	6.23E-04	5.73E-04	2.65E+00	1.45E-04	-	2.66E+00	2.41E+00
	Landfill	**Crane 260'**	375 hp	227.4384	128	8.28E-03	1.26E-01	3.48E-02	1.51E-04	5.06E-03	4.66E-03	1.53E+01	9.24E-04	-	1.54E+01	1.39E+01
	Micro-blast	**Crane 260'**	375 hp	60	128	2.18E-03	3.31E-02	9.18E-03	3.97E-05	1.34E-03	1.23E-03	4.05E+00	2.44E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	1.93E-04	1.48E-03	1.16E-03	2.95E-06	1.00E-04	9.23E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	128	2.69E-04	2.20E-04	3.24E-03	4.05E-06	3.32E-05	1.51E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	128	3.64E-03	5.52E-02	1.53E-02	6.62E-05	2.23E-03	2.05E-03	6.75E+00	4.06E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	128	1.12E-02	1.48E-02	5.40E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	6.38E-04	8.29E-04	3.66E+00	3.32E+00
		3/4 ton pickup truck		100	128	4.48E-04	3.67E-04	5.40E-03	6.75E-06	5.53E-05	2.51E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	20	5.21E-05	7.87E-04	9.57E-05	8.03E-07	1.73E-05	1.05E-05	1.61E-01	3.81E-07	3.59E-07	1.61E-01	1.46E-01
		Excavator	430 hp	4.445	20	1.16E-04	1.65E-03	8.95E-04	4.38E-06	5.34E-05	4.92E-05	4.46E-01	2.31E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	20	5.25E-04	9.82E-03	2.77E-03	9.08E-06	2.92E-04	2.69E-04	9.03E-01	6.66E-05	-	9.05E-01	8.21E-01
	Drilling	**Rotary drill**	475 hp	7.3333	20	2.15E-04	3.37E-03	1.92E-03	1.06E-05	1.01E-04	9.27E-05	1.08E+00	2.78E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	20	3.29E-05	2.69E-05	3.96E-04	4.95E-07	4.06E-06	1.84E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	20	2.15E-04	1.76E-04	2.59E-03	3.24E-06	2.66E-05	1.21E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	20	1.18E-03	5.65E-03	5.43E-03	9.49E-06	3.32E-04	3.05E-04	7.34E-01	1.06E-04	-	7.37E-01	6.68E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	20	2.18E-03	3.31E-02	9.19E-03	3.98E-05	1.34E-03	1.23E-03	4.05E+00	2.44E-04	-	4.06E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	20	2.69E-04	2.20E-04	3.24E-03	4.05E-06	3.32E-05	1.51E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Landfill	**Crane 260'**	375 hp	30.0107	20	1.09E-03	1.66E-02	4.59E-03	1.99E-05	6.68E-04	6.15E-04	2.03E+00	1.22E-04	-	2.03E+00	1.84E+00
					Total	**7.77E-01**	**1.01E+01**	**5.45E+00**	**1.78E-02**	**3.93E-01**	**3.57E-01**	**1.88E+03**	**1.14E-01**	**6.71E-03**	**1.89E+03**	**1.71E+03**
					Daily Onsi											

Data from Alt4_EnvrAirQualityReport.pdf

Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2018 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	210	8.20E-03	6.72E-03	9.88E-02	1.23E-04	1.01E-03	4.60E-04
Dust Control		Water truck	5000 gal	2320	210	3.39E-01	5.13E+00	6.23E-01	5.23E-03	1.13E-01	6.85E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	1.05E-01	8.60E-02	1.26E+00	1.58E-03	1.30E-02	5.88E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.51E-02	1.24E-02	1.82E-01	2.27E-04	1.86E-03	8.46E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.47E-03	2.90E-03	3.30E-02	6.27E-05	5.01E-04	2.22E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	6.00E-02	9.65E-01	3.22E-01	1.44E-03	3.65E-02	3.36E-02
		Chain saw		7.3335	19	1.04E-01	1.63E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	Front end loader	540 hp	3.696	19	4.58E-02	5.94E-01	3.01E-01	1.37E-03	2.35E-02	2.16E-02
		Tractor/crawler/dozer	310 hp	3.696	19	3.24E-02	4.99E-01	1.74E-01	6.13E-04	1.93E-02	1.78E-02
	Chipping	Brush chipper	250 hp	3.696	19	3.80E-02	3.81E-01	1.66E-01	9.73E-04	1.17E-02	1.07E-02
		Front end loader	540 hp	3.696	19	4.58E-02	5.94E-01	3.01E-01	1.37E-03	2.35E-02	2.16E-02
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.18E-02	1.89E-01	6.33E-02	2.83E-04	7.17E-03	6.60E-03
		Front end loader	49 hp	4	19	1.09E-02	7.37E-02	8.39E-02	1.36E-04	2.68E-03	2.47E-03
		Roller	47 hp	4	19	2.62E-02	8.59E-02	1.01E-01	1.33E-04	6.26E-03	5.76E-03
		Water truck	3000 gal	4	19	6.46E-03	9.77E-02	1.19E-02	9.97E-05	2.15E-03	1.31E-03
		Excavator	300 hp	4	19	1.53E-02	2.18E-01	1.18E-01	5.79E-04	7.06E-03	6.50E-03
		Front end loader	180 hp	4	19	1.67E-02	2.50E-01	9.80E-02	5.08E-04	8.47E-03	7.79E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	3.54E-02	5.68E-01	1.90E-01	8.49E-04	2.15E-02	1.98E-02
		Loader/backhoe	75 hp	0.0923	19	2.06E-04	2.46E-03	2.08E-03	3.68E-06	1.74E-04	1.60E-04
		Crane 94'	155 hp	155	19	8.25E-01	1.05E+01	6.88E+00	1.31E-02	5.64E-01	5.19E-01
		1 ton pickup truck		155	19	8.69E-02	1.02E-01	1.16E+00	2.21E-03	1.76E-02	7.82E-03
		Crane 94'	155 hp	155	20	7.83E-01	1.00E+01	6.54E+00	1.24E-02	5.36E-01	4.93E-01
		1 ton pickup truck		155	20	8.26E-02	9.70E-02	1.10E+00	2.10E-03	1.68E-02	7.43E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.12E-02	1.80E-01	6.01E-02	2.69E-04	6.81E-03	6.27E-03
	Dewatering	Concrete saw	13 hp	8	22	6.41E-02	4.74E-02	2.45E+00	1.19E-04	3.51E-02	3.50E-02
		Crane 80'	130 hp	16	22	6.17E-02	7.88E-01	5.15E-01	9.76E-04	4.22E-02	3.88E-02
		Flatbed truck		8	22	1.05E-02	1.10E-02	1.46E-01	9.76E-05	7.76E-04	3.38E-04
		Generator	80 hp	5856	244	2.05E+00	1.66E+01	1.50E+01	2.92E-02	1.06E+00	9.80E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	2.69E+00	4.23E+01	2.00E+01	7.26E-02	1.56E+00	1.43E+00
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.69E+00	4.23E+01	2.00E+01	7.26E-02	1.56E+00	1.43E+00
		Tractor/crawler/dozer	600 hp	184.6154	19	2.69E+00	4.23E+01	2.00E+01	7.26E-02	1.56E+00	1.43E+00
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	2.69E+00	4.23E+01	2.00E+01	7.26E-02	1.56E+00	1.43E+00
	Armoring	1 ton pickup truck		2	19	1.12E-03	1.32E-03	1.50E-02	2.85E-05	2.28E-04	1.01E-04
		Excavator	430 hp	2	19	1.10E-02	1.56E-01	8.48E-02	4.15E-04	5.06E-03	4.66E-03
		1 ton pickup truck		2	19	1.12E-03	1.32E-03	1.50E-02	2.85E-05	2.28E-04	1.01E-04
	Maintenance	Grader	215 hp	340	210	1.99E-01	3.31E+00	1.05E+00	5.39E-03	1.07E-01	9.89E-02
Coarse Material (Gravel & Larger) - 167,000 cy after ramp building (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	9.07E-02	1.06E-01	1.21E+00	2.30E-03	1.84E-02	8.15E-03
		Front end loader	350 hp	663.5	78	1.31E+00	1.77E+01	6.25E+00	2.77E-02	6.63E-01	6.10E-01
		Front end loader	350 hp	663.5	78	1.31E+00	1.77E+01	6.25E+00	2.77E-02	6.63E-01	6.10E-01
		Front end loader	350 hp	663.5	78	1.31E+00	1.77E+01	6.25E+00	2.77E-02	6.63E-01	6.10E-01
		Front end loader	350 hp	663.5	78	1.31E+00	1.77E+01	6.25E+00	2.77E-02	6.63E-01	6.10E-01
		Water truck	3000 gal	663.5	78	2.61E-01	3.95E+00	4.80E-01	4.03E-03	8.67E-02	5.28E-02
		Excavator	400 hp	663.5	78	8.27E-01	1.17E+01	6.38E+00	3.12E-02	3.81E-01	3.50E-01
		Excavator	400 hp	663.5	78	8.27E-01	1.17E+01	6.38E+00	3.12E-02	3.81E-01	3.50E-01
		Excavator	400 hp	663.5	78	8.27E-01	1.17E+01	6.38E+00	3.12E-02	3.81E-01	3.50E-01
		Excavator	400 hp	663.5	78	8.27E-01	1.17E+01	6.38E+00	3.12E-02	3.81E-01	3.50E-01
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	9.88E-02	1.16E-01	1.32E+00	2.51E-03	2.01E-02	8.89E-03
		Front end loader	350 hp	102	11	1.43E+00	1.93E+01	6.82E+00	3.02E-02	7.22E-01	6.64E-01
		Front end loader	350 hp	102	11	1.43E+00	1.93E+01	6.82E+00	3.02E-02	7.22E-01	6.64E-01
		Front end loader	350 hp	102	11	1.43E+00	1.93E+01	6.82E+00	3.02E-02	7.22E-01	6.64E-01
		Front end loader	350 hp	102	11	1.43E+00	1.93E+01	6.82E+00	3.02E-02	7.22E-01	6.64E-01
		Water truck	3000 gal	102	11	2.85E-01	4.30E+00	5.23E-01	4.39E-03	9.46E-02	5.75E-02
		Excavator	400 hp	102	11	9.01E-01	1.28E+01	6.95E+00	3.40E-02	4.15E-01	3.82E-01
		Excavator	400 hp	102	11	9.01E-01	1.28E+01	6.95E+00	3.40E-02	4.15E-01	3.82E-01
		Excavator	400 hp	102	11	9.01E-01	1.28E+01	6.95E+00	3.40E-02	4.15E-01	3.82E-01
		Excavator	400 hp	102	11	9.01E-01	1.28E+01	6.95E+00	3.40E-02	4.15E-01	3.82E-01
	Beach Crew	1 ton pickup truck		102	11	9.88E-02	1.16E-01	1.32E+00	2.51E-03	2.01E-02	8.89E-03
		Tractor/crawler/dozer	600 hp	102	11	2.57E+00	4.03E+01	1.91E+01	6.93E-02	1.49E+00	1.37E+00
		Tractor/crawler/dozer	600 hp	102	11	2.57E+00	4.03E+01	1.91E+01	6.93E-02	1.49E+00	1.37E+00
		Tractor/crawler/dozer	600 hp	102	11	2.57E+00	4.03E+01	1.91E+01	6.93E-02	1.49E+00	1.37E+00
		Tractor/crawler/dozer	600 hp	102	11	2.57E+00	4.03E+01	1.91E+01	6.93E-02	1.49E+00	1.37E+00
		Water truck	3000 gal	25	11	6.98E-02	1.05E+00	1.28E-01	1.08E-03	2.32E-02	1.41E-02

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2018
Birthday of Martin Luther King, Jr.	1/15/2018
Washington's Birthday	2/19/2018
Memorial Day	5/28/2018
Independence Day	7/4/2018
Labor Day	9/3/2018
Columbus Day	10/8/2018
Veterans Day	11/12/2018
Thanksgiving Day	11/22/2018
Christmas Day	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2018 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	48	8.49E-02	9.97E-02	1.13E+00	2.16E-03	1.72E-02	7.64E-03
		Front end loader	350 hp	382.5	48	1.23E+00	1.66E+01	5.86E+00	2.59E-02	6.21E-01	5.71E-01
		Front end loader	350 hp	382.5	48	1.23E+00	1.66E+01	5.86E+00	2.59E-02	6.21E-01	5.71E-01
		Front end loader	350 hp	382.5	48	1.23E+00	1.66E+01	5.86E+00	2.59E-02	6.21E-01	5.71E-01
		Front end loader	350 hp	382.5	48	1.23E+00	1.66E+01	5.86E+00	2.59E-02	6.21E-01	5.71E-01
		Water truck	3000 gal	382.5	48	2.45E-01	3.70E+00	4.50E-01	3.77E-03	8.13E-02	4.94E-02
		Excavator	400 hp	382.5	48	7.75E-01	1.10E+01	5.97E+00	2.92E-02	3.56E-01	3.28E-01
		Excavator	400 hp	382.5	48	7.75E-01	1.10E+01	5.97E+00	2.92E-02	3.56E-01	3.28E-01
		Excavator	400 hp	382.5	48	7.75E-01	1.10E+01	5.97E+00	2.92E-02	3.56E-01	3.28E-01
		Excavator	400 hp	382.5	48	7.75E-01	1.10E+01	5.97E+00	2.92E-02	3.56E-01	3.28E-01
	Beach Crew	**1 ton pickup truck**		382.5	48	8.49E-02	9.97E-02	1.13E+00	2.16E-03	1.72E-02	7.64E-03
		Tractor/crawler/dozer	600 hp	382.5	48	2.21E+00	3.47E+01	1.64E+01	5.95E-02	1.28E+00	1.18E+00
		Tractor/crawler/dozer	600 hp	382.5	48	2.21E+00	3.47E+01	1.64E+01	5.95E-02	1.28E+00	1.18E+00
		Tractor/crawler/dozer	600 hp	382.5	48	2.21E+00	3.47E+01	1.64E+01	5.95E-02	1.28E+00	1.18E+00
		Tractor/crawler/dozer	600 hp	382.5	48	2.21E+00	3.47E+01	1.64E+01	5.95E-02	1.28E+00	1.18E+00
		Water truck	3000 gal	382.5	30	3.91E-01	5.92E+00	7.19E-01	6.04E-03	1.30E-01	7.91E-02
Demolition - Concrete Arc & Spillway	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	7.74E+00	1.19E+02	4.14E+01	1.46E-01	4.61E+00	4.24E+00
		Tractor/crawler/dozer	440 hp	90	22	9.67E-01	1.49E+01	5.18E+00	1.83E-02	5.77E-01	5.30E-01
		3/4 ton pickup truck		360	22	2.93E-01	2.40E-01	3.53E+00	4.42E-03	3.62E-02	1.64E-02
	Drilling	**Rotary drill**	475 hp	88.1333	128	8.08E-02	1.26E+00	7.20E-01	3.99E-03	3.79E-02	3.48E-02
		3/4 ton pickup truck		84.1333	128	1.18E-02	9.66E-03	1.42E-01	1.77E-04	1.46E-03	6.61E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	5.27E-02	4.32E-02	6.35E-01	7.93E-04	6.50E-03	2.95E-03
		Diamond cutting saw	50 hp	376	128	2.88E-01	1.38E+00	1.33E+00	2.32E-03	8.12E-02	7.47E-02
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	5.17E-01	7.85E+00	2.18E+00	9.41E-03	3.17E-01	2.91E-01
		3/4 ton pickup truck		454.8767	128	6.37E-02	5.22E-02	7.68E-01	9.60E-04	7.87E-03	3.57E-03
	Load/Haul	**Front end loader**	350 hp	32	128	3.85E-02	5.20E-01	1.84E-01	8.13E-04	1.95E-02	1.79E-02
	Landfill	**Crane 260'**	375 hp	227.4384	128	2.59E-01	3.92E+00	1.09E+00	4.71E-03	1.58E-01	1.46E-01
	Micro-blast	**Crane 260'**	375 hp	60	128	6.82E-02	1.03E+00	2.87E-01	1.24E-03	4.18E-02	3.84E-02
		Horizontal boring drill	10 hp	55	128	6.03E-03	4.64E-02	3.62E-02	9.21E-05	3.14E-03	2.88E-03
		3/4 ton pickup truck		60	128	8.41E-03	6.89E-03	1.01E-01	1.27E-04	1.04E-03	4.71E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	1.14E-01	1.72E+00	4.78E-01	2.07E-03	6.96E-02	6.40E-02
		Air compressor	50 hp	200	128	3.51E-01	4.61E-01	1.69E+01	1.29E-03	8.10E-03	8.09E-03
		3/4 ton pickup truck		100	128	1.40E-02	1.15E-02	1.69E-01	2.11E-04	1.73E-03	7.85E-04
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	20	1.04E-02	1.57E-01	1.91E-02	1.61E-04	3.46E-03	2.10E-03
		Excavator	430 hp	4.445	20	2.32E-02	3.30E-01	1.79E-01	8.76E-04	1.07E-02	9.83E-03
		Tractor/crawler/dozer	850 hp	3.2327	20	1.05E-01	1.96E+00	5.54E-01	1.82E-03	5.84E-02	5.37E-02
	Drilling	**Rotary drill**	475 hp	7.3333	20	4.30E-02	6.74E-01	3.84E-01	2.13E-03	2.02E-02	1.85E-02
		3/4 ton Pickup truck		7.3333	20	6.58E-03	5.39E-03	7.92E-02	9.90E-05	8.12E-04	3.69E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	20	4.30E-02	3.53E-02	5.18E-01	6.48E-04	5.31E-03	2.41E-03
		Diamond cutting saw	50 hp	48	20	2.36E-01	1.13E+00	1.09E+00	1.90E-03	6.63E-02	6.10E-02
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	20	4.37E-01	6.63E+00	1.84E+00	7.95E-03	2.67E-01	2.46E-01
		3/4 ton Pickup truck		60.0214	20	5.38E-02	4.41E-02	6.48E-01	8.10E-04	6.64E-03	3.02E-03
	Landfill	**Crane 260'**	375 hp	30.0107	20	2.18E-01	3.31E+00	9.19E-01	3.98E-03	1.34E-01	1.23E-01
					Total	**7.46E+01**	**1.06E+03**	**5.04E+02**	**1.85E+00**	**3.97E+01**	**3.63E+01**

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsit						
Rindge	54	749	357	1	28	26
Surfrider	10	162	78	0	6	5
Topanga	9	145	68	0	5	5
Zuma	0	0	0	0	0	0
Landfill	0	7	2	0	0	0

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	2320	209	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.166	1.567	0.761	0.005	0.048	0.044	403.250	0.015	0.000
		Front end loader	540 hp	3.696	19	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
		Front end loader	49 hp	4	19	0.222	1.556	1.830	0.003	0.048	0.044	231.302	0.020	0.000
		Roller	47 hp	4	19	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000
		Water truck	3000 gal	4	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	300 hp	4	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		Front end loader	180 hp	4	19	0.093	1.355	0.579	0.003	0.045	0.042	270.061	0.015	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.450	1.583	92.611	0.004	1.249	1.246	148.932	0.140	0.122
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		Loader/backhoe	75 hp	0.0923	19	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
		Crane 94'	155 hp	155	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Crane 94'	155 hp	155	19	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Dewatering	Concrete saw	13 hp	8	21	3.075	2.272	117.574	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	21	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
		Flatbed truck		8	21	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
		Generator	80 hp	5856	244	0.213	1.796	1.761	0.003	0.108	0.100	294.384	0.019	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
	Armoring	1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Excavator	430 hp	2	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Maintenance	Grader	215 hp	340	209	0.122	1.989	0.675	0.004	0.064	0.059	312.002	0.017	0.000
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Front end loader	350 hp	59.5	7	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Front end loader	350 hp	59.5	7	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Water truck	3000 gal	59.5	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	400 hp	59.5	7	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Beach Crew	1 ton pickup truck		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	600 hp	59.5	7	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Tractor/crawler/dozer	600 hp	59.5	7	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Water truck	3000 gal	14.875	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Sand to Zuma Beach	*Material Excavation*	1 ton pickup truck		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
(124,200 cy) (4/10-10/15)		Front end loader	350 hp	1028.5	131	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Front end loader	350 hp	1028.5	131	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Water truck	3000 gal	1028.5	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	400 hp	1028.5	131	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Beach Crew	1 ton pickup truck		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	600 hp	1028.5	131	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Tractor/crawler/dozer	600 hp	1028.5	131	0.094	1.433	0.748	0.003	0.053	0.049	280.790	0.018	0.000
		Water truck	3000 gal	257.125	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	22	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
		Tractor/crawler/dozer	440 hp	90	22	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
		3/4 ton pickup truck		360	22	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Drilling	Rotary drill	475 hp	54.4	128	0.054	0.779	0.500	0.003	0.024	0.022	282.166	0.007	0.000
		3/4 ton pickup truck		50.4	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton pickup truck		148	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	148	128	0.388	2.062	2.000	0.004	0.110	0.101	277.562	0.035	0.000
	Lift/Load blocks	Crane 260'	375 hp	179.6356	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		3/4 ton pickup truck		179.6356	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Load/Haul	Front end loader	350 hp	32	128	0.091	1.189	0.465	0.002	0.044	0.041	214.821	0.011	0.000
		Water truck	3000 gal	521	128	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Landfill	Crane 260'	375 hp	89.8178	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
	Micro-blast	Crane 260'	375 hp	60	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		Horizontal boring drill	10 hp	55	128	0.300	2.371	1.909	0.005	0.152	0.140	312.570	0.033	0.000
		3/4 ton pickup truck		60	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	100	128	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		Air compressor	50 hp	200	128	0.932	1.229	50.033	0.004	0.024	0.023	307.059	0.053	0.072
		3/4 ton pickup truck		100	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Demolition - Notch 5'	*Excavation for Dam Demo*	Asphalt Distributor	3000 gal	6.7805	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	430 hp	4.445	19	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
		Tractor/crawler/dozer	850 hp	3.2327	19	0.163	3.093	0.873	0.003	0.090	0.083	298.249	0.021	0.000
	Drilling	Rotary drill	475 hp	7.3333	19	0.054	0.779	0.500	0.003	0.024	0.022	282.166	0.007	0.000
		3/4 ton Pickup truck		7.3333	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	19	0.388	2.062	2.000	0.004	0.110	0.101	277.562	0.035	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	19	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
		3/4 ton Pickup truck		60.0214	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Water truck	3000 gal	507	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	19	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
					Total									

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2019 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		96	209	3.71E-04	3.21E-04	4.51E-03	6.44E-06	5.25E-05	2.36E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		Water truck	5000 gal	2320	209	1.75E-02	2.47E-01	3.24E-02	2.73E-04	5.70E-03	3.40E-03	5.49E+01	1.30E-04	1.23E-04	5.49E+01	4.98E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		1229.3333	209	4.75E-03	4.11E-03	5.77E-02	8.24E-05	6.73E-04	3.02E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	6.19E-05	5.34E-05	7.52E-04	1.07E-06	8.76E-06	3.93E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	9.54E-06	1.22E-05	1.29E-04	2.96E-07	2.35E-06	1.03E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.72E-04	4.31E-03	1.49E-03	6.85E-06	1.62E-04	1.49E-04	6.09E-01	4.16E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	Front end loader	540 hp	3.696	19	1.93E-04	2.40E-03	1.40E-03	6.49E-06	9.43E-05	8.67E-05	6.45E-01	3.38E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.43E-04	2.13E-03	7.91E-04	2.91E-06	8.28E-05	7.62E-05	2.97E-01	1.92E-05	-	2.97E-01	2.70E-01
	Chipping	Brush chipper	250 hp	3.696	19	1.69E-04	1.60E-03	7.75E-04	4.62E-06	4.92E-05	4.52E-05	4.11E-01	1.52E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	1.93E-04	2.40E-03	1.40E-03	6.49E-06	9.43E-05	8.67E-05	6.45E-01	3.38E-05	-	6.46E-01	5.86E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.34E-05	8.46E-04	2.92E-04	1.34E-06	3.19E-05	2.94E-05	1.20E-01	8.17E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.80E-05	3.36E-04	3.95E-04	6.46E-07	1.04E-05	9.61E-06	5.00E-02	4.33E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.13E-04	3.95E-04	4.67E-04	6.31E-07	2.68E-05	2.46E-05	4.88E-02	1.02E-05	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	3.02E-05	4.25E-04	5.58E-05	4.72E-07	9.82E-06	5.86E-06	9.46E-02	2.25E-07	2.12E-07	9.47E-02	8.59E-02
		Excavator	300 hp	4	19	6.77E-05	8.99E-04	5.55E-04	2.75E-06	2.92E-05	2.69E-05	2.80E-01	1.37E-05	-	2.81E-01	2.54E-01
		Front end loader	180 hp	4	19	7.34E-05	1.08E-03	4.60E-04	2.41E-06	3.61E-05	3.32E-05	2.14E-01	1.16E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	1.60E-04	2.54E-03	8.77E-04	4.03E-06	9.57E-05	8.81E-05	3.59E-01	2.45E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	1.84E-04	1.19E-04	6.94E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.05E-05	9.16E-06	1.42E-02	1.29E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	5.29E-04	6.71E-03	4.83E-03	9.17E-06	3.59E-04	3.30E-04	8.15E-01	6.40E-05	-	8.16E-01	7.41E-01
		Loader/backhoe	75 hp	0.0923	19	8.55E-07	1.04E-05	9.84E-06	1.75E-08	6.93E-07	6.38E-07	1.49E-03	1.03E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.58E-03	4.54E-02	3.26E-02	6.20E-05	2.42E-03	2.23E-03	5.51E+00	4.32E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	3.58E-03	4.54E-02	3.26E-02	6.20E-05	2.42E-03	2.23E-03	5.51E+00	4.32E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	5.34E-05	8.46E-04	2.92E-04	1.34E-06	3.19E-05	2.94E-05	1.20E-01	8.17E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	21	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	21	3.10E-04	3.93E-03	2.83E-03	5.37E-06	2.10E-04	1.93E-04	4.77E-01	3.74E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	21	4.87E-05	5.25E-05	6.75E-04	5.33E-07	4.22E-06	1.82E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	1.10E-01	9.28E-01	9.09E-01	1.78E-03	5.60E-02	5.15E-02	1.52E+02	9.93E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.15E-02	1.75E-01	9.13E-02	3.45E-04	6.44E-03	5.93E-03	3.43E+01	2.23E-03	-	3.43E+01	3.11E+01
	Armoring	1 ton pickup truck		2	19	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	4.85E-05	6.44E-04	3.98E-04	1.97E-06	2.09E-05	1.92E-05	2.01E-01	9.81E-06	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	Grader	215 hp	340	209	9.80E-03	1.60E-01	5.44E-02	2.83E-04	5.14E-03	4.73E-03	2.51E+01	1.39E-03	-	2.52E+01	2.28E+01
Sand to Topanga Beach	*Material Excavation*	1 ton pickup truck		59.5	7	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
(7,200 cy) (4/1-9)		Front end loader	350 hp	59.5	7	2.10E-03	2.73E-02	1.07E-02	4.84E-05	1.02E-03	9.38E-04	4.93E+00	2.57E-04	-	4.94E+00	4.48E+00
		Front end loader	350 hp	59.5	7	2.10E-03	2.73E-02	1.07E-02	4.84E-05	1.02E-03	9.38E-04	4.93E+00	2.57E-04	-	4.94E+00	4.48E+00
		Water truck	3000 gal	59.5	7	4.49E-04	6.32E-03	8.31E-04	7.01E-06	1.46E-04	8.71E-05	1.41E+00	3.34E-06	3.15E-06	1.41E+00	1.28E+00
		Excavator	400 hp	59.5	7	1.34E-03	1.78E-02	1.10E-02	5.46E-05	5.79E-04	5.33E-04	5.56E+00	2.72E-04	-	5.56E+00	5.05E+00
	Beach Crew	1 ton pickup truck		59.5	7	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
		Tractor/crawler/dozer	600 hp	59.5	7	3.71E-03	5.64E-02	2.94E-02	1.11E-04	2.08E-03	1.91E-03	1.10E+01	7.17E-04	-	1.11E+01	1.00E+01
		Tractor/crawler/dozer	600 hp	59.5	7	3.71E-03	5.64E-02	2.94E-02	1.11E-04	2.08E-03	1.91E-03	1.10E+01	7.17E-04	-	1.11E+01	1.00E+01
		Water truck	3000 gal	14.875	7	1.12E-04	1.58E-03	2.08E-04	1.75E-06	3.65E-05	2.18E-05	3.52E-01	8.36E-07	7.87E-07	3.52E-01	3.19E-01

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2019 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Sand to Zuma Beach	***Material Excavation***	**1 ton pickup truck**		1028.5	131	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
(124,200 cy) (4/10-10/15)		**Front end loader**	350 hp	1028.5	131	3.63E-02	4.72E-01	1.84E-01	8.37E-04	1.76E-02	1.62E-02	8.52E+01	4.44E-03	-	8.53E+01	7.74E+01
		Front end loader	350 hp	1028.5	131	3.63E-02	4.72E-01	1.84E-01	8.37E-04	1.76E-02	1.62E-02	8.52E+01	4.44E-03	-	8.53E+01	7.74E+01
		Water truck	3000 gal	1028.5	131	7.77E-03	1.09E-01	1.44E-02	1.21E-04	2.53E-03	1.51E-03	2.43E+01	5.78E-05	5.44E-05	2.43E+01	2.21E+01
		Excavator	400 hp	1028.5	131	2.32E-02	3.08E-01	1.90E-01	9.43E-04	1.00E-02	9.21E-03	9.61E+01	4.69E-03	-	9.62E+01	8.72E+01
	Beach Crew	**1 ton pickup truck**		1028.5	131	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
		Tractor/crawler/dozer	600 hp	1028.5	131	6.42E-02	9.75E-01	5.09E-01	1.92E-03	3.59E-02	3.30E-02	1.91E+02	1.24E-02	-	1.91E+02	1.74E+02
		Tractor/crawler/dozer	600 hp	1028.5	131	6.42E-02	9.75E-01	5.09E-01	1.92E-03	3.59E-02	3.30E-02	1.91E+02	1.24E-02	-	1.91E+02	1.74E+02
		Water truck	3000 gal	257.125	131	1.94E-03	2.73E-02	3.59E-03	3.03E-05	6.31E-04	3.77E-04	6.08E+00	1.45E-05	1.36E-05	6.08E+00	5.52E+00
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	3.94E-02	5.89E-01	2.19E-01	8.05E-04	2.29E-02	2.11E-02	8.21E+01	5.30E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	4.93E-03	7.36E-02	2.74E-02	1.01E-04	2.86E-03	2.63E-03	1.03E+01	6.63E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	1.39E-03	1.20E-03	1.69E-02	2.41E-05	1.97E-04	8.84E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	54.4	128	1.53E-03	2.22E-02	1.42E-02	7.89E-05	6.86E-04	6.31E-04	8.04E+00	1.93E-04	-	8.04E+00	7.29E+00
		3/4 ton pickup truck		50.4	128	1.95E-04	1.68E-04	2.37E-03	3.38E-06	2.76E-05	1.24E-05	1.13E+00	1.12E-04	5.87E-05	1.15E+00	1.04E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	5.72E-04	4.94E-04	6.95E-03	9.92E-06	8.10E-05	3.64E-05	3.32E+00	3.30E-04	1.72E-04	3.38E+00	3.07E+00
		Diamond cutting saw	50 hp	148	128	3.16E-03	1.68E-02	1.63E-02	2.93E-05	8.97E-04	8.25E-04	2.26E+00	2.85E-04	-	2.27E+00	2.06E+00
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	6.17E-03	9.19E-02	2.66E-02	1.19E-04	3.70E-03	3.41E-03	1.21E+01	6.94E-04	-	1.21E+01	1.10E+01
		3/4 ton pickup truck		179.6356	128	6.95E-04	6.00E-04	8.44E-03	1.20E-05	9.83E-05	4.41E-05	4.03E+00	4.01E-04	2.09E-04	4.10E+00	3.72E+00
	Load/Haul	**Front end loader**	350 hp	32	128	1.13E-03	1.47E-02	5.74E-03	2.60E-05	5.48E-04	5.04E-04	2.65E+00	1.38E-04	-	2.66E+00	2.41E+00
		Water truck	3000 gal	521	128	3.93E-03	5.54E-02	7.27E-03	6.14E-05	1.28E-03	7.63E-04	1.23E+01	2.93E-05	2.76E-05	1.23E+01	1.12E+01
	Landfill	**Crane 260'**	375 hp	89.8178	128	3.09E-03	4.60E-02	1.33E-02	5.95E-05	1.85E-03	1.70E-03	6.06E+00	3.47E-04	-	6.07E+00	5.50E+00
	Micro-blast	**Crane 260'**	375 hp	60	128	2.06E-03	3.07E-02	8.88E-03	3.97E-05	1.24E-03	1.14E-03	4.05E+00	2.32E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	1.82E-04	1.44E-03	1.16E-03	2.95E-06	9.22E-05	8.48E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	128	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	128	3.44E-03	5.12E-02	1.48E-02	6.62E-05	2.06E-03	1.90E-03	6.75E+00	3.86E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	128	1.03E-02	1.35E-02	5.52E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	5.84E-04	7.95E-04	3.64E+00	3.31E+00
		3/4 ton pickup truck		100	128	3.87E-04	3.34E-04	4.70E-03	6.70E-06	5.47E-05	2.46E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt Distributor**	3000 gal	6.7805	19	5.12E-05	7.21E-04	9.47E-05	7.99E-07	1.67E-05	9.93E-06	1.60E-01	3.81E-07	3.59E-07	1.60E-01	1.46E-01
		Excavator	430 hp	4.445	19	1.08E-04	1.43E-03	8.85E-04	4.38E-06	4.65E-05	4.28E-05	4.46E-01	2.18E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	19	4.94E-04	9.37E-03	2.64E-03	9.08E-06	2.74E-04	2.52E-04	9.03E-01	6.32E-05	-	9.05E-01	8.21E-01
	Drilling	**Rotary drill**	475 hp	7.3333	19	2.06E-04	2.99E-03	1.92E-03	1.06E-05	9.24E-05	8.50E-05	1.08E+00	2.60E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	19	2.84E-05	2.45E-05	3.44E-04	4.92E-07	4.01E-06	1.80E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	19	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	19	1.03E-03	5.45E-03	5.29E-03	9.49E-06	2.91E-04	2.68E-04	7.34E-01	9.25E-05	-	7.36E-01	6.68E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	19	2.06E-03	3.07E-02	8.89E-03	3.98E-05	1.24E-03	1.14E-03	4.05E+00	2.32E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	19	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
		Water truck	3000 gal	507	19	3.83E-03	5.39E-02	7.08E-03	5.98E-05	1.25E-03	7.43E-04	1.20E+01	2.85E-05	2.68E-05	1.20E+01	1.09E+01
	Landfill	**Crane 260'**	375 hp	30.0107	19	1.03E-03	1.54E-02	4.44E-03	1.99E-05	6.18E-04	5.69E-04	2.03E+00	1.16E-04	-	2.03E+00	1.84E+00
					Total	**5.44E-01**	**6.83E+00**	**4.27E+00**	**1.28E-02**	**2.71E-01**	**2.44E-01**	**1.38E+03**	**8.26E-02**	**6.74E-03**	**1.39E+03**	**1.26E+03**

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsi
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	209	7.11E-03	6.14E-03	8.63E-02	1.23E-04	1.01E-03	4.51E-04
Dust Control		Water truck	5000 gal	2320	209	3.35E-01	4.72E+00	6.20E-01	5.23E-03	1.09E-01	6.50E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	9.10E-02	7.86E-02	1.11E+00	1.58E-03	1.29E-02	5.78E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.30E-02	1.12E-02	1.58E-01	2.26E-04	1.84E-03	8.27E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.01E-03	2.57E-03	2.72E-02	6.23E-05	4.95E-04	2.17E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	5.72E-02	9.07E-01	3.14E-01	1.44E-03	3.42E-02	3.15E-02
		Chain saw		7.3335	19	1.04E-01	1.63E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	Front end loader	540 hp	3.696	19	4.06E-02	5.06E-01	2.94E-01	1.37E-03	1.98E-02	1.83E-02
		Tractor/crawler/dozer	310 hp	3.696	19	3.00E-02	4.49E-01	1.67E-01	6.13E-04	1.74E-02	1.60E-02
	Chipping	Brush chipper	250 hp	3.696	19	3.55E-02	3.36E-01	1.63E-01	9.73E-04	1.04E-02	9.52E-03
		Front end loader	540 hp	3.696	19	4.06E-02	5.06E-01	2.94E-01	1.37E-03	1.98E-02	1.83E-02
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.12E-02	1.78E-01	6.16E-02	2.83E-04	6.72E-03	6.18E-03
		Front end loader	49 hp	4	19	1.01E-02	7.08E-02	8.32E-02	1.36E-04	2.20E-03	2.02E-03
		Roller	47 hp	4	19	2.37E-02	8.32E-02	9.84E-02	1.33E-04	5.64E-03	5.19E-03
		Water truck	3000 gal	4	19	6.36E-03	8.95E-02	1.18E-02	9.93E-05	2.07E-03	1.23E-03
		Excavator	300 hp	4	19	1.42E-02	1.89E-01	1.17E-01	5.79E-04	6.15E-03	5.65E-03
		Front end loader	180 hp	4	19	1.55E-02	2.26E-01	9.67E-02	5.08E-04	7.59E-03	6.98E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	3.37E-02	5.34E-01	1.85E-01	8.49E-04	2.02E-02	1.85E-02
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	3.87E-02	2.50E-02	1.46E+00	5.96E-05	1.97E-02	1.97E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	1.11E-01	1.41E+00	1.02E+00	1.93E-03	7.55E-02	6.94E-02
		Loader/backhoe	75 hp	0.0923	19	1.80E-04	2.19E-03	2.07E-03	3.68E-06	1.46E-04	1.34E-04
		Crane 94'	155 hp	155	19	7.54E-01	9.55E+00	6.87E+00	1.31E-02	5.10E-01	4.70E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
		Crane 94'	155 hp	155	19	7.54E-01	9.55E+00	6.87E+00	1.31E-02	5.10E-01	4.70E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	1.12E-02	1.78E-01	6.16E-02	2.83E-04	6.72E-03	6.18E-03
	Dewatering	Concrete saw	13 hp	8	21	6.71E-02	4.96E-02	2.57E+00	1.25E-04	3.68E-02	3.67E-02
		Crane 80'	130 hp	16	21	5.90E-02	7.48E-01	5.38E-01	1.02E-03	4.00E-02	3.68E-02
		Flatbed truck		8	21	9.27E-03	1.00E-02	1.29E-01	1.01E-04	8.04E-04	3.47E-04
		Generator	80 hp	5856	244	1.80E+00	1.52E+01	1.49E+01	2.92E-02	9.18E-01	8.45E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	2.43E+00	3.68E+01	1.92E+01	7.26E-02	1.36E+00	1.25E+00
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.43E+00	3.68E+01	1.92E+01	7.26E-02	1.36E+00	1.25E+00
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.43E+00	3.68E+01	1.92E+01	7.26E-02	1.36E+00	1.25E+00
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	2.43E+00	3.68E+01	1.92E+01	7.26E-02	1.36E+00	1.25E+00
	Armoring	1 ton pickup truck		2	19	9.13E-04	1.17E-03	1.24E-02	2.83E-05	2.25E-04	9.86E-05
		Excavator	430 hp	2	19	1.02E-02	1.36E-01	8.38E-02	4.15E-04	4.41E-03	4.05E-03
		1 ton pickup truck		2	19	9.13E-04	1.17E-03	1.24E-02	2.83E-05	2.25E-04	9.86E-05
	Maintenance	Grader	215 hp	340	209	1.87E-01	3.07E+00	1.04E+00	5.41E-03	9.84E-02	9.06E-02
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	7.37E-02	9.45E-02	9.98E-01	2.29E-03	1.82E-02	7.96E-03
		Front end loader	350 hp	59.5	7	1.20E+00	1.56E+01	6.10E+00	2.77E-02	5.82E-01	5.36E-01
		Front end loader	350 hp	59.5	7	1.20E+00	1.56E+01	6.10E+00	2.77E-02	5.82E-01	5.36E-01
		Water truck	3000 gal	59.5	7	2.57E-01	3.61E+00	4.75E-01	4.01E-03	8.35E-02	4.98E-02
		Excavator	400 hp	59.5	7	7.67E-01	1.02E+01	6.29E+00	3.12E-02	3.31E-01	3.04E-01
	Beach Crew	1 ton pickup truck		59.5	7	7.37E-02	9.45E-02	9.98E-01	2.29E-03	1.82E-02	7.96E-03
		Tractor/crawler/dozer	600 hp	59.5	7	2.12E+00	3.22E+01	1.68E+01	6.35E-02	1.19E+00	1.09E+00
		Tractor/crawler/dozer	600 hp	59.5	7	2.12E+00	3.22E+01	1.68E+01	6.35E-02	1.19E+00	1.09E+00
		Water truck	3000 gal	14.875	7	6.42E-02	9.03E-01	1.19E-01	1.00E-03	2.09E-02	1.24E-02

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2019

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Sand to Zuma Beach	***Material Excavation***	**1 ton pickup truck**		1028.5	131	6.81E-02	8.73E-02	9.22E-01	2.11E-03	1.68E-02	7.35E-03
(124,200 cy) (4/10-10/15)		**Front end loader**	350 hp	1028.5	131	1.11E+00	1.44E+01	5.63E+00	2.55E-02	5.38E-01	4.95E-01
		Front end loader	350 hp	1028.5	131	1.11E+00	1.44E+01	5.63E+00	2.55E-02	5.38E-01	4.95E-01
		Water truck	3000 gal	1028.5	131	2.37E-01	3.34E+00	4.38E-01	3.70E-03	7.71E-02	4.60E-02
		Excavator	400 hp	1028.5	131	7.08E-01	9.41E+00	5.81E+00	2.88E-02	3.06E-01	2.81E-01
	Beach Crew	**1 ton pickup truck**		1028.5	131	6.81E-02	8.73E-02	9.22E-01	2.11E-03	1.68E-02	7.35E-03
		Tractor/crawler/dozer	600 hp	1028.5	131	1.96E+00	2.98E+01	1.55E+01	5.86E-02	1.10E+00	1.01E+00
		Tractor/crawler/dozer	600 hp	1028.5	131	1.96E+00	2.98E+01	1.55E+01	5.86E-02	1.10E+00	1.01E+00
		Water truck	3000 gal	257.125	131	5.93E-02	8.34E-01	1.10E-01	9.25E-04	1.93E-02	1.15E-02
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	7.17E+00	1.07E+02	3.98E+01	1.46E-01	4.16E+00	3.83E+00
		Tractor/crawler/dozer	440 hp	90	22	8.96E-01	1.34E+01	4.97E+00	1.83E-02	5.20E-01	4.79E-01
		3/4 ton pickup truck		360	22	2.53E-01	2.19E-01	3.07E+00	4.39E-03	3.58E-02	1.61E-02
	Drilling	**Rotary drill**	475 hp	54.4	128	4.78E-02	6.94E-01	4.45E-01	2.47E-03	2.14E-02	1.97E-02
		3/4 ton pickup truck		50.4	128	6.09E-03	5.26E-03	7.40E-02	1.06E-04	8.62E-04	3.87E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	1.79E-02	1.54E-02	2.17E-01	3.10E-04	2.53E-03	1.14E-03
		Diamond cutting saw	50 hp	148	128	9.88E-02	5.25E-01	5.10E-01	9.15E-04	2.80E-02	2.58E-02
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	1.93E-01	2.87E+00	8.31E-01	3.72E-03	1.16E-01	1.06E-01
		3/4 ton pickup truck		179.6356	128	2.17E-02	1.87E-02	2.64E-01	3.76E-04	3.07E-03	1.38E-03
	Load/Haul	**Front end loader**	350 hp	32	128	3.53E-02	4.59E-01	1.79E-01	8.13E-04	1.71E-02	1.58E-02
		Water truck	3000 gal	521	128	1.23E-01	1.73E+00	2.27E-01	1.92E-03	4.00E-02	2.38E-02
	Landfill	**Crane 260'**	375 hp	89.8178	128	9.64E-02	1.44E+00	4.16E-01	1.86E-03	5.78E-02	5.32E-02
	Micro-blast	**Crane 260'**	375 hp	60	128	6.44E-02	9.59E-01	2.78E-01	1.24E-03	3.86E-02	3.55E-02
		Horizontal boring drill	10 hp	55	128	5.68E-03	4.49E-02	3.62E-02	9.21E-05	2.88E-03	2.65E-03
		3/4 ton pickup truck		60	128	7.25E-03	6.26E-03	8.81E-02	1.26E-04	1.03E-03	4.61E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	1.07E-01	1.60E+00	4.63E-01	2.07E-03	6.44E-02	5.92E-02
		Air compressor	50 hp	200	128	3.21E-01	4.23E-01	1.72E+01	1.29E-03	8.10E-03	8.09E-03
		3/4 ton pickup truck		100	128	1.21E-02	1.04E-02	1.47E-01	2.10E-04	1.71E-03	7.68E-04
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt Distributor**	3000 gal	6.7805	19	1.08E-02	1.52E-01	1.99E-02	1.68E-04	3.51E-03	2.09E-03
		Excavator	430 hp	4.445	19	2.27E-02	3.01E-01	1.86E-01	9.22E-04	9.79E-03	9.01E-03
		Tractor/crawler/dozer	850 hp	3.2327	19	1.04E-01	1.97E+00	5.57E-01	1.91E-03	5.76E-02	5.30E-02
	Drilling	**Rotary drill**	475 hp	7.3333	19	4.34E-02	6.30E-01	4.04E-01	2.24E-03	1.95E-02	1.79E-02
		3/4 ton Pickup truck		7.3333	19	5.97E-03	5.16E-03	7.25E-02	1.04E-04	8.45E-04	3.79E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	19	3.91E-02	3.37E-02	4.75E-01	6.77E-04	5.53E-03	2.48E-03
		Diamond cutting saw	50 hp	48	19	2.16E-01	1.15E+00	1.11E+00	2.00E-03	6.12E-02	5.63E-02
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	19	4.34E-01	6.47E+00	1.87E+00	8.37E-03	2.60E-01	2.40E-01
		3/4 ton Pickup truck		60.0214	19	4.89E-02	4.22E-02	5.94E-01	8.47E-04	6.92E-03	3.10E-03
		Water truck	3000 gal	507	19	8.06E-01	1.13E+01	1.49E+00	1.26E-02	2.62E-01	1.56E-01
	Landfill	**Crane 260'**	375 hp	30.0107	19	2.17E-01	3.23E+00	9.35E-01	4.18E-03	1.30E-01	1.20E-01
					Total	**4.11E+01**	**5.66E+02**	**3.01E+02**	**1.02E+00**	**2.16E+01**	**1.96E+01**

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsi						
Rindge	32	435	232	1	17	15
Surfrider	0	0	0	0	0	0
Topanga	4	65	35	0	2	2
Zuma	4	60	32	0	2	2
Landfill	0	5	1	0	0	0

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2020 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	209	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.083	1.001	0.621	0.003	0.039	0.036	293.384	0.015	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.156	1.378	0.752	0.005	0.043	0.039	403.250	0.014	0.000
		Front end loader	540 hp	3.696	19	0.083	1.001	0.621	0.003	0.039	0.036	293.384	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
		Front end loader	49 hp	4	19	0.208	1.500	1.818	0.003	0.039	0.036	231.302	0.019	0.000
		Roller	47 hp	4	19	0.492	1.848	2.208	0.003	0.116	0.106	235.507	0.044	0.000
		Water truck	3000 gal	4	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	300 hp	4	19	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
		Front end loader	180 hp	4	19	0.087	1.238	0.573	0.003	0.041	0.038	270.061	0.014	0.000
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.448	1.584	92.582	0.004	1.249	1.246	148.932	0.140	0.122
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		Loader/backhoe	75 hp	0.0923	19	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
		Crane 94'	155 hp	155	19	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Crane 94'	155 hp	155	19	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Dewatering	Concrete saw	13 hp	8	22	3.075	2.272	117.566	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	22	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
		Flatbed truck		8	22	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
		Generator	80 hp	5856	244	0.191	1.653	1.753	0.003	0.094	0.087	294.384	0.017	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
	Armoring	1 ton pickup truck		2	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Excavator	430 hp	2	19	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
		1 ton pickup truck		2	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Compaction	Vibratory roller	50 hp	7.38	19	0.492	1.848	2.208	0.003	0.116	0.106	235.507	0.044	0.000
		Tractor/crawler/dozer	250 hp	7.38	19	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
		Water truck	5000 gal	9.225	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Maintenance	Grader	215 hp	340	209	0.119	1.912	0.668	0.004	0.061	0.056	312.002	0.016	0.000
Sand to Zuma Beach (19,500 cy) (4/1-26)	*Material Excavation*	1 ton pickup truck		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Front end loader	350 hp	161.5	18	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Front end loader	350 hp	161.5	18	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	400 hp	161.5	18	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
	Beach Crew	1 ton pickup truck		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.091	1.345	0.721	0.003	0.049	0.045	280.790	0.017	0.000
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2020 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Fines to landfill (147,700 cy) (4/27-10/15)	*Material Excavation*	1 ton pickup truck		1066	120	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Front end loader	350 hp	1066	120	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Front end loader	350 hp	1066	120	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Water truck	3000 gal	1066	120	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	400 hp	1066	120	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	20	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
		Tractor/crawler/dozer	440 hp	90	20	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
		3/4 ton pickup truck		360	20	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	61.7333	127	0.052	0.708	0.500	0.003	0.022	0.021	282.166	0.006	0.000
		3/4 ton pickup truck		57.7333	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton pickup truck		196	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	196	127	0.344	1.993	1.959	0.004	0.096	0.089	277.562	0.031	0.000
	Lift/Load blocks	Crane 260'	375 hp	239.2283	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		3/4 ton pickup truck		239.2283	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	32	127	0.086	1.091	0.455	0.002	0.041	0.037	214.821	0.011	0.000
		Water truck	3000 gal	521	127	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Landfill	Crane 260'	375 hp	119.6141	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
	Micro-blast	Crane 260'	375 hp	60	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		Horizontal boring drill	10 hp	55	127	0.297	2.334	1.909	0.005	0.148	0.136	312.570	0.033	0.000
		3/4 ton pickup truck		60	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	100	127	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		Air compressor	50 hp	200	127	0.882	1.143	50.704	0.004	0.024	0.023	307.059	0.050	0.070
		3/4 ton pickup truck		100	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Demolition - Notch 5'	*Excavation for Dam Demo*	Asphalt Distributor	3000 gal	6.7805	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	430 hp	4.445	19	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
		Tractor/crawler/dozer	850 hp	3.2327	19	0.164	3.103	0.836	0.003	0.091	0.084	298.249	0.020	0.000
	Drilling	Rotary drill	475 hp	7.3333	19	0.052	0.708	0.500	0.003	0.022	0.021	282.166	0.006	0.000
		3/4 ton Pickup truck		7.3333	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	19	0.344	1.993	1.959	0.004	0.096	0.089	277.562	0.031	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	19	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
		3/4 ton Pickup truck		60.0214	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
		Water truck	3000 gal	507	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	19	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000

Data from Alt4_EnvrAirQualityReport.pdf

Total Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2020 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	209	3.29E-04	2.97E-04	4.01E-03	6.43E-06	5.21E-05	2.31E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	209	1.70E-02	1.99E-01	3.17E-02	2.73E-04	5.18E-03	2.93E-03	5.47E+01	1.30E-04	1.23E-04	5.48E+01	4.97E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	4.22E-03	3.80E-03	5.14E-02	8.24E-05	6.67E-04	2.96E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	5.49E-05	4.95E-05	6.69E-04	1.07E-06	8.68E-06	3.86E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	8.02E-06	1.11E-05	1.10E-04	2.96E-07	2.33E-06	1.01E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.58E-04	4.01E-03	1.45E-03	6.85E-06	1.51E-04	1.39E-04	6.09E-01	3.93E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	1.82E-04	2.20E-03	1.37E-03	6.49E-06	8.55E-05	7.87E-05	6.45E-01	3.21E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.35E-04	1.96E-03	7.63E-04	2.91E-06	7.63E-05	7.02E-05	2.97E-01	1.82E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	1.59E-04	1.40E-03	7.66E-04	4.62E-06	4.36E-05	4.01E-05	4.11E-01	1.43E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	1.82E-04	2.20E-03	1.37E-03	6.49E-06	8.55E-05	7.87E-05	6.45E-01	3.21E-05	-	6.46E-01	5.86E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	5.06E-05	7.88E-04	2.85E-04	1.34E-06	2.97E-05	2.73E-05	1.20E-01	7.71E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.50E-05	3.24E-04	3.93E-04	6.46E-07	8.46E-06	7.78E-06	5.00E-02	4.06E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.02E-04	3.83E-04	4.58E-04	6.31E-07	2.40E-05	2.21E-05	4.88E-02	9.20E-06	-	4.90E-02	4.45E-02
		Water truck	3000 gal	4	19	2.92E-05	3.43E-04	5.47E-05	4.70E-07	8.94E-06	5.04E-06	9.43E-02	2.25E-07	2.12E-07	9.44E-02	8.56E-02
		Excavator	300 hp	4	19	6.40E-05	7.94E-04	5.50E-04	2.75E-06	2.62E-05	2.41E-05	2.80E-01	1.30E-05	-	2.81E-01	2.54E-01
		Front end loader	180 hp	4	19	6.89E-05	9.82E-04	4.54E-04	2.41E-06	3.26E-05	3.00E-05	2.14E-01	1.10E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradin	**Tractor/crawler/dozer**	180 hp	6	19	1.52E-04	2.36E-03	8.56E-04	4.03E-06	8.91E-05	8.20E-05	3.59E-01	2.31E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	1.83E-04	1.19E-04	6.94E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.05E-05	9.16E-06	1.42E-02	1.29E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	5.01E-04	6.29E-03	4.82E-03	9.17E-06	3.36E-04	3.09E-04	8.15E-01	5.93E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	7.69E-07	9.35E-06	9.80E-06	1.75E-08	5.91E-07	5.44E-07	1.49E-03	9.52E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.39E-03	4.25E-02	3.26E-02	6.20E-05	2.27E-03	2.09E-03	5.51E+00	4.01E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	3.39E-03	4.25E-02	3.26E-02	6.20E-05	2.27E-03	2.09E-03	5.51E+00	4.01E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	5.06E-05	7.88E-04	2.85E-04	1.34E-06	2.97E-05	2.73E-05	1.20E-01	7.71E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	22	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.02E-02	2.74E-02
		Crane 80'	130 hp	16	22	2.93E-04	3.68E-03	2.82E-03	5.37E-06	1.97E-04	1.81E-04	4.77E-01	3.47E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	22	4.12E-05	4.58E-05	5.67E-04	5.32E-07	4.18E-06	1.78E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	9.87E-02	8.54E-01	9.05E-01	1.78E-03	4.87E-02	4.48E-02	1.52E+02	8.90E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.11E-02	1.64E-01	8.81E-02	3.45E-04	6.03E-03	5.54E-03	3.43E+01	2.11E-03	-	3.43E+01	3.11E+01
	Armoring	**1 ton pickup truck**		2	19	3.64E-06	5.03E-06	4.98E-05	1.34E-07	1.06E-06	4.59E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	4.59E-05	5.69E-04	3.94E-04	1.97E-06	1.88E-05	1.73E-05	2.01E-01	9.29E-06	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	3.64E-06	5.03E-06	4.98E-05	1.34E-07	1.06E-06	4.59E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Compaction	**Vibratory roller**	50 hp	7.38	19	2.00E-04	7.52E-04	8.98E-04	1.24E-06	4.71E-05	4.33E-05	9.58E-02	1.81E-05	-	9.62E-02	8.72E-02
		Tractor/crawler/dozer	250 hp	7.38	19	2.59E-04	4.04E-03	1.46E-03	6.89E-06	1.52E-04	1.40E-04	6.12E-01	3.95E-05	-	6.13E-01	5.56E-01
		Water truck	5000 gal	9.225	19	6.74E-05	7.90E-04	1.26E-04	1.08E-06	2.06E-05	1.16E-05	2.18E-01	5.19E-07	4.88E-07	2.18E-01	1.98E-01
	Maintenance	**Grader**	215 hp	340	209	9.58E-03	1.54E-01	5.38E-02	2.83E-04	4.93E-03	4.53E-03	2.51E+01	1.32E-03	-	2.52E+01	2.28E+01
Sand to Zuma Beach (19,500	***Material Excavation***	**1 ton pickup truck**		161.5	18	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
cy) (4/1-26)		**Front end loader**	350 hp	161.5	18	5.38E-03	6.80E-02	2.83E-02	1.31E-04	2.53E-03	2.33E-03	1.34E+01	6.64E-04	-	1.34E+01	1.22E+01
		Front end loader	350 hp	161.5	18	5.38E-03	6.80E-02	2.83E-02	1.31E-04	2.53E-03	2.33E-03	1.34E+01	6.64E-04	-	1.34E+01	1.22E+01
		Water truck	3000 gal	161.5	18	1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
		Excavator	400 hp	161.5	18	3.45E-03	4.28E-02	2.96E-02	1.48E-04	1.41E-03	1.30E-03	1.51E+01	6.98E-04	-	1.51E+01	1.37E+01
	Beach Crew	**1 ton pickup truck**		161.5	18	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Tractor/crawler/dozer	600 hp	161.5	18	9.70E-03	1.44E-01	7.70E-02	3.02E-04	5.27E-03	4.85E-03	3.00E+01	1.85E-03	-	3.00E+01	2.72E+01
		Water truck	3000 gal	161.5	18	1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2020 (tons per year)										Metric Tons CO2e/yr
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	
Fines to landfill (147,700 cy) (4/27-10/15)	***Material Excavation***	**1 ton pickup truck**		1066	120	1.94E-03	2.68E-03	2.65E-02	7.16E-05	5.65E-04	2.45E-04	2.39E+01	2.38E-03	1.24E-03	2.44E+01	2.21E+01
		Front end loader	350 hp	1066	120	3.55E-02	4.49E-01	1.87E-01	8.67E-04	1.67E-02	1.54E-02	8.83E+01	4.38E-03	-	8.84E+01	8.02E+01
		Front end loader	350 hp	1066	120	3.55E-02	4.49E-01	1.87E-01	8.67E-04	1.67E-02	1.54E-02	8.83E+01	4.38E-03	-	8.84E+01	8.02E+01
		Water truck	3000 gal	1066	120	7.79E-03	9.13E-02	1.46E-02	1.25E-04	2.38E-03	1.34E-03	2.51E+01	5.99E-05	5.64E-05	2.52E+01	2.28E+01
		Excavator	400 hp	1066	120	2.28E-02	2.82E-01	1.96E-01	9.77E-04	9.30E-03	8.55E-03	9.96E+01	4.61E-03	-	9.97E+01	9.04E+01
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	3.73E-02	5.42E-01	2.11E-01	8.05E-04	2.11E-02	1.94E-02	8.21E+01	5.02E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	4.66E-03	6.78E-02	2.64E-02	1.01E-04	2.64E-03	2.43E-03	1.03E+01	6.28E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	20	1.24E-03	1.11E-03	1.50E-02	2.41E-05	1.95E-04	8.68E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	61.7333	127	1.67E-03	2.29E-02	1.61E-02	8.95E-05	7.24E-04	6.66E-04	9.12E+00	2.07E-04	-	9.12E+00	8.28E+00
		3/4 ton pickup truck		57.7333	127	1.98E-04	1.79E-04	2.41E-03	3.87E-06	3.13E-05	1.39E-05	1.30E+00	1.29E-04	6.72E-05	1.32E+00	1.20E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	6.73E-04	6.06E-04	8.19E-03	1.31E-05	1.06E-04	4.73E-05	4.40E+00	4.37E-04	2.28E-04	4.48E+00	4.06E+00
		Diamond cutting saw	50 hp	196	127	3.71E-03	2.15E-02	2.12E-02	3.88E-05	1.04E-03	9.56E-04	3.00E+00	3.35E-04	-	3.01E+00	2.73E+00
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	7.55E-03	1.10E-01	3.44E-02	1.58E-04	4.41E-03	4.06E-03	1.61E+01	8.79E-04	-	1.62E+01	1.47E+01
		3/4 ton pickup truck		239.2283	127	8.21E-04	7.40E-04	1.00E-02	1.60E-05	1.30E-04	5.77E-05	5.37E+00	5.34E-04	2.78E-04	5.47E+00	4.96E+00
	Load/Haul	**Front end loader**	350 hp	32	127	1.07E-03	1.35E-02	5.61E-03	2.60E-05	5.01E-04	4.61E-04	2.65E+00	1.31E-04	-	2.65E+00	2.41E+00
		Water truck	3000 gal	521	127	3.81E-03	4.46E-02	7.13E-03	6.12E-05	1.16E-03	6.57E-04	1.23E+01	2.93E-05	2.76E-05	1.23E+01	1.12E+01
	Landfill	**Crane 260'**	375 hp	119.6141	127	3.77E-03	5.50E-02	1.72E-02	7.92E-05	2.21E-03	2.03E-03	8.07E+00	4.40E-04	-	8.08E+00	7.33E+00
	Micro-blast	**Crane 260'**	375 hp	60	127	1.89E-03	2.76E-02	8.63E-03	3.97E-05	1.11E-03	1.02E-03	4.05E+00	2.21E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	127	1.80E-04	1.42E-03	1.16E-03	2.95E-06	8.96E-05	8.24E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	127	2.06E-04	1.86E-04	2.51E-03	4.02E-06	3.25E-05	1.45E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	127	3.16E-03	4.60E-02	1.44E-02	6.62E-05	1.84E-03	1.70E-03	6.75E+00	3.68E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	127	9.72E-03	1.26E-02	5.59E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	5.53E-04	7.68E-04	3.63E+00	3.30E+00
		3/4 ton pickup truck		100	127	3.43E-04	3.09E-04	4.18E-03	6.70E-06	5.42E-05	2.41E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt Distributor**	3000 gal	6.7805	19	4.96E-05	5.81E-04	9.28E-05	7.97E-07	1.52E-05	8.55E-06	1.60E-01	3.81E-07	3.59E-07	1.60E-01	1.45E-01
		Excavator	430 hp	4.445	19	1.02E-04	1.26E-03	8.77E-04	4.38E-06	4.17E-05	3.83E-05	4.46E-01	2.06E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	19	4.97E-04	9.40E-03	2.53E-03	9.08E-06	2.75E-04	2.53E-04	9.03E-01	5.99E-05	-	9.05E-01	8.21E-01
	Drilling	**Rotary drill**	475 hp	7.3333	19	1.99E-04	2.72E-03	1.92E-03	1.06E-05	8.60E-05	7.91E-05	1.08E+00	2.46E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	19	2.52E-05	2.27E-05	3.06E-04	4.91E-07	3.98E-06	1.77E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	19	1.65E-04	1.49E-04	2.01E-03	3.22E-06	2.60E-05	1.16E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	19	9.10E-04	5.27E-03	5.18E-03	9.49E-06	2.55E-04	2.34E-04	7.34E-01	8.21E-05	-	7.36E-01	6.68E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	19	1.89E-03	2.76E-02	8.63E-03	3.98E-05	1.11E-03	1.02E-03	4.05E+00	2.21E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	19	2.06E-04	1.86E-04	2.51E-03	4.02E-06	3.26E-05	1.45E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
		Water truck	3000 gal	507	19	3.71E-03	4.34E-02	6.94E-03	5.96E-05	1.13E-03	6.39E-04	1.20E+01	2.85E-05	2.68E-05	1.20E+01	1.09E+01
	Landfill	**Crane 260'**	375 hp	30.0107	19	9.47E-04	1.38E-02	4.32E-03	1.99E-05	5.53E-04	5.09E-04	2.03E+00	1.10E-04	-	2.03E+00	1.84E+00
					Total	**4.36E-01**	**5.12E+00**	**3.53E+00**	**1.03E-02**	**2.05E-01**	**1.84E-01**	**1.13E+03**	**6.16E-02**	**5.93E-03**	**1.13E+03**	**1.03E+03**

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsi
Rindge
Surfrider
Topanga
Zuma
Landfill

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2020 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	209	6.30E-03	5.69E-03	7.68E-02	1.23E-04	9.96E-04	4.43E-04
Dust Control		Water truck	5000 gal	2320	209	3.25E-01	3.80E+00	6.08E-01	5.22E-03	9.92E-02	5.60E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	8.07E-02	7.28E-02	9.83E-01	1.58E-03	1.28E-02	5.67E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.16E-02	1.04E-02	1.41E-01	2.26E-04	1.83E-03	8.12E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.69E-03	2.33E-03	2.31E-02	6.23E-05	4.91E-04	2.13E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	5.43E-02	8.45E-01	3.06E-01	1.44E-03	3.18E-02	2.93E-02
		Chain saw		7.3335	19	1.04E-01	1.63E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	Front end loader	540 hp	3.696	19	3.83E-02	4.64E-01	2.87E-01	1.37E-03	1.80E-02	1.66E-02
		Tractor/crawler/dozer	310 hp	3.696	19	2.84E-02	4.13E-01	1.61E-01	6.13E-04	1.61E-02	1.48E-02
	Chipping	Brush chipper	250 hp	3.696	19	3.34E-02	2.96E-01	1.61E-01	9.73E-04	9.17E-03	8.44E-03
		Front end loader	540 hp	3.696	19	3.83E-02	4.64E-01	2.87E-01	1.37E-03	1.80E-02	1.66E-02
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.07E-02	1.66E-01	6.01E-02	2.83E-04	6.25E-03	5.75E-03
		Front end loader	49 hp	4	19	9.48E-03	6.82E-02	8.27E-02	1.36E-04	1.78E-03	1.64E-03
		Roller	47 hp	4	19	2.15E-02	8.06E-02	9.63E-02	1.33E-04	5.05E-03	4.65E-03
		Water truck	3000 gal	4	19	6.16E-03	7.22E-02	1.15E-02	9.90E-05	1.88E-03	1.06E-03
		Excavator	300 hp	4	19	1.35E-02	1.67E-01	1.16E-01	5.79E-04	5.51E-03	5.07E-03
		Front end loader	180 hp	4	19	1.45E-02	2.07E-01	9.57E-02	5.08E-04	6.87E-03	6.32E-03
	36" Diversion Pipe - gradin	Tractor/crawler/dozer	180 hp	6	19	3.20E-02	4.98E-01	1.80E-01	8.49E-04	1.88E-02	1.73E-02
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	3.86E-02	2.50E-02	1.46E+00	5.96E-05	1.97E-02	1.97E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	1.05E-01	1.32E+00	1.02E+00	1.93E-03	7.08E-02	6.51E-02
		Loader/backhoe	75 hp	0.0923	19	1.62E-04	1.97E-03	2.06E-03	3.68E-06	1.24E-04	1.15E-04
		Crane 94'	155 hp	155	19	7.13E-01	8.95E+00	6.86E+00	1.31E-02	4.78E-01	4.40E-01
		1 ton pickup truck		155	19	5.95E-02	8.21E-02	8.12E-01	2.19E-03	1.73E-02	7.49E-03
		Crane 94'	155 hp	155	19	7.13E-01	8.95E+00	6.86E+00	1.31E-02	4.78E-01	4.40E-01
		1 ton pickup truck		155	19	5.95E-02	8.21E-02	8.12E-01	2.19E-03	1.73E-02	7.49E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	1.07E-02	1.66E-01	6.01E-02	2.83E-04	6.25E-03	5.75E-03
	Dewatering	Concrete saw	13 hp	8	22	6.41E-02	4.74E-02	2.45E+00	1.19E-04	3.51E-02	3.50E-02
		Crane 80'	130 hp	16	22	5.33E-02	6.69E-01	5.13E-01	9.76E-04	3.58E-02	3.29E-02
		Flatbed truck		8	22	7.49E-03	8.32E-03	1.03E-01	9.67E-05	7.61E-04	3.25E-04
		Generator	80 hp	5856	244	1.62E+00	1.40E+01	1.48E+01	2.92E-02	7.98E-01	7.35E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	2.33E+00	3.46E+01	1.85E+01	7.26E-02	1.27E+00	1.17E+00
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.33E+00	3.46E+01	1.85E+01	7.26E-02	1.27E+00	1.17E+00
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.33E+00	3.46E+01	1.85E+01	7.26E-02	1.27E+00	1.17E+00
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	2.33E+00	3.46E+01	1.85E+01	7.26E-02	1.27E+00	1.17E+00
	Armoring	1 ton pickup truck		2	19	7.67E-04	1.06E-03	1.05E-02	2.83E-05	2.23E-04	9.66E-05
		Excavator	430 hp	2	19	9.66E-03	1.20E-01	8.30E-02	4.15E-04	3.95E-03	3.63E-03
		1 ton pickup truck		2	19	7.67E-04	1.06E-03	1.05E-02	2.83E-05	2.23E-04	9.66E-05
	Compaction	Vibratory roller	50 hp	7.38	19	4.21E-02	1.58E-01	1.89E-01	2.61E-04	9.91E-03	9.12E-03
		Tractor/crawler/dozer	250 hp	7.38	19	5.46E-02	8.50E-01	3.08E-01	1.45E-03	3.20E-02	2.95E-02
		Water truck	5000 gal	9.225	19	1.42E-02	1.66E-01	2.66E-02	2.28E-04	4.34E-03	2.45E-03
	Maintenance	Grader	215 hp	340	209	1.83E-01	2.95E+00	1.03E+00	5.41E-03	9.43E-02	8.67E-02
Sand to Zuma Beach (19,500 cy) (4/1-26)	*Material Excavation*	1 ton pickup truck		161.5	18	6.54E-02	9.03E-02	8.94E-01	2.41E-03	1.90E-02	8.24E-03
		Front end loader	350 hp	161.5	18	1.20E+00	1.51E+01	6.29E+00	2.92E-02	5.62E-01	5.17E-01
		Front end loader	350 hp	161.5	18	1.20E+00	1.51E+01	6.29E+00	2.92E-02	5.62E-01	5.17E-01
		Water truck	3000 gal	161.5	18	2.62E-01	3.08E+00	4.91E-01	4.22E-03	8.02E-02	4.53E-02
		Excavator	400 hp	161.5	18	7.66E-01	9.50E+00	6.58E+00	3.29E-02	3.13E-01	2.88E-01
	Beach Crew	1 ton pickup truck		161.5	18	6.54E-02	9.03E-02	8.94E-01	2.41E-03	1.90E-02	8.24E-03
		Tractor/crawler/dozer	600 hp	161.5	18	2.15E+00	3.19E+01	1.71E+01	6.70E-02	1.17E+00	1.08E+00
		Tractor/crawler/dozer	600 hp	161.5	18	2.15E+00	3.19E+01	1.71E+01	6.70E-02	1.17E+00	1.08E+00
		Tractor/crawler/dozer	600 hp	161.5	18	2.15E+00	3.19E+01	1.71E+01	6.70E-02	1.17E+00	1.08E+00
		Tractor/crawler/dozer	600 hp	161.5	18	2.15E+00	3.19E+01	1.71E+01	6.70E-02	1.17E+00	1.08E+00
		Water truck	3000 gal	161.5	18	2.62E-01	3.08E+00	4.91E-01	4.22E-03	8.02E-02	4.53E-02

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2020
Birthday of Martin Luther King, Jr.	1/20/2020
Washington's Birthday	2/17/2020
Memorial Day	5/25/2020
Independence Day	7/3/2020
Labor Day	9/7/2020
Columbus Day	10/12/2020
Veterans Day	11/11/2020
Thanksgiving Day	11/26/2020
Christmas Day	12/25/2020
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2020

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2020 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Fines to landfill (147,700 cy) (4/27-10/15)	*Material Excavation*	1 ton pickup truck		1066	120	6.47E-02	8.94E-02	8.85E-01	2.39E-03	1.88E-02	8.16E-03
		Front end loader	350 hp	1066	120	1.18E+00	1.50E+01	6.23E+00	2.89E-02	5.56E-01	5.12E-01
		Front end loader	350 hp	1066	120	1.18E+00	1.50E+01	6.23E+00	2.89E-02	5.56E-01	5.12E-01
		Water truck	3000 gal	1066	120	2.60E-01	3.04E+00	4.86E-01	4.18E-03	7.94E-02	4.48E-02
		Excavator	400 hp	1066	120	7.58E-01	9.41E+00	6.52E+00	3.26E-02	3.10E-01	2.85E-01
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	20	7.46E+00	1.08E+02	4.22E+01	1.61E-01	4.22E+00	3.88E+00
		Tractor/crawler/dozer	440 hp	90	20	9.32E-01	1.36E+01	5.27E+00	2.01E-02	5.27E-01	4.85E-01
		3/4 ton pickup truck		360	20	2.47E-01	2.23E-01	3.01E+00	4.82E-03	3.90E-02	1.74E-02
	Drilling	Rotary drill	475 hp	61.7333	127	5.26E-02	7.21E-01	5.09E-01	2.82E-03	2.28E-02	2.10E-02
		3/4 ton pickup truck		57.7333	127	6.24E-03	5.63E-03	7.60E-02	1.22E-04	9.86E-04	4.38E-04
	Cut with Diamond wire	3/4 ton pickup truck		196	127	2.12E-02	1.91E-02	2.58E-01	4.14E-04	3.35E-03	1.49E-03
		Diamond cutting saw	50 hp	196	127	1.17E-01	6.78E-01	6.66E-01	1.22E-03	3.27E-02	3.01E-02
	Lift/Load blocks	Crane 260'	375 hp	239.2283	127	2.38E-01	3.47E+00	1.08E+00	4.99E-03	1.39E-01	1.28E-01
		3/4 ton pickup truck		239.2283	127	2.59E-02	2.33E-02	3.15E-01	5.05E-04	4.09E-03	1.82E-03
	Load/Haul	Front end loader	350 hp	32	127	3.36E-02	4.24E-01	1.77E-01	8.20E-04	1.58E-02	1.45E-02
		Water truck	3000 gal	521	127	1.20E-01	1.41E+00	2.25E-01	1.93E-03	3.67E-02	2.07E-02
	Landfill	Crane 260'	375 hp	119.6141	127	1.19E-01	1.73E+00	5.42E-01	2.50E-03	6.95E-02	6.39E-02
	Micro-blast	Crane 260'	375 hp	60	127	5.96E-02	8.69E-01	2.72E-01	1.25E-03	3.48E-02	3.21E-02
		Horizontal boring drill	10 hp	55	127	5.68E-03	4.46E-02	3.64E-02	9.29E-05	2.82E-03	2.60E-03
		3/4 ton pickup truck		60	127	6.48E-03	5.85E-03	7.90E-02	1.27E-04	1.02E-03	4.56E-04
	Demolish spillway	Crane 260'	375 hp	100	127	9.94E-02	1.45E+00	4.53E-01	2.09E-03	5.81E-02	5.34E-02
		Air compressor	50 hp	200	127	3.06E-01	3.97E-01	1.76E+01	1.30E-03	8.17E-03	8.15E-03
		3/4 ton pickup truck		100	127	1.08E-02	9.75E-03	1.32E-01	2.11E-04	1.71E-03	7.59E-04
Demolition - Notch 5'	*Excavation for Dam Demo*	Asphalt Distributor	3000 gal	6.7805	19	1.04E-02	1.22E-01	1.95E-02	1.68E-04	3.19E-03	1.80E-03
		Excavator	430 hp	4.445	19	2.15E-02	2.66E-01	1.85E-01	9.22E-04	8.77E-03	8.07E-03
		Tractor/crawler/dozer	850 hp	3.2327	19	1.05E-01	1.98E+00	5.33E-01	1.91E-03	5.80E-02	5.33E-02
	Drilling	Rotary drill	475 hp	7.3333	19	4.18E-02	5.72E-01	4.04E-01	2.24E-03	1.81E-02	1.67E-02
		3/4 ton Pickup truck		7.3333	19	5.30E-03	4.78E-03	6.45E-02	1.03E-04	8.37E-04	3.72E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	19	3.47E-02	3.13E-02	4.22E-01	6.77E-04	5.48E-03	2.44E-03
		Diamond cutting saw	50 hp	48	19	1.91E-01	1.11E+00	1.09E+00	2.00E-03	5.36E-02	4.93E-02
	Lift/Load blocks	Crane 260'	375 hp	60.0214	19	3.99E-01	5.81E+00	1.82E+00	8.37E-03	2.33E-01	2.14E-01
		3/4 ton Pickup truck		60.0214	19	4.34E-02	3.91E-02	5.28E-01	8.47E-04	6.85E-03	3.05E-03
		Water truck	3000 gal	507	19	7.80E-01	9.15E+00	1.46E+00	1.25E-02	2.39E-01	1.35E-01
	Landfill	Crane 260'	375 hp	30.0107	19	1.99E-01	2.91E+00	9.09E-01	4.18E-03	1.16E-01	1.07E-01
					Total	**4.15E+01**	**5.56E+02**	**3.07E+02**	**1.09E+00**	**2.12E+01**	**1.92E+01**

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsi						
Rindge	32	421	235	1	16	15
Surfrider	0	0	0	0	0	0
Topanga	0	0	0	0	0	0
Zuma	9	131	70	0	5	4
Landfill	0	5	1	0	0	0

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	210	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Environmental protection measures	Biologist	3/4 ton pickup truck		1229.3333	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Chain saw		7.3335	19	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.148	1.214	0.746	0.005	0.038	0.035	403.250	0.013	0.000
		Front end loader	540 hp	3.696	19	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
Landscaping	*Rock from Landfill*	Loader/backhoe	75 hp	24	20	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
		Front end loader	350 hp	20	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Front end loader	49 hp	4	19	0.199	1.450	1.811	0.003	0.032	0.030	231.302	0.018	0.000
		Roller	47 hp	4	19	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Water truck	3000 gal	4	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	300 hp	4	19	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Front end loader	180 hp	4	19	0.080	1.085	0.567	0.003	0.036	0.033	270.061	0.013	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.438	1.578	92.570	0.004	1.249	1.246	148.932	0.139	0.122
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		Loader/backhoe	75 hp	0.0923	19	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
		Crane 94'	155 hp	155	19	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		1 ton pickup truck		155	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		1 ton pickup truck		155	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.070	2.268	117.560	0.006	1.685	1.681	200.981	0.175	0.188
		Crane 80'	130 hp	16	23	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
		Flatbed truck		8	23	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.172	1.509	1.744	0.003	0.081	0.075	294.384	0.016	0.000
Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
		Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.085	1.211	0.698	0.003	0.045	0.041	280.790	0.016	0.000
	Armoring	1 ton pickup truck		2	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Excavator	430 hp	2	19	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		1 ton pickup truck		2	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Compaction	Vibratory roller	50 hp	17.28	19	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Tractor/crawler/dozer	250 hp	17.28	19	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Water truck	5000 gal	21.6	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Maintenance	Grader	215 hp	340	210	0.113	1.791	0.661	0.004	0.057	0.052	312.002	0.015	0.000
Fines to landfill (82,300 cy) (4/1-7/10)	*Material Excavation*	1 ton pickup truck		597	70	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Front end loader	350 hp	597	70	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	597	70	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	597	70	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	400 hp	597	70	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	*Material Excavation*	1 ton pickup truck		195.5	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	195.5	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	195.5	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	400 hp	195.5	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	*Material Excavation*	1 ton pickup truck		585	72	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Front end loader	350 hp	585	72	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Front end loader	350 hp	585	72	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	585	72	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	400 hp	585	72	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Rindge Dam & Spillway Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		Tractor/crawler/dozer	440 hp	90	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		3/4 ton pickup truck		360	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	61.733	126	0.049	0.613	0.500	0.003	0.021	0.019	282.166	0.006	0.000
		3/4 ton pickup truck		57.733	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton pickup truck		204	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	204	126	0.306	1.918	1.917	0.004	0.082	0.076	277.562	0.028	0.000
	Lift/Load blocks	Crane 260'	375 hp	239.2283	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		3/4 ton pickup truck		239.2283	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	32	126	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
		Water truck	3000 gal	14	126	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Landfill	Crane 260'	375 hp	119.6141	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	Micro-blast	Crane 260'	375 hp	60	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		Horizontal boring drill	10 hp	55	126	0.295	2.329	1.909	0.005	0.146	0.135	312.570	0.033	0.000
		3/4 ton pickup truck		60	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	100	126	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
		Air compressor	50 hp	200	126	0.837	1.059	50.665	0.004	0.024	0.023	307.059	0.048	0.067
		3/4 ton pickup truck		100	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Rindge Dam Concrete Arc Foundation Demolition	*Drilling*	Rotary drill	475 hp	120.7333	20	0.049	0.613	0.500	0.003	0.021	0.019	282.166	0.006	0.000
		3/4 ton Pickup truck		128.7333	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	34	20	0.079	0.944	0.446	0.002	0.035	0.032	214.821	0.010	0.000
	Fracture	Excavator	400 hp	540	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	300 hp	540	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Excavator	300 hp	270	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
		Tractor/crawler/dozer	440 hp	270	20	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
		3/4 ton Pickup truck		540	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Road Improvement Plan	*Stabilize*	Grader	135 hp	30.4	20	0.171	1.978	1.884	0.004	0.110	0.102	320.916	0.020	0.000
		Tractor/crawler/dozer	250 hp	30.4	20	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
		Excavator	400 hp	30.4	20	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
	Asphalt Road	Asphalt hopper	300 hp	442.5143	20	0.071	0.746	0.490	0.002	0.027	0.025	246.840	0.012	0.000
		Line Striper	23 hp	92.576	20	0.110	0.330	8.519	0.003	0.021	0.021	260.327	0.006	0.021
		Roller	70 hp	442.5143	20	0.110	1.347	1.455	0.003	0.082	0.076	222.777	0.018	0.000
		Vibratory roller	33 hp	442.5143	20	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
		Flatbed truck		92.576	20	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
		3/4 ton pickup truck		92.576	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056

Total
Daily Onsite Emissions (lb/day)
Rindge
Surfrider
Topanga
Zuma
Landfill

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2021 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	210	2.89E-04	2.75E-04	3.55E-03	6.45E-06	5.16E-05	2.27E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	210	1.79E-02	1.28E-01	3.40E-02	2.72E-04	4.72E-03	2.50E-03	5.45E+01	1.30E-04	1.23E-04	5.45E+01	4.94E+01
Environmental protection measures	**Biologist**	**3/4 ton pickup truck**		1229.3333	210	3.70E-03	3.52E-03	4.54E-02	8.26E-05	6.61E-04	2.91E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	**3/4 ton pickup truck**		16	19	4.82E-05	4.58E-05	5.91E-04	1.07E-06	8.60E-06	3.79E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	6.69E-06	1.00E-05	9.27E-05	2.97E-07	2.31E-06	9.92E-07	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	2.45E-04	3.76E-03	1.42E-03	6.85E-06	1.41E-04	1.30E-04	6.09E-01	3.71E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	4.95E-04	7.76E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	3.08E-05	2.66E-06	3.89E-03	3.53E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	1.79E-04	2.10E-03	1.34E-03	6.49E-06	8.15E-05	7.49E-05	6.45E-01	3.06E-05	-	6.46E-01	5.86E-01
		Tractor/crawler/dozer	310 hp	3.696	19	1.27E-04	1.77E-03	7.39E-04	2.91E-06	6.99E-05	6.43E-05	2.97E-01	1.72E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	1.50E-04	1.24E-03	7.59E-04	4.62E-06	3.87E-05	3.56E-05	4.11E-01	1.36E-05	-	4.11E-01	3.73E-01
		Front end loader	540 hp	3.696	19	1.79E-04	2.10E-03	1.34E-03	6.49E-06	8.15E-05	7.49E-05	6.45E-01	3.06E-05	-	6.46E-01	5.86E-01
Landscaping	***Rock from Landfill***	**Loader/backhoe**	75 hp	24	20	1.79E-04	2.19E-03	2.54E-03	4.55E-06	1.29E-04	1.19E-04	3.88E-01	2.30E-05	-	3.88E-01	3.52E-01
		Front end loader	350 hp	20	20	6.10E-04	7.29E-03	3.44E-03	1.63E-05	2.72E-04	2.50E-04	1.66E+00	7.82E-05	-	1.66E+00	1.51E+00
		Dump truck	20cy/24 ton	20	20	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
		Dump truck	20cy/24 ton	20	20	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	4.82E-05	7.37E-04	2.79E-04	1.34E-06	2.77E-05	2.55E-05	1.20E-01	7.29E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.30E-05	3.13E-04	3.91E-04	6.46E-07	6.99E-06	6.43E-06	5.00E-02	3.88E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	9.22E-05	3.72E-04	4.49E-04	6.31E-07	2.13E-05	1.96E-05	4.88E-02	8.32E-06	-	4.90E-02	4.44E-02
		Water truck	3000 gal	4	19	3.08E-05	2.20E-04	5.86E-05	4.69E-07	8.14E-06	4.31E-06	9.39E-02	2.25E-07	2.12E-07	9.40E-02	8.53E-02
		Excavator	300 hp	4	19	5.97E-05	6.73E-04	5.47E-04	2.75E-06	2.25E-05	2.07E-05	2.80E-01	1.23E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	6.32E-05	8.61E-04	4.50E-04	2.41E-06	2.87E-05	2.64E-05	2.14E-01	1.04E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	1.45E-04	2.21E-03	8.37E-04	4.03E-06	8.32E-05	7.66E-05	3.59E-01	2.19E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	1.83E-04	1.18E-04	6.94E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.04E-05	9.14E-06	1.42E-02	1.29E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	4.65E-04	5.77E-03	4.82E-03	9.17E-06	3.08E-04	2.83E-04	8.15E-01	5.50E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	6.88E-07	8.42E-06	9.78E-06	1.75E-08	4.97E-07	4.57E-07	1.49E-03	8.84E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	3.14E-03	3.90E-02	3.26E-02	6.20E-05	2.08E-03	1.91E-03	5.51E+00	3.72E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	3.14E-03	3.90E-02	3.26E-02	6.20E-05	2.08E-03	1.91E-03	5.51E+00	3.72E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	4.82E-05	7.37E-04	2.79E-04	1.34E-06	2.77E-05	2.55E-05	1.20E-01	7.29E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.52E-04	2.60E-04	1.35E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.01E-05	2.16E-05	3.01E-02	2.73E-02
		Crane 80'	130 hp	16	23	2.72E-04	3.38E-03	2.82E-03	5.37E-06	1.80E-04	1.66E-04	4.77E-01	3.22E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	3.47E-05	3.98E-05	4.78E-04	5.33E-07	4.15E-06	1.76E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	8.88E-02	7.79E-01	9.00E-01	1.78E-03	4.19E-02	3.86E-02	1.52E+02	8.02E-03	-	1.52E+02	1.38E+02
Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.04E-02	1.48E-01	8.53E-02	3.45E-04	5.43E-03	5.00E-03	3.43E+01	2.00E-03	-	3.43E+01	3.11E+01
	Armoring	**1 ton pickup truck**		2	19	3.04E-06	4.56E-06	4.21E-05	1.35E-07	1.05E-06	4.51E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	4.28E-05	4.82E-04	3.92E-04	1.97E-06	1.61E-05	1.48E-05	2.01E-01	8.81E-06	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	3.04E-06	4.56E-06	4.21E-05	1.35E-07	1.05E-06	4.51E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Compaction	**Vibratory roller**	50 hp	17.28	19	4.24E-04	1.71E-03	2.06E-03	2.90E-06	9.81E-05	9.03E-05	2.24E-01	3.82E-05	-	2.25E-01	2.04E-01
		Tractor/crawler/dozer	250 hp	17.28	19	5.78E-04	8.85E-03	3.35E-03	1.61E-05	3.33E-04	3.06E-04	1.43E+00	8.75E-05	-	1.44E+00	1.30E+00
		Water truck	5000 gal	21.6	19	1.67E-04	1.19E-03	3.16E-04	2.53E-06	4.40E-05	2.33E-05	5.07E-01	1.21E-06	1.14E-06	5.07E-01	4.60E-01
	Maintenance	**Grader**	215 hp	340	210	9.12E-03	1.44E-01	5.33E-02	2.83E-04	4.57E-03	4.21E-03	2.51E+01	1.25E-03	-	2.52E+01	2.28E+01
Fines to landfill (82,300 cy) (4/1-7/10)	***Material Excavation***	**1 ton pickup truck**		597	70	9.08E-04	1.36E-03	1.26E-02	4.02E-05	3.14E-04	1.35E-04	1.34E+01	1.33E-03	6.95E-04	1.36E+01	1.24E+01
		Front end loader	350 hp	597	70	1.82E-02	2.18E-01	1.03E-01	4.86E-04	8.12E-03	7.47E-03	4.95E+01	2.34E-03	-	4.95E+01	4.49E+01
		Front end loader	350 hp	597	70	1.82E-02	2.18E-01	1.03E-01	4.86E-04	8.12E-03	7.47E-03	4.95E+01	2.34E-03	-	4.95E+01	4.49E+01
		Water truck	3000 gal	597	70	4.60E-03	3.29E-02	8.74E-03	6.99E-05	1.22E-03	6.44E-04	1.40E+01	3.36E-05	3.16E-05	1.40E+01	1.27E+01
		Excavator	400 hp	597	70	1.19E-02	1.34E-01	1.09E-01	5.47E-04	4.48E-03	4.12E-03	5.58E+01	2.45E-03	-	5.58E+01	5.06E+01
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	***Material Excavation***	**1 ton pickup truck**		195.5	20	2.97E-04	4.46E-04	4.12E-03	1.32E-05	1.03E-04	4.41E-05	4.39E+00	4.36E-04	2.28E-04	4.47E+00	4.05E+00
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	5.96E-03	7.12E-02	3.36E-02	1.59E-04	2.66E-03	2.45E-03	1.62E+01	7.65E-04	-	1.62E+01	1.47E+01
		Water truck	3000 gal	195.5	20	1.51E-03	1.08E-02	2.86E-03	2.29E-05	3.98E-04	2.11E-04	4.59E+00	1.10E-05	1.03E-05	4.59E+00	4.17E+00
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	3.89E-03	4.38E-02	3.56E-02	1.79E-04	1.47E-03	1.35E-03	1.83E+01	8.01E-04	-	1.83E+01	1.66E+01
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	***Material Excavation***	**1 ton pickup truck**		585	72	8.89E-04	1.33E-03	1.23E-02	3.94E-05	3.07E-04	1.32E-04	1.31E+01	1.31E-03	6.81E-04	1.34E+01	1.21E+01
		Front end loader	350 hp	585	72	1.78E-02	2.13E-01	1.01E-01	4.76E-04	7.96E-03	7.32E-03	4.85E+01	2.29E-03	-	4.85E+01	4.40E+01
		Front end loader	350 hp	585	72	1.78E-02	2.13E-01	1.01E-01	4.76E-04	7.96E-03	7.32E-03	4.85E+01	2.29E-03	-	4.85E+01	4.40E+01
		Water truck	3000 gal	585	72	4.51E-03	3.22E-02	8.56E-03	6.85E-05	1.19E-03	6.31E-04	1.37E+01	3.29E-05	3.10E-05	1.37E+01	1.25E+01
		Excavator	400 hp	585	72	1.16E-02	1.31E-01	1.07E-01	5.36E-04	4.39E-03	4.04E-03	5.46E+01	2.40E-03	-	5.47E+01	4.96E+01

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2021 (tons per year)									Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Rindge Dam & Spillway Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	3.51E-02	4.91E-01	2.04E-01	8.05E-04	1.93E-02	1.78E-02	8.21E+01	4.77E-03	-	8.22E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	4.38E-03	6.13E-02	2.55E-02	1.01E-04	2.41E-03	2.22E-03	1.03E+01	5.96E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	20	1.08E-03	1.03E-03	1.33E-02	2.42E-05	1.94E-04	8.53E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	61.733	126	1.57E-03	1.98E-02	1.61E-02	8.95E-05	6.64E-04	6.10E-04	9.12E+00	1.99E-04	-	9.12E+00	8.28E+00
		3/4 ton pickup truck		57.733	126	1.74E-04	1.65E-04	2.13E-03	3.88E-06	3.10E-05	1.37E-05	1.30E+00	1.29E-04	6.72E-05	1.32E+00	1.20E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		204	126	6.14E-04	5.84E-04	7.54E-03	1.37E-05	1.10E-04	4.83E-05	4.58E+00	4.55E-04	2.37E-04	4.66E+00	4.23E+00
		Diamond cutting saw	50 hp	204	126	3.44E-03	2.16E-02	2.16E-02	4.03E-05	9.27E-04	8.53E-04	3.12E+00	3.11E-04	-	3.13E+00	2.84E+00
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	126	6.95E-03	9.81E-02	3.36E-02	1.58E-04	3.95E-03	3.63E-03	1.61E+01	8.37E-04	-	1.62E+01	1.47E+01
		3/4 ton pickup truck		239.2283	126	7.20E-04	6.85E-04	8.84E-03	1.61E-05	1.29E-04	5.67E-05	5.37E+00	5.34E-04	2.78E-04	5.47E+00	4.96E+00
	Load/Haul	**Front end loader**	350 hp	32	126	9.76E-04	1.17E-02	5.51E-03	2.60E-05	4.35E-04	4.00E-04	2.65E+00	1.25E-04	-	2.65E+00	2.41E+00
		Water truck	3000 gal	14	126	1.08E-04	7.71E-04	2.05E-04	1.64E-06	2.85E-05	1.51E-05	3.29E-01	7.87E-07	7.41E-07	3.29E-01	2.98E-01
	Landfill	**Crane 260'**	375 hp	119.6141	126	3.48E-03	4.90E-02	1.68E-02	7.92E-05	1.97E-03	1.82E-03	8.07E+00	4.18E-04	-	8.08E+00	7.33E+00
	Micro-blast	**Crane 260'**	375 hp	60	126	1.74E-03	2.46E-02	8.42E-03	3.97E-05	9.90E-04	9.11E-04	4.05E+00	2.10E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	126	1.79E-04	1.41E-03	1.16E-03	2.95E-06	8.86E-05	8.15E-05	1.89E-01	1.99E-05	-	1.90E-01	1.72E-01
		3/4 ton pickup truck		60	126	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	126	2.91E-03	4.10E-02	1.40E-02	6.62E-05	1.65E-03	1.52E-03	6.75E+00	3.50E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	126	9.23E-03	1.17E-02	5.58E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	5.25E-04	7.40E-04	3.63E+00	3.29E+00
		3/4 ton pickup truck		100	126	3.01E-04	2.86E-04	3.70E-03	6.72E-06	5.38E-05	2.37E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Rindge Dam Concrete Arc Foundation Demolition	***Drilling***	**Rotary drill**	475 hp	120.7333	20	3.07E-03	3.88E-02	3.16E-02	1.75E-04	1.30E-03	1.19E-03	1.78E+01	3.89E-04	-	1.78E+01	1.62E+01
		3/4 ton Pickup truck		128.7333	20	3.88E-04	3.68E-04	4.76E-03	8.65E-06	6.92E-05	3.05E-05	2.89E+00	2.87E-04	1.50E-04	2.94E+00	2.67E+00
	Load/Haul	**Front end loader**	350 hp	34	20	1.04E-03	1.24E-02	5.85E-03	2.77E-05	4.62E-04	4.25E-04	2.82E+00	1.33E-04	-	2.82E+00	2.56E+00
	Fracture	**Excavator**	400 hp	540	20	1.07E-02	1.21E-01	9.84E-02	4.95E-04	4.05E-03	3.73E-03	5.04E+01	2.21E-03	-	5.05E+01	4.58E+01
		Excavator	300 hp	540	20	8.06E-03	9.08E-02	7.38E-02	3.71E-04	3.04E-03	2.80E-03	3.78E+01	1.66E-03	-	3.79E+01	3.44E+01
		Excavator	300 hp	270	20	4.03E-03	4.54E-02	3.69E-02	1.86E-04	1.52E-03	1.40E-03	1.89E+01	8.30E-04	-	1.89E+01	1.72E+01
		Tractor/crawler/dozer	440 hp	270	20	1.31E-02	1.84E-01	7.66E-02	3.02E-04	7.24E-03	6.66E-03	3.08E+01	1.79E-03	-	3.08E+01	2.79E+01
		3/4 ton Pickup truck		540	20	1.63E-03	1.55E-03	2.00E-02	3.63E-05	2.90E-04	1.28E-04	1.21E+01	1.20E-03	6.29E-04	1.23E+01	1.12E+01
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	7.72E-04	8.95E-03	8.52E-03	1.63E-05	4.99E-04	4.59E-04	1.45E+00	9.02E-05	-	1.45E+00	1.32E+00
		Tractor/crawler/dozer	250 hp	30.4	20	1.02E-03	1.56E-02	5.89E-03	2.84E-05	5.86E-04	5.39E-04	2.52E+00	1.54E-04	-	2.53E+00	2.29E+00
		Excavator	400 hp	30.4	20	6.05E-04	6.82E-03	5.54E-03	2.79E-05	2.28E-04	2.10E-04	2.84E+00	1.25E-04	-	2.84E+00	2.58E+00
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	1.04E-02	1.09E-01	7.17E-02	3.55E-04	4.00E-03	3.68E-03	3.61E+01	1.69E-03	-	3.62E+01	3.28E+01
		Line Striper	23 hp	92.576	20	2.59E-04	7.76E-04	2.00E-02	6.07E-06	4.87E-05	4.86E-05	6.11E-01	1.47E-05	5.01E-05	6.27E-01	5.69E-01
		Roller	70 hp	442.5143	20	3.74E-03	4.60E-02	4.97E-02	8.92E-05	2.81E-03	2.59E-03	7.61E+00	6.15E-04	-	7.62E+00	6.91E+00
		Vibratory roller	33 hp	442.5143	20	7.16E-03	2.89E-02	3.48E-02	4.90E-05	1.66E-03	1.53E-03	3.79E+00	6.46E-04	-	3.80E+00	3.45E+00
		Flatbed truck		92.576	20	4.02E-04	4.61E-04	5.53E-03	6.16E-06	4.81E-05	2.03E-05	2.08E+00	4.70E-04	2.18E-04	2.16E+00	1.96E+00
		3/4 ton pickup truck		92.576	20	2.79E-04	2.65E-04	3.42E-03	6.22E-06	4.98E-05	2.19E-05	2.08E+00	2.07E-04	1.08E-04	2.12E+00	1.92E+00
					Total	**4.61E-01**	**4.99E+00**	**3.95E+00**	**1.24E-02**	**2.03E-01**	**1.82E-01**	**1.34E+03**	**6.91E-02**	**6.87E-03**	**1.34E+03**	**1.22E+03**
					Daily Onsi											
					Rindge											
					Surfrider											
					Topanga											
					Zuma											
					Landfill											

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year	2021
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	210	5.50E-03	5.23E-03	6.76E-02	1.23E-04	9.83E-04	4.33E-04
Dust Control		**Water truck**	5000 gal	2320	210	3.41E-01	2.43E+00	6.47E-01	5.18E-03	9.00E-02	4.76E-02
Environmental protection measures	**Biologist**	**3/4 ton pickup truck**		1229.3333	210	7.05E-02	6.70E-02	8.65E-01	1.57E-03	1.26E-02	5.55E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.01E-02	9.64E-03	1.24E-01	2.26E-04	1.81E-03	7.98E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.41E-03	2.11E-03	1.95E-02	6.24E-05	4.87E-04	2.09E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	5.17E-02	7.91E-01	2.99E-01	1.44E-03	2.97E-02	2.74E-02
		Chain saw		7.3335	19	1.04E-01	1.63E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	**Front end loader**	540 hp	3.696	19	3.76E-02	4.43E-01	2.82E-01	1.37E-03	1.72E-02	1.58E-02
		Tractor/crawler/dozer	310 hp	3.696	19	2.67E-02	3.74E-01	1.55E-01	6.13E-04	1.47E-02	1.35E-02
	Chipping	**Brush chipper**	250 hp	3.696	19	3.17E-02	2.60E-01	1.60E-01	9.73E-04	8.14E-03	7.49E-03
		Front end loader	540 hp	3.696	19	3.76E-02	4.43E-01	2.82E-01	1.37E-03	1.72E-02	1.58E-02
Landscaping	***Rock from Landfill***	**Loader/backhoe**	75 hp	24	20	3.58E-02	4.38E-01	5.09E-01	9.09E-04	2.58E-02	2.38E-02
		Front end loader	350 hp	20	20	1.22E-01	1.46E+00	6.88E-01	3.25E-03	5.44E-02	5.01E-02
		Dump truck	20cy/24 ton	20	20	3.08E-02	2.20E-01	5.86E-02	4.69E-04	8.14E-03	4.31E-03
		Dump truck	20cy/24 ton	20	20	3.08E-02	2.20E-01	5.86E-02	4.69E-04	8.14E-03	4.31E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.01E-02	1.55E-01	5.88E-02	2.83E-04	5.84E-03	5.37E-03
		Front end loader	49 hp	4	19	9.05E-03	6.59E-02	8.24E-02	1.36E-04	1.47E-03	1.35E-03
		Roller	47 hp	4	19	1.94E-02	7.83E-02	9.45E-02	1.33E-04	4.49E-03	4.13E-03
		Water truck	3000 gal	4	19	6.49E-03	4.64E-02	1.23E-02	9.87E-05	1.71E-03	9.08E-04
		Excavator	300 hp	4	19	1.26E-02	1.42E-01	1.15E-01	5.79E-04	4.74E-03	4.36E-03
		Front end loader	180 hp	4	19	1.33E-02	1.81E-01	9.48E-02	5.08E-04	6.04E-03	5.56E-03
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	3.04E-02	4.66E-01	1.76E-01	8.49E-04	1.75E-02	1.61E-02
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	3.85E-02	2.49E-02	1.46E+00	5.96E-05	1.97E-02	1.97E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	9.79E-02	1.21E+00	1.01E+00	1.93E-03	6.48E-02	5.96E-02
		Loader/backhoe	75 hp	0.0923	19	1.45E-04	1.77E-03	2.06E-03	3.68E-06	1.05E-04	9.62E-05
		Crane 94'	155 hp	155	19	6.62E-01	8.21E+00	6.86E+00	1.31E-02	4.38E-01	4.03E-01
		1 ton pickup truck		155	19	4.96E-02	7.44E-02	6.87E-01	2.20E-03	1.71E-02	7.36E-03
		Crane 94'	155 hp	155	20	6.29E-01	7.80E+00	6.52E+00	1.24E-02	4.16E-01	3.83E-01
		1 ton pickup truck		155	20	4.71E-02	7.07E-02	6.53E-01	2.09E-03	1.63E-02	6.99E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	9.64E-03	1.47E-01	5.58E-02	2.69E-04	5.55E-03	5.11E-03
	Dewatering	**Concrete saw**	13 hp	8	23	6.12E-02	4.52E-02	2.34E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	4.73E-02	5.87E-01	4.91E-01	9.33E-04	3.13E-02	2.88E-02
		Flatbed truck		8	23	6.03E-03	6.93E-03	8.32E-02	9.26E-05	7.22E-04	3.06E-04
		Generator	80 hp	5856	244	1.46E+00	1.28E+01	1.48E+01	2.92E-02	6.87E-01	6.32E-01
Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.18E+00	3.11E+01	1.79E+01	7.26E-02	1.14E+00	1.05E+00
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.18E+00	3.11E+01	1.79E+01	7.26E-02	1.14E+00	1.05E+00
		Tractor/crawler/dozer	600 hp	184.6154	19	2.18E+00	3.11E+01	1.79E+01	7.26E-02	1.14E+00	1.05E+00
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	2.18E+00	3.11E+01	1.79E+01	7.26E-02	1.14E+00	1.05E+00
	Armoring	**1 ton pickup truck**		2	19	6.40E-04	9.61E-04	8.87E-03	2.84E-05	2.21E-04	9.49E-05
		Excavator	430 hp	2	19	9.00E-03	1.02E-01	8.25E-02	4.15E-04	3.40E-03	3.13E-03
		1 ton pickup truck		2	19	6.40E-04	9.61E-04	8.87E-03	2.84E-05	2.21E-04	9.49E-05
	Compaction	**Vibratory roller**	50 hp	17.28	19	8.92E-02	3.60E-01	4.34E-01	6.10E-04	2.07E-02	1.90E-02
		Tractor/crawler/dozer	250 hp	17.28	19	1.22E-01	1.86E+00	7.05E-01	3.40E-03	7.01E-02	6.45E-02
		Water truck	5000 gal	21.6	19	3.51E-02	2.50E-01	6.66E-02	5.33E-04	9.26E-03	4.90E-03
	Maintenance	**Grader**	215 hp	340	210	1.74E-01	2.75E+00	1.01E+00	5.39E-03	8.71E-02	8.01E-02
Fines to landfill (82,300 cy) (4/1-7/10)	***Material Excavation***	**1 ton pickup truck**		597	70	5.19E-02	7.78E-02	7.18E-01	2.30E-03	1.79E-02	7.69E-03
		Front end loader	350 hp	597	70	1.04E+00	1.24E+01	5.87E+00	2.78E-02	4.64E-01	4.27E-01
		Front end loader	350 hp	597	70	1.04E+00	1.24E+01	5.87E+00	2.78E-02	4.64E-01	4.27E-01
		Water truck	3000 gal	597	70	2.63E-01	1.88E+00	4.99E-01	4.00E-03	6.94E-02	3.68E-02
		Excavator	400 hp	597	70	6.79E-01	7.65E+00	6.22E+00	3.13E-02	2.56E-01	2.36E-01
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	***Material Excavation***	**1 ton pickup truck**		195.5	20	5.94E-02	8.92E-02	8.23E-01	2.64E-03	2.05E-02	8.82E-03
		Front end loader	350 hp	195.5	20	1.19E+00	1.42E+01	6.73E+00	3.18E-02	5.32E-01	4.89E-01
		Front end loader	350 hp	195.5	20	1.19E+00	1.42E+01	6.73E+00	3.18E-02	5.32E-01	4.89E-01
		Front end loader	350 hp	195.5	20	1.19E+00	1.42E+01	6.73E+00	3.18E-02	5.32E-01	4.89E-01
		Front end loader	350 hp	195.5	20	1.19E+00	1.42E+01	6.73E+00	3.18E-02	5.32E-01	4.89E-01
		Water truck	3000 gal	195.5	20	3.01E-01	2.15E+00	5.72E-01	4.58E-03	7.96E-02	4.22E-02
		Excavator	400 hp	195.5	20	7.78E-01	8.77E+00	7.13E+00	3.58E-02	2.93E-01	2.70E-01
		Excavator	400 hp	195.5	20	7.78E-01	8.77E+00	7.13E+00	3.58E-02	2.93E-01	2.70E-01
		Excavator	400 hp	195.5	20	7.78E-01	8.77E+00	7.13E+00	3.58E-02	2.93E-01	2.70E-01
		Excavator	400 hp	195.5	20	7.78E-01	8.77E+00	7.13E+00	3.58E-02	2.93E-01	2.70E-01
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	***Material Excavation***	**1 ton pickup truck**		585	72	4.94E-02	7.41E-02	6.84E-01	2.19E-03	1.71E-02	7.33E-03
		Front end loader	350 hp	585	72	9.91E-01	1.18E+01	5.59E+00	2.64E-02	4.42E-01	4.07E-01
		Front end loader	350 hp	585	72	9.91E-01	1.18E+01	5.59E+00	2.64E-02	4.42E-01	4.07E-01
		Water truck	3000 gal	585	72	2.51E-01	1.79E+00	4.76E-01	3.81E-03	6.62E-02	3.50E-02
		Excavator	400 hp	585	72	6.47E-01	7.29E+00	5.92E+00	2.98E-02	2.44E-01	2.24E-01

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2020

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day)					
						VOC	NOx	CO	SO2	PM10	PM2.5
Rindge Dam & Spillway Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	20	7.01E+00	9.81E+01	4.08E+01	1.61E-01	3.86E+00	3.55E+00
		Tractor/crawler/dozer	440 hp	90	20	8.76E-01	1.23E+01	5.11E+00	2.01E-02	4.83E-01	4.44E-01
		3/4 ton pickup truck		360	20	2.17E-01	2.06E-01	2.66E+00	4.84E-03	3.87E-02	1.71E-02
	Drilling	Rotary drill	475 hp	61.733	126	4.99E-02	6.29E-01	5.13E-01	2.84E-03	2.11E-02	1.94E-02
		3/4 ton pickup truck		57.733	126	5.52E-03	5.25E-03	6.77E-02	1.23E-04	9.86E-04	4.34E-04
	Cut with Diamond wire	3/4 ton pickup truck		204	126	1.95E-02	1.85E-02	2.39E-01	4.35E-04	3.48E-03	1.53E-03
		Diamond cutting saw	50 hp	204	126	1.09E-01	6.85E-01	6.84E-01	1.28E-03	2.94E-02	2.71E-02
	Lift/Load blocks	Crane 260'	375 hp	239.2283	126	2.21E-01	3.11E+00	1.07E+00	5.03E-03	1.25E-01	1.15E-01
		3/4 ton pickup truck		239.2283	126	2.29E-02	2.17E-02	2.81E-01	5.10E-04	4.08E-03	1.80E-03
	Load/Haul	Front end loader	350 hp	32	126	3.10E-02	3.70E-01	1.75E-01	8.26E-04	1.38E-02	1.27E-02
		Water truck	3000 gal	14	126	3.43E-03	2.45E-02	6.51E-03	5.21E-05	9.05E-04	4.79E-04
	Landfill	Crane 260'	375 hp	119.6141	126	1.10E-01	1.56E+00	5.33E-01	2.51E-03	6.26E-02	5.76E-02
	Micro-blast	Crane 260'	375 hp	60	126	5.54E-02	7.81E-01	2.67E-01	1.26E-03	3.14E-02	2.89E-02
		Horizontal boring drill	10 hp	55	126	5.68E-03	4.48E-02	3.67E-02	9.36E-05	2.81E-03	2.59E-03
		3/4 ton pickup truck		60	126	5.73E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Demolish spillway	Crane 260'	375 hp	100	126	9.23E-02	1.30E+00	4.46E-01	2.10E-03	5.24E-02	4.82E-02
		Air compressor	50 hp	200	126	2.93E-01	3.71E-01	1.77E+01	1.31E-03	8.23E-03	8.21E-03
		3/4 ton pickup truck		100	126	9.56E-03	9.09E-03	1.17E-01	2.13E-04	1.71E-03	7.52E-04
Rindge Dam Concrete Arc Foundation Demolition	*Drilling*	Rotary drill	475 hp	120.7333	20	6.14E-01	7.76E+00	6.32E+00	3.50E-02	2.60E-01	2.39E-01
		3/4 ton Pickup truck		128.7333	20	7.75E-02	7.37E-02	9.52E-01	1.73E-03	1.38E-02	6.10E-03
	Load/Haul	Front end loader	350 hp	34	20	2.07E-01	2.48E+00	1.17E+00	5.53E-03	9.25E-02	8.51E-02
	Fracture	Excavator	400 hp	540	20	2.15E+00	2.42E+01	1.97E+01	9.90E-02	8.11E-01	7.46E-01
		Excavator	300 hp	540	20	1.61E+00	1.82E+01	1.48E+01	7.43E-02	6.08E-01	5.59E-01
		Excavator	300 hp	270	20	8.06E-01	9.08E+00	7.38E+00	3.71E-02	3.04E-01	2.80E-01
		Tractor/crawler/dozer	440 hp	270	20	2.63E+00	3.68E+01	1.53E+01	6.04E-02	1.45E+00	1.33E+00
		3/4 ton Pickup truck		540	20	3.25E-01	3.09E-01	3.99E+00	7.26E-03	5.81E-02	2.56E-02
Road Improvement Plan	*Stabilize*	Grader	135 hp	30.4	20	1.54E-01	1.79E+00	1.70E+00	3.27E-03	9.98E-02	9.18E-02
		Tractor/crawler/dozer	250 hp	30.4	20	2.03E-01	3.11E+00	1.18E+00	5.68E-03	1.17E-01	1.08E-01
		Excavator	400 hp	30.4	20	1.21E-01	1.36E+00	1.11E+00	5.57E-03	4.56E-02	4.20E-02
	Asphalt Road	Asphalt hopper	300 hp	442.5143	20	2.08E+00	2.18E+01	1.43E+01	7.09E-02	8.01E-01	7.37E-01
		Line Striper	23 hp	92.576	20	5.18E-02	1.55E-01	4.00E+00	1.21E-03	9.73E-03	9.71E-03
		Roller	70 hp	442.5143	20	7.48E-01	9.20E+00	9.94E+00	1.78E-02	5.62E-01	5.17E-01
		Vibratory roller	33 hp	442.5143	20	1.43E+00	5.77E+00	6.97E+00	9.80E-03	3.32E-01	3.05E-01
		Flatbed truck		92.576	20	8.03E-02	9.22E-02	1.11E+00	1.23E-03	9.61E-03	4.07E-03
		3/4 ton pickup truck		92.576	20	5.57E-02	5.30E-02	6.84E-01	1.24E-03	9.96E-03	4.39E-03
					Total	**5.00E+01**	**5.93E+02**	**3.90E+02**	**1.49E+00**	**2.30E+01**	**2.10E+01**
					Daily Onsi						
					Rindge	50	591	389	1	23	21
					Surfrider	0	0	0	0	0	0
					Topanga	0	0	0	0	0	0
					Zuma	0	0	0	0	0	0
					Landfill	0	2	1	0	0	0

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt4_EnvrAirQualityReport.pdf

Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

			15	15	15	days per construction period (5 days per week)									
			CC1 & CC4	CC1 & CC5	LV2										
	Equipment	Equipment	Hours of Operation			Annual	Emission Factors - 2018 (g/hp-hr or g/hr)								
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck		4	12		16	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.222	2.285	1.317	0.002	0.168	0.155	189.389	0.022	0.000
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Truck		0.3077		2.7692	3.0769	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Water pump	3.5 hp		4		4	4.694	2.102	56.671	0.006	0.059	0.059	177.791	0.267	0.301
Water Control - Removal	Flatbed Truck		4	12		16	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.222	2.285	1.317	0.002	0.168	0.155	189.389	0.022	0.000
	Loader/Backhoe	75 hp				0	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Truck		0.3077			0.3077	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	0.201	1.743	1.804	0.004	0.082	0.076	341.375	0.018	0.000
	Crane 50'	200 hp	9.4118	18.8236		28.2354	0.115	1.663	0.457	0.002	0.072	0.066	203.318	0.013	0.000
	Man lift	210 hp				0	0.076	0.802	0.353	0.002	0.024	0.023	192.930	0.007	0.000
	Loader	190 hp	28.2353	37.6471		65.8824	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Chainsaw		56.7647	75.2941	0.2941	132.3529	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	1 ton pickup		0.1765		0.1765	0.353	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Front end loader	540 hp	0.2964		0.2964	0.5928	0.099	1.282	0.650	0.003	0.051	0.047	293.384	0.016	0.000
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	0.122	1.875	0.653	0.002	0.073	0.067	234.962	0.016	0.000
	Dump truck	20cy/24 ton			1.4866	1.4866	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	0.135	1.184	0.481	0.003	0.037	0.034	237.872	0.012	0.000
	Air Compressor	50 hp		32		32	1.018	1.339	49.027	0.004	0.024	0.023	307.059	0.058	0.075
	Crane 126'	350 hp	5.1111	5.1111		10.2222	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
	Crane 50'	263 hp	44.4571	44.4571		88.9142	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
	Crane 210'	230 hp	16	16		32	0.115	1.663	0.457	0.002	0.072	0.066	203.318	0.013	0.000
	Excavator	115 hp	32	16	24	72	0.116	1.437	1.895	0.003	0.096	0.088	278.045	0.024	0.000
	Excavator	430 hp	8	8	12	28	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Loader	190 hp	72	64	12	148	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Front end loader	180 hp	4.6667	4.6667		9.3334	0.100	1.495	0.587	0.003	0.051	0.047	270.061	0.015	0.000
	Loader/Backhoe	75 hp	11.1	11.1		22.2	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
	Tractor/crawler/dozer	250 hp	4	4		8	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	3/4 ton pickup		72	80	12	164	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Chainsaw		44.4571	44.4571		88.9142	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
Road Realignment	Vibratory roller	145 hp				0	0.082	1.194	1.587	0.003	0.055	0.051	280.063	0.021	0.000
	Vibrating compactor	5.5 hp	4	4		8	1.926	1.423	73.698	0.004	1.056	1.054	125.971	0.110	0.147
	Vibratory compactor	7.5 hp				0	0.330	1.817	1.166	0.003	0.145	0.133	190.952	0.020	0.000
	Truck		16	16		32	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Asphalt distributor	3000 gal	4	4		8	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Suburban	3/4 ton	4	4		8	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Disposal	Truck	35 ton	40	40		80	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	Truck	75 ton	11.2	11.2		22.4	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Bridge Installation	Suburban	3/4 ton	12	12		24	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Crane 210'	230 hp	24	24		48	0.115	1.663	0.457	0.002	0.072	0.066	203.318	0.013	0.000
	Crane 270'	430 hp	24	24		48	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
	3/4 ton pickup		24	24		48	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp	8	8		16	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Excavator	430 hp	0.6137	0.6137		1.2274	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Truck		2.9609	2.9609		5.9218	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Generator	7.5 hp	15.8865	15.8865		31.773	1.988	1.400	102.950	0.005	0.092	0.092	175.214	0.113	0.145
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	1.926	1.423	73.698	0.004	1.056	1.054	125.971	0.110	0.147
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Truck		4.3678	4.3678		8.7356	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Asphalt paver	120 hp	0.208	0.208		0.416	0.184	2.085	1.836	0.003	0.156	0.143	261.328	0.035	0.000
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	0.600	1.968	2.309	0.003	0.143	0.132	235.507	0.054	0.000
	Chip spreader truck		0.64	0.64		1.28	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Line striper	23 hp	0.0713	0.0713		0.1426	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Flatbed Truck		0.0713	0.0713		0.1426	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	3/4 ton pickup		0.0713	0.0713		0.1426	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp				0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Crane 80'	130 hp				0	0.148	1.889	1.234	0.002	0.101	0.093	208.066	0.018	0.000
	Crane 114'	430 hp				0	0.088	1.335	0.370	0.002	0.054	0.050	163.241	0.010	0.000
	Auger drill	100 hp				0	0.112	1.708	1.762	0.003	0.093	0.085	291.259	0.011	0.000
	Water pump	80 hp				0	0.255	1.986	1.800	0.003	0.132	0.122	294.384	0.023	0.000
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	0.055	0.783	0.425	0.002	0.025	0.023	211.854	0.011	0.000
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	0.128	1.531	1.294	0.002	0.108	0.100	195.356	0.015	0.000
	Vibratory roller	44 hp				0	0.600	1.968	2.309	0.003	0.143	0.132	235.507	0.054	0.000
	Tractor/crawler/dozer	250 hp				0	0.141	2.268	0.758	0.003	0.086	0.079	301.158	0.022	0.000
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	3/4 ton pickup					0	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	3/4 ton pickup		4	4	2	10	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
						Total									

Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

			15	15	15	days per const							GWP	1	21	310		
			CC1 & CC4	CC1 & CC5	LV2													
	Equipment	Equipment	Hours of Operation			Annual	Annual Emissions - 2018 (tons per year)											Metric Tons
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e		CO2e/yr
Water Control - Installation	Flatbed Truck		4	12		16	1.16E-04	1.21E-04	1.61E-03	1.07E-06	8.53E-06	3.72E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01		3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	6.95E-05	7.16E-04	4.13E-04	6.97E-07	5.27E-05	4.85E-05	5.94E-02	6.82E-06	-	5.95E-02		5.40E-02
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	6.32E-05	7.56E-04	6.39E-04	1.13E-06	5.36E-05	4.93E-05	9.65E-02	7.32E-06	-	9.67E-02		8.77E-02
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	4.85E-04	7.80E-03	2.61E-03	1.17E-05	2.95E-04	2.71E-04	1.04E+00	7.50E-05	-	1.04E+00		9.41E-01
	Truck		0.3077		2.7692	3.0769	2.36E-05	3.57E-04	4.34E-05	3.64E-07	7.84E-06	4.77E-06	7.29E-02	1.73E-07	1.63E-07	7.29E-02		6.62E-02
	Water pump	3.5 hp		4		4	7.24E-05	3.24E-05	8.75E-04	9.47E-08	9.16E-07	9.14E-07	2.74E-03	4.13E-06	4.65E-06	4.27E-03		3.88E-03
Water Control - Removal	Flatbed Truck		4	12		16	1.16E-04	1.21E-04	1.61E-03	1.07E-06	8.53E-06	3.72E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01		3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	6.95E-05	7.16E-04	4.13E-04	6.97E-07	5.27E-05	4.85E-05	5.94E-02	6.82E-06	-	5.95E-02		5.40E-02
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	4.15E-04	6.67E-03	2.23E-03	9.96E-06	2.52E-04	2.32E-04	8.85E-01	6.41E-05	-	8.87E-01		8.04E-01
	Truck		0.3077			0.3077	2.36E-06	3.57E-05	4.34E-06	3.64E-08	7.84E-07	4.77E-07	7.29E-03	1.73E-08	1.63E-08	7.29E-03		6.62E-03
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	2.49E-03	2.16E-02	2.24E-02	4.76E-05	1.02E-03	9.41E-04	4.23E+00	2.25E-04	-	4.24E+00		3.84E+00
	Crane 50'	200 hp	9.4118	18.8236		28.2354	7.16E-04	1.04E-02	2.85E-03	1.42E-05	4.48E-04	4.12E-04	1.27E+00	8.01E-05	-	1.27E+00		1.15E+00
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Loader	190 hp	28.2353	37.6471		65.8824	1.95E-03	3.13E-02	1.05E-02	4.68E-05	1.18E-03	1.09E-03	4.16E+00	3.01E-04	-	4.16E+00		3.78E+00
	Chainsaw		56.7647	75.2941	0.2941	132.3529	8.94E-03	1.40E-04	1.62E-02	1.80E-06	2.54E-05	2.54E-05	4.37E-02	5.55E-04	4.80E-05	7.02E-02		6.37E-02
	1 ton pickup		0.1765		0.1765	0.353	9.40E-07	1.10E-06	1.26E-05	2.39E-08	1.91E-07	8.46E-08	7.92E-03	7.88E-07	4.11E-07	8.07E-03		7.32E-03
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	2.29E-05	3.68E-04	1.23E-04	5.49E-07	1.39E-05	1.28E-05	4.88E-02	3.53E-06	-	4.89E-02		4.44E-02
	Front end loader	540 hp	0.2964		0.2964	0.5928	3.49E-05	4.52E-04	2.29E-04	1.04E-06	1.79E-05	1.64E-05	1.04E-01	5.71E-06	-	1.04E-01		9.40E-02
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	1.23E-05	1.90E-04	6.61E-05	2.34E-07	7.36E-06	6.77E-06	2.38E-02	1.62E-06	-	2.38E-02		2.16E-02
	Dump truck	20cy/24 ton			1.4866	1.4866	1.14E-05	1.73E-04	2.10E-05	1.76E-07	3.79E-06	2.31E-06	3.52E-02	8.36E-08	7.87E-08	3.52E-02		3.20E-02
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	3.32E-03	2.90E-02	1.18E-02	6.56E-05	9.13E-04	8.40E-04	5.83E+00	2.99E-04	-	5.83E+00		5.29E+00
	Air Compressor	50 hp		32		32	1.79E-03	2.36E-03	8.65E-02	6.58E-06	4.15E-05	4.14E-05	5.42E-01	1.02E-04	1.33E-04	5.85E-01		5.31E-01
	Crane 126'	350 hp	5.1111	5.1111		10.2222	3.47E-04	5.27E-03	1.46E-03	6.32E-06	2.12E-04	1.95E-04	6.44E-01	3.88E-05	-	6.45E-01		5.85E-01
	Crane 50'	263 hp	44.4571	44.4571		88.9142	2.27E-03	3.44E-02	9.55E-03	4.13E-05	1.39E-03	1.28E-03	4.21E+00	2.53E-04	-	4.21E+00		3.82E+00
	Crane 210'	230 hp	16	16		32	9.33E-04	1.35E-02	3.71E-03	1.86E-05	5.84E-04	5.37E-04	1.65E+00	1.04E-04	-	1.65E+00		1.50E+00
	Excavator	115 hp	32	16	24	72	1.06E-03	1.31E-02	1.73E-02	2.98E-05	8.73E-04	8.03E-04	2.54E+00	2.16E-04	-	2.54E+00		2.31E+00
	Excavator	430 hp	8	8	12	28	7.31E-04	1.04E-02	5.64E-03	2.76E-05	3.37E-04	3.10E-04	2.81E+00	1.45E-04	-	2.81E+00		2.55E+00
	Loader	190 hp	72	64	12	148	4.38E-03	7.03E-02	2.35E-02	1.05E-04	2.66E-03	2.45E-03	9.33E+00	6.76E-04	-	9.35E+00		8.48E+00
	Front end loader	180 hp	4.6667	4.6667		9.3334	1.85E-04	2.77E-03	1.09E-03	5.63E-06	9.39E-05	8.64E-05	5.00E-01	2.87E-05	-	5.01E-01		4.54E-01
	Loader/Backhoe	75 hp	11.1	11.1		22.2	2.35E-04	2.81E-03	2.37E-03	4.21E-06	1.99E-04	1.83E-04	3.59E-01	2.72E-05	-	3.59E-01		3.26E-01
	Tractor/crawler/dozer	250 hp	4	4		8	3.11E-04	5.00E-03	1.67E-03	7.47E-06	1.89E-04	1.74E-04	6.64E-01	4.81E-05	-	6.65E-01		6.03E-01
	3/4 ton pickup		72	80	12	164	7.35E-04	6.02E-04	8.86E-03	1.11E-05	9.08E-05	4.12E-05	3.68E+00	3.66E-04	1.91E-04	3.75E+00		3.40E+00
	Chainsaw		44.4571	44.4571		88.9142	6.00E-03	9.40E-05	1.09E-02	1.21E-06	1.71E-05	1.70E-05	2.93E-02	3.73E-04	3.22E-05	4.72E-02		4.28E-02
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Vibrating compactor	5.5 hp	4	4		8	9.34E-05	6.90E-05	3.57E-03	1.74E-07	5.12E-05	5.11E-05	6.11E-03	5.33E-06	7.11E-06	8.43E-03		7.64E-03
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Truck		16	16		32	2.46E-04	3.71E-03	4.51E-04	3.79E-06	8.16E-05	4.96E-05	7.58E-01	1.80E-06	1.69E-06	7.59E-01		6.88E-01
	Asphalt distributor	3000 gal	4	4		8	6.14E-05	9.28E-04	1.13E-04	9.47E-07	2.04E-05	1.24E-05	1.89E-01	4.50E-07	4.23E-07	1.90E-01		1.72E-01
	Suburban	3/4 ton	4	4		8	3.59E-05	2.94E-05	4.32E-04	5.40E-07	4.43E-06	2.01E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01		1.66E-01
Disposal	Truck	35 ton	40	40		80	5.78E-04	6.04E-04	8.03E-03	5.37E-06	4.27E-05	1.86E-05	1.80E+00	4.06E-04	1.88E-04	1.86E+00		1.69E+00
	Truck	75 ton	11.2	11.2		22.4	1.72E-04	2.60E-03	3.16E-04	2.65E-06	5.71E-05	3.47E-05	5.31E-01	1.26E-06	1.19E-06	5.31E-01		4.82E-01
Bridge Installation	Suburban	3/4 ton	12	12		24	1.08E-04	8.82E-05	1.30E-03	1.62E-06	1.33E-05	6.03E-06	5.39E-01	5.35E-05	2.79E-05	5.48E-01		4.98E-01
	Crane 210'	230 hp	24	24		48	1.40E-03	2.02E-02	5.56E-03	2.78E-05	8.76E-04	8.06E-04	2.47E+00	1.57E-04	-	2.48E+00		2.25E+00
	Crane 270'	430 hp	24	24		48	2.00E-03	3.04E-02	8.42E-03	3.65E-05	1.23E-03	1.13E-03	3.71E+00	2.24E-04	-	3.72E+00		3.37E+00
	3/4 ton pickup		24	24		48	2.15E-04	1.76E-04	2.59E-03	3.24E-06	2.66E-05	1.21E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00		9.95E-01
	Tractor/crawler/dozer	250 hp	8	8		16	6.22E-04	1.00E-02	3.34E-03	1.49E-05	3.78E-04	3.48E-04	1.33E+00	9.61E-05	-	1.33E+00		1.21E+00
	Excavator	430 hp	0.6137	0.6137		1.2274	3.21E-05	4.56E-04	2.47E-04	1.21E-06	1.48E-05	1.36E-05	1.23E-01	6.37E-06	-	1.23E-01		1.12E-01
	Truck		2.9609	2.9609		5.9218	4.55E-05	6.87E-04	8.35E-05	7.01E-07	1.51E-05	9.18E-06	1.40E-01	3.33E-07	3.13E-07	1.40E-01		1.27E-01
	Generator	7.5 hp	15.8865	15.8865		31.773	5.22E-04	3.68E-04	2.70E-02	1.31E-06	2.42E-05	2.42E-05	4.60E-02	2.98E-05	3.80E-05	5.84E-02		5.30E-02
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	8.52E-05	6.29E-05	3.26E-03	1.59E-07	4.67E-05	4.66E-05	5.57E-03	4.86E-06	6.48E-06	7.68E-03		6.97E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	1.57E-04	2.53E-03	8.44E-04	3.78E-06	9.56E-05	8.80E-05	3.36E-01	2.43E-05	-	3.36E-01		3.05E-01
	Truck		4.3678	4.3678		8.7356	6.71E-05	1.01E-03	1.23E-04	1.03E-06	2.23E-05	1.35E-05	2.07E-01	4.91E-07	4.62E-07	2.07E-01		1.88E-01
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	7.60E-05	1.15E-03	1.40E-04	1.17E-06	2.52E-05	1.53E-05	2.34E-01	5.56E-07	5.24E-07	2.35E-01		2.13E-01
	Asphalt paver	120 hp	0.208	0.208		0.416	1.01E-05	1.15E-04	1.01E-04	1.69E-07	8.58E-06	7.89E-06	1.44E-02	1.93E-06	-	1.44E-02		1.31E-02
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	3.70E-05	1.21E-04	1.42E-04	1.88E-07	8.85E-06	8.14E-06	1.45E-02	3.34E-06	-	1.46E-02		1.32E-02
	Chip spreader truck		0.64	0.64		1.28	9.83E-06	1.49E-04	1.81E-05	1.52E-07	3.26E-06	1.98E-06	3.03E-02	7.20E-08	6.77E-08	3.03E-02		2.75E-02
	Line striper	23 hp	0.0713	0.0713		0.1426	3.99E-07	1.19E-06	3.08E-05	9.35E-09	7.50E-08	7.48E-08	9.41E-04	2.27E-08	7.71E-08	9.66E-04		8.76E-04
	Flatbed Truck		0.0713	0.0713		0.1426	1.03E-06	1.08E-06	1.43E-05	9.57E-09	7.61E-08	3.31E-08	3.20E-03	7.24E-07	3.36E-07	3.32E-03		3.01E-03
	3/4 ton pickup		0.0713	0.0713		0.1426	6.39E-07	5.24E-07	7.70E-06	9.63E-09	7.89E-08	3.58E-08	3.20E-03	3.18E-07	1.66E-07	3.26E-03		2.96E-03
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-		-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	4.92E-04	6.99E-03	3.79E-03	1.86E-05	2.26E-04	2.08E-04	1.89E+00	9.77E-05	-	1.89E+00		1.72E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	4.98E-04	5.96E-03	5.03E-03	8.92E-06	4.22E-04	3.88E-04	7.60E-01	5.77E-05	-	7.61E-01		6.91E-01
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	3.05E-04	3.65E-03	3.09E-03	5.47E-06	2.59E-04	2.38E-04	4.66E-01	3.54E-05	-	4.67E-01		4.24E-01
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.61E-04	5.46E-03	6.64E-04	5.57E-06	1.20E-04	7.30E-05	1.11E+00	2.65E-06	2.49E-06	1.12E+00		1.01E+00
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-		-
	3/4 ton pickup		4	4	2	10	4.48E-05	3.67E-05	5.40E-04	6.75E-07	5.53E-06	2.51E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01		2.07E-01
						Total	**4.62E-02**	**3.69E-01**	**3.26E-01**	**6.16E-04**	**1.51E-02**	**1.37E-02**	**6.38E+01**	**5.54E-03**	**8.37E-04**	**6.42E+01**		**5.83E+01**

Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

			15	15	15	days per const												
			CC1 & CC4	CC1 & CC5	LV2													
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC1 & CC4) - 2018 (pounds per day)						Peak Daily Emissions (CC1 & CC5) - 2018 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	7.71E-03	8.05E-03	1.07E-01	7.16E-05	5.69E-04	2.48E-04	2.31E-02	2.42E-02	3.21E-01	2.15E-04	1.71E-03	7.43E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	9.27E-03	9.55E-02	5.50E-02	9.29E-05	7.02E-03	6.46E-03	6.95E-03	7.16E-02	4.13E-02	6.97E-05	5.27E-03	4.85E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	7.41E-03	8.86E-02	7.49E-02	1.33E-04	6.27E-03	5.77E-03	9.46E-03	1.13E-01	9.56E-02	1.69E-04	8.01E-03	7.37E-03
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	5.73E-02	9.20E-01	3.07E-01	1.37E-03	3.48E-02	3.20E-02	-	-	-	-	-	-
	Truck		0.3077		2.7692	3.0769	6.30E-04	9.52E-03	1.16E-03	9.71E-06	2.09E-04	1.27E-04	-	-	-	-	-	-
	Water pump	3.5 hp		4		4	-	-	-	-	-	-	1.93E-02	8.65E-03	2.33E-01	2.53E-05	2.44E-04	2.44E-04
Water Control - Removal	Flatbed Truck		4	12		16	7.71E-03	8.05E-03	1.07E-01	7.16E-05	5.69E-04	2.48E-04	2.31E-02	2.42E-02	3.21E-01	2.15E-04	1.71E-03	7.43E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	9.27E-03	9.55E-02	5.50E-02	9.29E-05	7.02E-03	6.46E-03	6.95E-03	7.16E-02	4.13E-02	6.97E-05	5.27E-03	4.85E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	5.53E-02	8.89E-01	2.97E-01	1.33E-03	3.36E-02	3.09E-02	-	-	-	-	-	-
	Truck		0.3077			0.3077	6.30E-04	9.52E-03	1.16E-03	9.71E-06	2.09E-04	1.27E-04	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	2.85E-01	2.47E+00	2.56E+00	5.45E-03	1.17E-01	1.08E-01	3.78E-01	3.28E+00	3.39E+00	7.23E-03	1.55E-01	1.43E-01
	Crane 50'	200 hp	9.4118	18.8236		28.2354	6.36E-02	9.20E-01	2.53E-01	1.27E-03	3.98E-02	3.66E-02	1.27E-01	1.84E+00	5.06E-01	2.53E-03	7.97E-02	7.33E-02
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	2.23E-01	3.58E+00	1.19E+00	5.34E-03	1.35E-01	1.24E-01	2.97E-01	4.77E+00	1.59E+00	7.12E-03	1.80E-01	1.66E-01
	Chainsaw		56.7647	75.2941	0.2941	132.3529	1.02E+00	1.60E-02	1.85E+00	2.06E-04	2.91E-03	2.90E-03	1.36E+00	2.12E-02	2.45E+00	2.73E-04	3.86E-03	3.85E-03
	1 ton pickup		0.1765		0.1765	0.353	1.25E-04	1.47E-04	1.67E-03	3.19E-06	2.55E-05	1.13E-05	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	3.05E-03	4.90E-02	1.64E-02	7.32E-05	1.85E-03	1.71E-03	-	-	-	-	-	-
	Front end loader	540 hp	0.2964		0.2964	0.5928	4.65E-03	6.03E-02	3.06E-02	1.39E-04	2.38E-03	2.19E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	1.65E-03	2.53E-02	8.81E-03	3.11E-05	9.81E-04	9.03E-04	-	-	-	-	-	-
	Dump truck	20cy/24 ton			1.4866	1.4866	-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	4.43E-01	3.87E+00	1.57E+00	8.74E-03	1.22E-01	1.12E-01	4.43E-01	3.87E+00	1.57E+00	8.74E-03	1.22E-01	1.12E-01
	Air Compressor	50 hp		32		32	-	-	-	-	-	-	4.79E-01	6.30E-01	2.31E+01	1.76E-03	1.11E-02	1.10E-02
	Crane 126'	350 hp	5.1111	5.1111		10.2222	4.63E-02	7.02E-01	1.95E-01	8.43E-04	2.83E-02	2.61E-02	4.63E-02	7.02E-01	1.95E-01	8.43E-04	2.83E-02	2.61E-02
	Crane 50'	263 hp	44.4571	44.4571		88.9142	3.03E-01	4.59E+00	1.27E+00	5.51E-03	1.85E-01	1.70E-01	3.03E-01	4.59E+00	1.27E+00	5.51E-03	1.85E-01	1.70E-01
	Crane 210'	230 hp	16	16		32	1.24E-01	1.80E+00	4.94E-01	2.47E-03	7.79E-02	7.16E-02	1.24E-01	1.80E+00	4.94E-01	2.47E-03	7.79E-02	7.16E-02
	Excavator	115 hp	32	16	24	72	1.26E-01	1.55E+00	2.05E+00	3.53E-03	1.03E-01	9.52E-02	6.28E-02	7.77E-01	1.02E+00	1.76E-03	5.17E-02	4.76E-02
	Excavator	430 hp	8	8	12	28	5.57E-02	7.92E-01	4.30E-01	2.10E-03	2.56E-02	2.36E-02	5.57E-02	7.92E-01	4.30E-01	2.10E-03	2.56E-02	2.36E-02
	Loader	190 hp	72	64	12	148	5.68E-01	9.12E+00	3.05E+00	1.36E-02	3.45E-01	3.17E-01	5.05E-01	8.11E+00	2.71E+00	1.21E-02	3.07E-01	2.82E-01
	Front end loader	180 hp	4.6667	4.6667		9.3334	2.46E-02	3.69E-01	1.45E-01	7.50E-04	1.25E-02	1.15E-02	2.46E-02	3.69E-01	1.45E-01	7.50E-04	1.25E-02	1.15E-02
	Loader/Backhoe	75 hp	11.1	11.1		22.2	3.13E-02	3.75E-01	3.17E-01	5.61E-04	2.65E-02	2.44E-02	3.13E-02	3.75E-01	3.17E-01	5.61E-04	2.65E-02	2.44E-02
	Tractor/crawler/dozer	250 hp	4	4		8	4.15E-02	6.67E-01	2.23E-01	9.96E-04	2.52E-02	2.32E-02	4.15E-02	6.67E-01	2.23E-01	9.96E-04	2.52E-02	2.32E-02
	3/4 ton pickup		72	80	12	164	8.61E-02	7.05E-02	1.04E+00	1.30E-03	1.06E-02	4.82E-03	9.56E-02	7.84E-02	1.15E+00	1.44E-03	1.18E-02	5.36E-03
	Chainsaw		44.4571	44.4571		88.9142	8.00E-01	1.25E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03	8.00E-01	1.25E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	1.25E-02	9.20E-03	4.77E-01	2.32E-05	6.83E-03	6.82E-03	1.25E-02	9.20E-03	4.77E-01	2.32E-05	6.83E-03	6.82E-03
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	3.28E-02	4.95E-01	6.02E-02	5.05E-04	1.09E-02	6.62E-03	3.28E-02	4.95E-01	6.02E-02	5.05E-04	1.09E-02	6.62E-03
	Asphalt distributor	3000 gal	4	4		8	8.19E-03	1.24E-01	1.50E-02	1.26E-04	2.72E-03	1.65E-03	8.19E-03	1.24E-01	1.50E-02	1.26E-04	2.72E-03	1.65E-03
	Suburban	3/4 ton	4	4		8	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04
Disposal	Truck	35 ton	40	40		80	7.71E-02	8.05E-02	1.07E+00	7.16E-04	5.69E-03	2.48E-03	7.71E-02	8.05E-02	1.07E+00	7.16E-04	5.69E-03	2.48E-03
	Truck	75 ton	11.2	11.2		22.4	2.29E-02	3.47E-01	4.21E-02	3.54E-04	7.61E-03	4.63E-03	2.29E-02	3.47E-01	4.21E-02	3.54E-04	7.61E-03	4.63E-03
Bridge Installation	Suburban	3/4 ton	12	12		24	1.43E-02	1.18E-02	1.73E-01	2.16E-04	1.77E-03	8.04E-04	1.43E-02	1.18E-02	1.73E-01	2.16E-04	1.77E-03	8.04E-04
	Crane 210'	230 hp	24	24		48	1.87E-01	2.70E+00	7.42E-01	3.71E-03	1.17E-01	1.07E-01	1.87E-01	2.70E+00	7.42E-01	3.71E-03	1.17E-01	1.07E-01
	Crane 270'	430 hp	24	24		48	2.67E-01	4.05E+00	1.12E+00	4.86E-03	1.63E-01	1.50E-01	2.67E-01	4.05E+00	1.12E+00	4.86E-03	1.63E-01	1.50E-01
	3/4 ton pickup		24	24		48	2.87E-02	2.35E-02	3.46E-01	4.32E-04	3.54E-03	1.61E-03	2.87E-02	2.35E-02	3.46E-01	4.32E-04	3.54E-03	1.61E-03
	Tractor/crawler/dozer	250 hp	8	8		16	8.30E-02	1.33E+00	4.45E-01	1.99E-03	5.04E-02	4.64E-02	8.30E-02	1.33E+00	4.45E-01	1.99E-03	5.04E-02	4.64E-02
	Excavator	430 hp	0.6137	0.6137		1.2274	4.28E-03	6.07E-02	3.30E-02	1.61E-04	1.97E-03	1.81E-03	4.28E-03	6.07E-02	3.30E-02	1.61E-04	1.97E-03	1.81E-03
	Truck		2.9609	2.9609		5.9218	6.06E-03	9.16E-02	1.11E-02	9.35E-05	2.01E-03	1.22E-03	6.06E-03	9.16E-02	1.11E-02	9.35E-05	2.01E-03	1.22E-03
	Generator	7.5 hp	15.8865	15.8865		31.773	6.96E-02	4.90E-02	3.61E+00	1.75E-04	3.23E-03	3.22E-03	6.96E-02	4.90E-02	3.61E+00	1.75E-04	3.23E-03	3.22E-03
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	1.14E-02	8.39E-03	4.35E-01	2.12E-05	6.23E-03	6.22E-03	1.14E-02	8.39E-03	4.35E-01	2.12E-05	6.23E-03	6.22E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	2.10E-02	3.37E-01	1.13E-01	5.03E-04	1.27E-02	1.17E-02	2.10E-02	3.37E-01	1.13E-01	5.03E-04	1.27E-02	1.17E-02
	Truck		4.3678	4.3678		8.7356	8.94E-03	1.35E-01	1.64E-02	1.38E-04	2.97E-03	1.81E-03	8.94E-03	1.35E-01	1.64E-02	1.38E-04	2.97E-03	1.81E-03
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	1.01E-02	1.53E-01	1.86E-02	1.56E-04	3.36E-03	2.05E-03	1.01E-02	1.53E-01	1.86E-02	1.56E-04	3.36E-03	2.05E-03
	Asphalt paver	120 hp	0.208	0.208		0.416	1.35E-03	1.53E-02	1.35E-02	2.25E-05	1.14E-03	1.05E-03	1.35E-03	1.53E-02	1.35E-02	2.25E-05	1.14E-03	1.05E-03
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	4.94E-03	1.62E-02	1.90E-02	2.50E-05	1.18E-03	1.09E-03	4.94E-03	1.62E-02	1.90E-02	2.50E-05	1.18E-03	1.09E-03
	Chip spreader truck		0.64	0.64		1.28	1.31E-03	1.98E-02	2.41E-03	2.02E-05	4.35E-04	2.65E-04	1.31E-03	1.98E-02	2.41E-03	2.02E-05	4.35E-04	2.65E-04
	Line striper	23 hp	0.0713	0.0713		0.1426	5.31E-05	1.59E-04	4.11E-03	1.25E-06	1.00E-05	9.98E-06	5.31E-05	1.59E-04	4.11E-03	1.25E-06	1.00E-05	9.98E-06
	Flatbed Truck		0.0713	0.0713		0.1426	1.37E-04	1.44E-04	1.91E-03	1.28E-06	1.01E-05	4.42E-06	1.37E-04	1.44E-04	1.91E-03	1.28E-06	1.01E-05	4.42E-06
	3/4 ton pickup		0.0713	0.0713		0.1426	8.52E-05	6.98E-05	1.03E-03	1.28E-06	1.05E-05	4.78E-06	8.52E-05	6.98E-05	1.03E-03	1.28E-06	1.05E-05	4.78E-06
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	6.56E-02	9.32E-01	5.06E-01	2.47E-03	3.02E-02	2.78E-02	6.56E-02	9.32E-01	5.06E-01	2.47E-03	3.02E-02	2.78E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	5.31E-02	6.35E-01	5.37E-01	9.51E-04	4.50E-02	4.14E-02	5.31E-02	6.35E-01	5.37E-01	9.51E-04	4.50E-02	4.14E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	1.63E-02	1.95E-01	1.65E-01	2.92E-04	1.38E-02	1.27E-02	3.26E-02	3.90E-01	3.29E-01	5.83E-04	2.76E-02	2.54E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.85E-02	5.82E-01	7.08E-02	5.94E-04	1.28E-02	7.78E-03	3.85E-02	5.82E-01	7.08E-02	5.94E-04	1.28E-02	7.78E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04
						Total	**5.46E+00**	**4.56E+01**	**2.93E+01**	**7.50E-02**	**1.86E+00**	**1.69E+00**	**6.33E+00**	**4.56E+01**	**5.34E+01**	**7.61E-02**	**1.85E+00**	**1.68E+00**

Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

			15	15	15	days per constr						
			CC1 & CC4	CC1 & CC5	LV2							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (LV2) - 2018 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	2.32E-03	2.39E-02	1.38E-02	2.32E-05	1.76E-03	1.62E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	7.22E-02	1.16E+00	3.87E-01	1.73E-03	4.39E-02	4.04E-02
	Truck		0.3077		2.7692	3.0769	5.67E-03	8.57E-02	1.04E-02	8.74E-05	1.88E-03	1.15E-03
	Water pump	3.5 hp		4		4	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	12		16	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	2.32E-03	2.39E-02	1.38E-02	2.32E-05	1.76E-03	1.62E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	5.53E-02	8.89E-01	2.97E-01	1.33E-03	3.36E-02	3.09E-02
	Truck		0.3077			0.3077	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	1.49E-03	1.29E-02	1.34E-02	2.84E-05	6.11E-04	5.62E-04
	Crane 50'	200 hp	9.4118	18.8236		28.2354	-	-	-	-	-	-
	Man lift	210 hp				0	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	-	-	-	-	-	-
	Chainsaw		56.7647	75.2941	0.2941	132.3529	5.29E-03	8.30E-05	9.58E-03	1.07E-06	1.51E-05	1.50E-05
	1 ton pickup		0.1765		0.1765	0.353	1.25E-04	1.47E-04	1.67E-03	3.19E-06	2.55E-05	1.13E-05
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	3.05E-03	4.90E-02	1.64E-02	7.32E-05	1.85E-03	1.71E-03
	Front end loader	540 hp	0.2964		0.2964	0.5928	4.65E-03	6.03E-02	3.06E-02	1.39E-04	2.38E-03	2.19E-03
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	1.65E-03	2.53E-02	8.81E-03	3.11E-05	9.81E-04	9.03E-04
	Dump truck	20cy/24 ton			1.4866	1.4866	3.04E-03	4.60E-02	5.59E-03	4.69E-05	1.01E-03	6.15E-04
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Air Compressor	50 hp		32		32	-	-	-	-	-	-
	Crane 126'	350 hp	5.1111	5.1111		10.2222	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	9.43E-02	1.17E+00	1.54E+00	2.65E-03	7.76E-02	7.14E-02
	Excavator	430 hp	8	8	12	28	8.36E-02	1.19E+00	6.45E-01	3.15E-03	3.85E-02	3.54E-02
	Loader	190 hp	72	64	12	148	9.46E-02	1.52E+00	5.08E-01	2.27E-03	5.75E-02	5.29E-02
	Front end loader	180 hp	4.6667	4.6667		9.3334	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	1.43E-02	1.18E-02	1.73E-01	2.16E-04	1.77E-03	8.04E-04
	Chainsaw		44.4571	44.4571		88.9142	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-
	Truck		16	16		32	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.66E-02	3.18E-01	2.68E-01	4.75E-04	2.25E-02	2.07E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	3.26E-02	3.90E-01	3.29E-01	5.83E-04	2.76E-02	2.54E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.93E-02	2.91E-01	3.54E-02	2.97E-04	6.40E-03	3.89E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2.39E-03	1.96E-03	2.88E-02	3.60E-05	2.95E-04	1.34E-04
						Total	**5.25E-01**	**7.26E+00**	**4.33E+00**	**1.32E-02**	**3.22E-01**	**2.92E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/11/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

On-highway vehicles

Source:
CC1 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV2 Equipment Report.pdf

Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

			15	15	15	days per constr																
			CC1 & CC4	CC1 & CC5	LV2																	
	Equipment	Equipment	Hours of Operation			Annual	Annual Hours by Site				Peak Daily Emissions (CC1) - 2018 (pounds per day)						Peak Daily Emissions (CC4) - 2018 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	CC1	CC4	CC5	LV2 - Yr 1	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	4		8		1.54E-02	1.61E-02	2.14E-01	1.43E-04	1.14E-03	4.96E-04	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.3333	0.4444		0.4444	1.39E-02	1.43E-01	8.26E-02	1.39E-04	1.05E-02	9.69E-03	2.32E-03	2.39E-02	1.38E-02	2.32E-05	1.76E-03	1.62E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	2.624		0.7273		1.48E-02	1.77E-01	1.50E-01	2.65E-04	1.25E-02	1.15E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788		5.5208		6.958	-	-	-	-	-	-	5.73E-02	9.20E-01	3.07E-01	1.37E-03	3.48E-02	3.20E-02
	Truck		0.3077		2.7692	3.0769		0.3077		2.7692	-	-	-	-	-	-	6.30E-04	9.52E-03	1.16E-03	9.71E-06	2.09E-04	1.27E-04
	Water pump	3.5 hp		4		4			4		-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	12		16	4		8		1.54E-02	1.61E-02	2.14E-01	1.43E-04	1.14E-03	4.96E-04	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.3333	0.4444		0.4444	1.39E-02	1.43E-01	8.26E-02	1.39E-04	1.05E-02	9.69E-03	2.32E-03	2.39E-02	1.38E-02	2.32E-05	1.76E-03	1.62E-03
	Loader/Backhoe	75 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666		5.3333		5.3333	-	-	-	-	-	-	5.53E-02	8.89E-01	2.97E-01	1.33E-03	3.36E-02	3.09E-02
	Truck		0.3077			0.3077		0.3077			-	-	-	-	-	-	6.30E-04	9.52E-03	1.16E-03	9.71E-06	2.09E-04	1.27E-04
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	28.2353	0.1482	9.4118	0.1482	5.67E-01	4.92E+00	5.09E+00	1.08E-02	2.33E-01	2.14E-01	1.49E-03	1.29E-02	1.34E-02	2.84E-05	6.11E-04	5.62E-04
	Crane 50'	200 hp	9.4118	18.8236		28.2354	9.4118		9.4118		1.27E-01	1.84E+00	5.06E-01	2.53E-03	7.97E-02	7.33E-02	-	-	-	-	-	-
	Man lift	210 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	28.2353		9.4118		4.45E-01	7.15E+00	2.39E+00	1.07E-02	2.71E-01	2.49E-01	-	-	-	-	-	-
	Chainsaw		56.7647	75.2941	0.2941	132.3529	56.4706	0.2941	18.8235	0.2941	2.03E+00	3.19E-02	3.68E+00	4.09E-04	5.79E-03	5.77E-03	5.29E-03	8.30E-05	9.58E-03	1.07E-06	1.51E-05	1.50E-05
	1 ton pickup		0.1765		0.1765	0.353		0.1765		0.1765	-	-	-	-	-	-	1.25E-04	1.47E-04	1.67E-03	3.19E-06	2.55E-05	1.13E-05
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882		0.2941		0.2941	-	-	-	-	-	-	3.05E-03	4.90E-02	1.64E-02	7.32E-05	1.85E-03	1.71E-03
	Front end loader	540 hp	0.2964		0.2964	0.5928		0.2964		0.2964	-	-	-	-	-	-	4.65E-03	6.03E-02	3.06E-02	1.39E-04	2.38E-03	2.19E-03
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964		0.1482		0.1482	-	-	-	-	-	-	1.65E-03	2.53E-02	8.81E-03	3.11E-05	9.81E-04	9.03E-04
	Dump truck	20cy/24 ton			1.4866	1.4866				1.4866	-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	44.4571				8.85E-01	7.73E+00	3.14E+00	1.75E-02	2.43E-01	2.24E-01	-	-	-	-	-	-
	Air Compressor	50 hp		32		32			32		-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp	5.1111	5.1111		10.2222	5.1111				9.26E-02	1.40E+00	3.89E-01	1.69E-03	5.67E-02	5.21E-02	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	44.4571				6.05E-01	9.18E+00	2.55E+00	1.10E-02	3.70E-01	3.41E-01	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	16				2.49E-01	3.60E+00	9.89E-01	4.95E-03	1.56E-01	1.43E-01	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	16	16		24	1.26E-01	1.55E+00	2.05E+00	3.53E-03	1.03E-01	9.52E-02	6.28E-02	7.77E-01	1.02E+00	1.76E-03	5.17E-02	4.76E-02
	Excavator	430 hp	8	8	12	28	8			12	1.11E-01	1.58E+00	8.59E-01	4.21E-03	5.13E-02	4.72E-02	-	-	-	-	-	-
	Loader	190 hp	72	64	12	148	64	8		12	1.01E+00	1.62E+01	5.42E+00	2.42E-02	6.13E-01	5.64E-01	6.31E-02	1.01E+00	3.39E-01	1.51E-03	3.83E-02	3.53E-02
	Front end loader	180 hp	4.6667	4.6667		9.3334	4.6667				4.92E-02	7.38E-01	2.90E-01	1.50E-03	2.50E-02	2.30E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	11.1				6.27E-02	7.49E-01	6.33E-01	1.12E-03	5.31E-02	4.88E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	4				8.30E-02	1.33E+00	4.45E-01	1.99E-03	5.04E-02	4.64E-02	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	64	8	16	12	1.53E-01	1.25E-01	1.84E+00	2.30E-03	1.89E-02	8.58E-03	9.56E-03	7.84E-03	1.15E-01	1.44E-04	1.18E-03	5.36E-04
	Chainsaw		44.4571	44.4571		88.9142	44.4571				1.60E+00	2.51E-02	2.90E+00	3.22E-04	4.56E-03	4.55E-03	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	4				2.49E-02	1.84E-02	9.53E-01	4.65E-05	1.37E-02	1.36E-02	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	16				6.55E-02	9.90E-01	1.20E-01	1.01E-03	2.18E-02	1.32E-02	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	4				1.64E-02	2.48E-01	3.01E-02	2.53E-04	5.44E-03	3.31E-03	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	4				9.56E-03	7.84E-03	1.15E-01	1.44E-04	1.18E-03	5.36E-04	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	40				1.54E-01	1.61E-01	2.14E+00	1.43E-03	1.14E-02	4.96E-03	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	11.2				4.59E-02	6.93E-01	8.43E-02	7.07E-04	1.52E-02	9.26E-03	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	12				2.87E-02	2.35E-02	3.46E-01	4.32E-04	3.54E-03	1.61E-03	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	24				3.73E-01	5.40E+00	1.48E+00	7.42E-03	2.34E-01	2.15E-01	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	24				5.34E-01	8.10E+00	2.25E+00	9.72E-03	3.27E-01	3.01E-01	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	24				5.74E-02	4.70E-02	6.91E-01	8.64E-04	7.08E-03	3.22E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	8				1.66E-01	2.67E+00	8.91E-01	3.98E-03	1.01E-01	9.28E-02	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	0.6137				8.55E-03	1.21E-01	6.59E-02	3.23E-04	3.93E-03	3.62E-03	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	2.9609				1.21E-02	1.83E-01	2.23E-02	1.87E-04	4.03E-03	2.45E-03	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	15.8865				1.39E-01	9.80E-02	7.21E+00	3.50E-04	6.46E-03	6.45E-03	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	3.648				2.27E-02	1.68E-02	8.69E-01	4.24E-05	1.25E-02	1.24E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	2.0218				4.19E-02	6.74E-01	2.25E-01	1.01E-03	2.55E-02	2.35E-02	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	4.3678				1.79E-02	2.70E-01	3.29E-02	2.76E-04	5.94E-03	3.61E-03	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	4.9474				2.03E-02	3.06E-01	3.72E-02	3.12E-04	6.73E-03	4.09E-03	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	0.208				2.70E-03	3.06E-02	2.69E-02	4.50E-05	2.29E-03	2.10E-03	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	0.848				9.88E-03	3.24E-02	3.80E-02	5.01E-05	2.36E-03	2.17E-03	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	0.64				2.62E-03	3.96E-02	4.82E-03	4.04E-05	8.70E-04	5.29E-04	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	0.0713				1.06E-04	3.18E-04	8.21E-03	2.49E-06	2.00E-05	2.00E-05	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	0.0713				2.75E-04	2.87E-04	3.81E-03	2.55E-06	2.03E-05	8.83E-06	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	0.0713				1.70E-04	1.40E-04	2.05E-03	2.57E-06	2.10E-05	9.56E-06	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	9.4118				1.31E-01	1.86E+00	1.01E+00	4.95E-03	6.03E-02	5.55E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	5.31E-02	6.35E-01	5.37E-01	9.51E-04	4.50E-02	4.14E-02	2.66E-02	3.18E-01	2.68E-01	4.75E-04	2.25E-02	2.07E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295		4.7059	9.4118	9.4118	-	-	-	-	-	-	1.63E-02	1.95E-01	1.65E-01	2.92E-04	1.38E-02	1.27E-02
	Vibratory roller	44 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	3.85E-02	5.82E-01	7.08E-02	5.94E-04	1.28E-02	7.78E-03	1.93E-02	2.91E-01	3.54E-02	2.97E-04	6.40E-03	3.89E-03
	3/4 ton pickup					0					-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2	2	2	2	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04	2.39E-03	1.96E-03	2.88E-02	3.60E-05	2.95E-04	1.34E-04
						Total					1.03E+01	8.19E+01	5.32E+01	1.35E-01	3.30E+00	3.00E+00	3.35E-01	4.63E+00	2.69E+00	7.57E-03	2.13E-01	1.93E-01

Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC1 & CC4	CC1 & CC5	LV2							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC5) - 2018 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	1.54E-02	1.61E-02	2.14E-01	1.43E-04	1.14E-03	4.96E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	-	-	-	-	-	-
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	2.05E-03	2.45E-02	2.07E-02	3.67E-05	1.74E-03	1.60E-03
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	-	-	-	-	-	-
	Truck		0.3077		2.7692	3.0769	-	-	-	-	-	-
	Water pump	3.5 hp		4		4	1.93E-02	8.65E-03	2.33E-01	2.53E-05	2.44E-04	2.44E-04
Water Control - Removal	Flatbed Truck		4	12		16	1.54E-02	1.61E-02	2.14E-01	1.43E-04	1.14E-03	4.96E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	-	-	-	-	-	-
	Truck		0.3077			0.3077	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	9.44E-02	8.20E-01	8.48E-01	1.81E-03	3.88E-02	3.57E-02
	Crane 50'	200 hp	9.4118	18.8236		28.2354	6.36E-02	9.20E-01	2.53E-01	1.27E-03	3.98E-02	3.66E-02
	Man lift	210 hp				0	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	7.42E-02	1.19E+00	3.98E-01	1.78E-03	4.51E-02	4.15E-02
	Chainsaw		56.7647	75.2941	0.2941	132.3529	3.39E-01	5.31E-03	6.13E-01	6.82E-05	9.64E-04	9.62E-04
	1 ton pickup		0.1765		0.1765	0.353	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	-	-	-	-	-	-
	Front end loader	540 hp	0.2964		0.2964	0.5928	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	-	-	-	-	-	-
	Dump truck	20cy/24 ton			1.4866	1.4866	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Air Compressor	50 hp		32		32	4.79E-01	6.30E-01	2.31E+01	1.76E-03	1.11E-02	1.10E-02
	Crane 126'	350 hp	5.1111	5.1111		10.2222	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	-	-	-	-	-	-
	Excavator	430 hp	8	8	12	28	-	-	-	-	-	-
	Loader	190 hp	72	64	12	148	-	-	-	-	-	-
	Front end loader	180 hp	4.6667	4.6667		9.3334	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	1.91E-02	1.57E-02	2.30E-01	2.88E-04	2.36E-03	1.07E-03
	Chainsaw		44.4571	44.4571		88.9142	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-
	Truck		16	16		32	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.66E-02	3.18E-01	2.68E-01	4.75E-04	2.25E-02	2.07E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	3.26E-02	3.90E-01	3.29E-01	5.83E-04	2.76E-02	2.54E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.93E-02	2.91E-01	3.54E-02	2.97E-04	6.40E-03	3.89E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2.39E-03	1.96E-03	2.88E-02	3.60E-05	2.95E-04	1.34E-04
						Total	**1.20E+00**	**4.65E+00**	**2.67E+01**	**8.71E-03**	**1.99E-01**	**1.80E-01**

Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

15 15 15 days per construction period (5 days per week)

Activity	Equipment Type	Equipment Size	Hours of Operation CC2 & LV1 4/1-21	CC2 & LV2 4/22-5/12	CC3 5/13-6/2	Annual Hours	Emission Factors - 2019 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck		4	4	4	12	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.191	2.005	1.309	0.002	0.144	0.133	189.389	0.020	0.000
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Truck		2.7692	2.7692		5.5384	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Water pump	3.5 hp				0	4.688	2.102	56.579	0.006	0.058	0.058	177.791	0.267	0.301
Water Control - Removal	Flatbed Truck		4	4	4	12	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.191	2.005	1.309	0.002	0.144	0.133	189.389	0.020	0.000
	Loader/Backhoe	75 hp				0	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
	Tractor/crawler/dozer	250 hp	4	4		8	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Truck		2.7692			2.7692	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	0.184	1.549	1.804	0.004	0.073	0.067	341.375	0.017	0.000
	Crane 50'	200 hp	9.4118			9.4118	0.102	1.465	0.449	0.002	0.062	0.057	203.318	0.012	0.000
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	0.072	0.714	0.348	0.002	0.022	0.020	192.930	0.006	0.000
	Loader	190 hp	28.2352	14.2656		42.5008	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Chainsaw		56.4706	28.2353	28.2353	112.9412	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	1 ton pickup			0.0176		0.0176	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Tractor/crawler/dozer	250 hp				0	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Front end loader	540 hp		0.0148		0.0148	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000
	Dump truck	20cy/24 ton		0.1487		0.1487	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	0.128	1.044	0.475	0.003	0.033	0.031	237.872	0.012	0.000
	Air Compressor	50 hp				0	0.932	1.229	50.033	0.004	0.024	0.023	307.059	0.053	0.072
	Crane 126'	350 hp				0	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
	Crane 50'	263 hp	3.3028	3.3028		6.6056	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
	Crane 210'	230 hp				0	0.102	1.465	0.449	0.002	0.062	0.057	203.318	0.012	0.000
	Excavator	115 hp	128	32	48	208	0.103	1.287	1.887	0.003	0.080	0.074	278.045	0.022	0.000
	Excavator	430 hp	80	32	48	160	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Loader	190 hp	112	64	48	224	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Front end loader	180 hp				0	0.093	1.355	0.579	0.003	0.045	0.042	270.061	0.015	0.000
	Loader/Backhoe	75 hp				0	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	3/4 ton pickup		112	64	48	224	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Chainsaw		3.3028	3.3028		6.6056	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
Road Realignment	Vibratory roller	145 hp				0	0.072	1.013	1.585	0.003	0.047	0.043	280.063	0.019	0.000
	Vibrating compactor	5.5 hp				0	1.926	1.423	73.693	0.004	1.056	1.054	125.971	0.110	0.147
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	0.301	1.743	1.166	0.003	0.131	0.121	190.952	0.020	0.000
	Truck		39.6577	6.1748	6.1748	52.0073	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Suburban	3/4 ton				0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Disposal	Truck	35 ton	4	4	4	12	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	Truck	75 ton				0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Crane 210'	230 hp	18.8235			18.8235	0.102	1.465	0.449	0.002	0.062	0.057	203.318	0.012	0.000
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Tractor/crawler/dozer	250 hp				0	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Excavator	430 hp				0	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Truck					0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Generator	7.5 hp				0	1.953	1.388	102.758	0.005	0.092	0.092	175.214	0.111	0.144
Highway Replacement	Vibrating compactor	5.5 hp				0	1.926	1.423	73.693	0.004	1.056	1.054	125.971	0.110	0.147
	Tractor/crawler/dozer	250 hp				0	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Truck					0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Asphalt distributor	3000 gal				0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Asphalt paver	120 hp				0	0.170	1.940	1.825	0.003	0.144	0.132	261.328	0.033	0.000
	Vibrating roller/compactor	33 hp				0	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000
	Chip spreader truck					0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Line striper	23 hp				0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Flatbed Truck					0	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	3/4 ton pickup					0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	0.111	1.669	1.761	0.003	0.091	0.083	291.259	0.010	0.000
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	0.225	1.823	1.789	0.003	0.114	0.105	294.384	0.020	0.000
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
	Loader/Backhoe	92 hp		9.4118		9.4118	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000
	Vibratory roller	44 hp				0	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000
	Tractor/crawler/dozer	250 hp				0	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	3/4 ton pickup					0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	3/4 ton pickup			2		2	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
						Total									

Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const							GWP	1	21	310		
			CC2 & LV1	CC2 & LV2	CC3													
	Equipment	Equipment	Hours of Operation			Annual	Annual Emissions - 2019 (tons per year)											Metric Tons
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e		CO2e/yr
Water Control - Installation	Flatbed Truck		4	4	4	12	7.30E-05	7.88E-05	1.01E-03	7.99E-07	6.33E-06	2.73E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01		2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	8.99E-05	9.43E-04	6.15E-04	1.04E-06	6.78E-05	6.24E-05	8.91E-02	9.44E-06	-	8.93E-02		8.10E-02
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	9.72E-05	1.18E-03	1.12E-03	1.99E-06	7.88E-05	7.25E-05	1.70E-01	1.18E-05	-	1.70E-01		1.54E-01
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	6.15E-04	9.74E-03	3.37E-03	1.55E-05	3.67E-04	3.38E-04	1.38E+00	9.40E-05	-	1.38E+00		1.25E+00
	Truck		2.7692	2.7692		5.5384	4.18E-05	5.89E-04	7.73E-05	6.53E-07	1.36E-05	8.11E-06	1.31E-01	3.11E-07	2.93E-07	1.31E-01		1.19E-01
	Water pump	3.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
Water Control - Removal	Flatbed Truck		4	4	4	12	7.30E-05	7.88E-05	1.01E-03	7.99E-07	6.33E-06	2.73E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01		2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	8.99E-05	9.43E-04	6.15E-04	1.04E-06	6.78E-05	6.24E-05	8.91E-02	9.44E-06	-	8.93E-02		8.10E-02
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp	4	4		8	2.97E-04	4.70E-03	1.62E-03	7.47E-06	1.77E-04	1.63E-04	6.64E-01	4.54E-05	-	6.65E-01		6.03E-01
	Truck		2.7692			2.7692	2.09E-05	2.94E-04	3.87E-05	3.26E-07	6.80E-06	4.06E-06	6.55E-02	1.56E-07	1.47E-07	6.55E-02		5.94E-02
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.94E-03	1.64E-02	1.91E-02	4.07E-05	7.72E-04	7.11E-04	3.61E+00	1.75E-04	-	3.62E+00		3.28E+00
	Crane 50'	200 hp	9.4118			9.4118	2.11E-04	3.04E-03	9.32E-04	4.75E-06	1.29E-04	1.19E-04	4.22E-01	2.53E-05	-	4.22E-01		3.83E-01
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	4.70E-04	4.67E-03	2.28E-03	1.24E-05	1.44E-04	1.32E-04	1.26E+00	4.24E-05	-	1.26E+00		1.14E+00
	Loader	190 hp	28.2352	14.2656		42.5008	1.20E-03	1.90E-02	6.56E-03	3.02E-05	7.16E-04	6.58E-04	2.68E+00	1.83E-04	-	2.68E+00		2.44E+00
	Chainsaw		56.4706	28.2353	28.2353	112.9412	7.62E-03	1.19E-04	1.38E-02	1.54E-06	2.17E-05	2.17E-05	3.73E-02	4.74E-04	4.09E-05	5.99E-02		5.44E-02
	1 ton pickup			0.0176		0.0176	3.82E-08	4.89E-08	5.17E-07	1.18E-09	9.41E-09	4.12E-09	3.95E-04	3.93E-08	2.05E-08	4.02E-04		3.65E-04
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Front end loader	540 hp		0.0148		0.0148	7.72E-07	9.62E-06	5.59E-06	2.60E-08	3.78E-07	3.47E-07	2.58E-03	1.35E-07	-	2.59E-03		2.35E-03
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	5.71E-07	8.53E-06	3.17E-06	1.17E-08	3.31E-07	3.05E-07	1.19E-03	7.68E-08	-	1.19E-03		1.08E-03
	Dump truck	20cy/24 ton		0.1487		0.1487	1.12E-06	1.58E-05	2.08E-06	1.75E-08	3.65E-07	2.18E-07	3.52E-03	8.36E-09	7.87E-09	3.52E-03		3.19E-03
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	2.33E-04	1.90E-03	8.64E-04	4.87E-06	6.04E-05	5.56E-05	4.33E-01	2.10E-05	-	4.33E-01		3.93E-01
	Air Compressor	50 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 126'	350 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	1.59E-04	2.37E-03	6.86E-04	3.07E-06	9.55E-05	8.78E-05	3.13E-01	1.79E-05	-	3.13E-01		2.84E-01
	Crane 210'	230 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Excavator	115 hp	128	32	48	208	2.70E-03	3.39E-02	4.98E-02	8.60E-05	2.12E-03	1.95E-03	7.33E+00	5.69E-04	-	7.34E+00		6.66E+00
	Excavator	430 hp	80	32	48	160	3.88E-03	5.16E-02	3.18E-02	1.58E-04	1.67E-03	1.54E-03	1.61E+01	7.85E-04	-	1.61E+01		1.46E+01
	Loader	190 hp	112	64	48	224	6.31E-03	1.00E-01	3.46E-02	1.59E-04	3.77E-03	3.47E-03	1.41E+01	9.65E-04	-	1.41E+01		1.28E+01
	Front end loader	180 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	1.17E-03	1.85E-02	6.41E-03	2.95E-05	7.00E-04	6.44E-04	2.62E+00	1.79E-04	-	2.62E+00		2.38E+00
	3/4 ton pickup		112	64	48	224	8.66E-04	7.48E-04	1.05E-02	1.50E-05	1.23E-04	5.50E-05	5.03E+00	5.00E-04	2.61E-04	5.12E+00		4.64E+00
	Chainsaw		3.3028	3.3028		6.6056	4.46E-04	6.99E-06	8.07E-04	8.98E-08	1.27E-06	1.27E-06	2.18E-03	2.77E-05	2.39E-06	3.50E-03		3.18E-03
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	5.43E-05	3.14E-04	2.10E-04	5.35E-07	2.36E-05	2.17E-05	3.44E-02	3.61E-06	-	3.45E-02		3.13E-02
	Truck		39.6577	6.1748	6.1748	52.0073	3.93E-04	5.53E-03	7.26E-04	6.13E-06	1.28E-04	7.62E-05	1.23E+00	2.92E-06	2.75E-06	1.23E+00		1.12E+00
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	4.70E-05	6.61E-04	8.69E-05	7.34E-07	1.53E-05	9.11E-06	1.47E-01	3.50E-07	3.29E-07	1.47E-01		1.34E-01
	Suburban	3/4 ton				0	-	-	-	-	-	-	-	-	-	-		-
Disposal	Truck	35 ton	4	4	4	12	7.30E-05	7.88E-05	1.01E-03	7.99E-07	6.33E-06	2.73E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01		2.53E-01
	Truck	75 ton				0	-	-	-	-	-	-	-	-	-	-		-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	1.46E-04	1.26E-04	1.77E-03	2.52E-06	2.06E-05	9.25E-06	8.45E-01	8.40E-05	4.38E-05	8.60E-01		7.80E-01
	Crane 210'	230 hp	18.8235			18.8235	4.85E-04	6.99E-03	2.14E-03	1.09E-05	2.96E-04	2.73E-04	9.70E-01	5.81E-05	-	9.72E-01		8.81E-01
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	2.22E-03	3.31E-02	9.59E-03	4.29E-05	1.33E-03	1.23E-03	4.37E+00	2.50E-04	-	4.37E+00		3.97E+00
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	2.91E-04	2.51E-04	3.54E-03	5.05E-06	4.12E-05	1.85E-05	1.69E+00	1.68E-04	8.76E-05	1.72E+00		1.56E+00
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Excavator	430 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Truck					0	-	-	-	-	-	-	-	-	-	-		-
	Generator	7.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Truck					0	-	-	-	-	-	-	-	-	-	-		-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-	-	-	-	-		-
	Asphalt paver	120 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Chip spreader truck					0	-	-	-	-	-	-	-	-	-	-		-
	Line striper	23 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Flatbed Truck					0	-	-	-	-	-	-	-	-	-	-		-
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-		-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	6.43E-05	1.93E-04	4.97E-03	1.51E-06	1.21E-05	1.21E-05	1.52E-01	3.66E-06	1.24E-05	1.56E-01		1.41E-01
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	4.56E-04	5.78E-03	4.16E-03	7.89E-06	3.09E-04	2.84E-04	7.02E-01	5.51E-05	-	7.03E-01		6.37E-01
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	2.32E-03	3.45E-02	9.99E-03	4.47E-05	1.39E-03	1.28E-03	4.55E+00	2.61E-04	-	4.56E+00		4.13E+00
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	2.88E-04	4.33E-03	4.57E-03	8.86E-06	2.35E-04	2.16E-04	7.55E-01	2.59E-05	-	7.56E-01		6.86E-01
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	4.67E-04	3.78E-03	3.71E-03	7.17E-06	2.37E-04	2.18E-04	6.11E-01	4.22E-05	-	6.12E-01		5.55E-01
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	9.13E-04	1.21E-02	7.49E-03	3.71E-05	3.94E-04	3.62E-04	3.78E+00	1.85E-04	-	3.78E+00		3.43E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	4.36E-04	5.29E-03	5.01E-03	8.92E-06	3.53E-04	3.25E-04	7.60E-01	5.27E-05	-	7.61E-01		6.91E-01
	Loader/Backhoe	92 hp		9.4118		9.4118	1.07E-04	1.30E-03	1.23E-03	2.19E-06	8.67E-05	7.98E-05	1.86E-01	1.29E-05	-	1.87E-01		1.69E-01
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.55E-04	5.00E-03	6.57E-04	5.55E-06	1.16E-04	6.89E-05	1.11E+00	2.65E-06	2.49E-06	1.11E+00		1.01E+00
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-		-
	3/4 ton pickup			2		2	7.74E-06	6.68E-06	9.39E-05	1.34E-07	1.09E-06	4.91E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02		4.15E-02
						Total	**3.77E-02**	**3.90E-01**	**2.49E-01**	**7.68E-04**	**1.61E-02**	**1.46E-02**	**7.93E+01**	**5.53E-03**	**5.41E-04**	**7.96E+01**		**7.22E+01**

Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per constr												
			CC2 & LV1	CC2 & LV2	CC3													
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC2 & LV1) - 2019 (pounds per day)						Peak Daily Emissions (CC2 & LV2) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	9.99E-03	1.05E-01	6.84E-02	1.16E-04	7.53E-03	6.93E-03	7.99E-03	8.38E-02	5.47E-02	9.29E-05	6.03E-03	5.55E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	1.30E-02	1.57E-01	1.49E-01	2.65E-04	1.05E-02	9.67E-03	6.48E-03	7.87E-02	7.46E-02	1.33E-04	5.26E-03	4.83E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	1.08E-01	1.72E+00	5.93E-01	2.73E-03	6.47E-02	5.96E-02	5.56E-02	8.81E-01	3.05E-01	1.40E-03	3.32E-02	3.06E-02
	Truck		2.7692	2.7692		5.5384	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
	Water pump	3.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	9.99E-03	1.05E-01	6.84E-02	1.16E-04	7.53E-03	6.93E-03	7.99E-03	8.38E-02	5.47E-02	9.29E-05	6.03E-03	5.55E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	3.95E-02	6.27E-01	2.17E-01	9.96E-04	2.36E-02	2.17E-02	3.95E-02	6.27E-01	2.17E-01	9.96E-04	2.36E-02	2.17E-02
	Truck		2.7692			2.7692	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	2.59E-01	2.19E+00	2.55E+00	5.42E-03	1.03E-01	9.47E-02	1.30E-01	1.09E+00	1.27E+00	2.71E-03	5.15E-02	4.74E-02
	Crane 50'	200 hp	9.4118			9.4118	5.62E-02	8.10E-01	2.49E-01	1.27E-03	3.44E-02	3.16E-02	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	4.18E-02	4.15E-01	2.02E-01	1.10E-03	1.28E-02	1.18E-02	4.18E-02	4.15E-01	2.02E-01	1.10E-03	1.28E-02	1.18E-02
	Loader	190 hp	28.2352	14.2656		42.5008	2.12E-01	3.36E+00	1.16E+00	5.34E-03	1.27E-01	1.17E-01	1.07E-01	1.70E+00	5.87E-01	2.70E-03	6.41E-02	5.89E-02
	Chainsaw		56.4706	28.2353	28.2353	112.9412	1.02E+00	1.59E-02	1.84E+00	2.05E-04	2.89E-03	2.89E-03	5.08E-01	7.96E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176	-	-	-	-	-	-	1.02E-05	1.30E-05	1.38E-04	3.16E-07	2.51E-06	1.10E-06
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	-	-	-	-	-	-	2.06E-04	2.57E-03	1.49E-03	6.93E-06	1.01E-04	9.26E-05
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	-	-	-	-	-	-	1.52E-04	2.28E-03	8.45E-04	3.11E-06	8.84E-05	8.13E-05
	Dump truck	20cy/24 ton		0.1487		0.1487	-	-	-	-	-	-	2.99E-04	4.21E-03	5.54E-04	4.67E-06	9.74E-05	5.81E-05
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	3.11E-02	2.53E-01	1.15E-01	6.50E-04	8.06E-03	7.41E-03	3.11E-02	2.53E-01	1.15E-01	6.50E-04	8.06E-03	7.41E-03
	Air Compressor	50 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	2.12E-02	3.16E-01	9.14E-02	4.09E-04	1.27E-02	1.17E-02	2.12E-02	3.16E-01	9.14E-02	4.09E-04	1.27E-02	1.17E-02
	Crane 210'	230 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	4.44E-01	5.57E+00	8.16E+00	1.41E-02	3.48E-01	3.20E-01	1.11E-01	1.39E+00	2.04E+00	3.53E-03	8.70E-02	8.01E-02
	Excavator	430 hp	80	32	48	160	5.17E-01	6.87E+00	4.25E+00	2.10E-02	2.23E-01	2.05E-01	2.07E-01	2.75E+00	1.70E+00	8.41E-03	8.93E-02	8.21E-02
	Loader	190 hp	112	64	48	224	8.41E-01	1.33E+01	4.61E+00	2.12E-02	5.03E-01	4.63E-01	4.81E-01	7.62E+00	2.63E+00	1.21E-02	2.87E-01	2.64E-01
	Front end loader	180 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	2.05E-01	3.25E+00	1.12E+00	5.17E-03	1.23E-01	1.13E-01	5.35E-02	8.48E-01	2.93E-01	1.35E-03	3.20E-02	2.94E-02
	3/4 ton pickup		112	64	48	224	1.16E-01	9.97E-02	1.40E+00	2.00E-03	1.63E-02	7.34E-03	6.60E-02	5.70E-02	8.02E-01	1.14E-03	9.34E-03	4.19E-03
	Chainsaw		3.3028	3.3028		6.6056	5.95E-02	9.32E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04	5.95E-02	9.32E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	9.51E-03	5.50E-02	3.68E-02	9.37E-05	4.13E-03	3.80E-03	2.48E-03	1.44E-02	9.60E-03	2.45E-05	1.08E-03	9.93E-04
	Truck		39.6577	6.1748	6.1748	52.0073	7.98E-02	1.12E+00	1.48E-01	1.25E-03	2.60E-02	1.55E-02	1.24E-02	1.75E-01	2.30E-02	1.94E-04	4.04E-03	2.41E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	8.23E-03	1.16E-01	1.52E-02	1.29E-04	2.68E-03	1.60E-03	2.15E-03	3.02E-02	3.97E-03	3.35E-05	6.99E-04	4.17E-04
	Suburban	3/4 ton				0	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Truck	75 ton				0	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03	9.71E-03	8.38E-03	1.18E-01	1.68E-04	1.37E-03	6.16E-04
	Crane 210'	230 hp	18.8235			18.8235	1.29E-01	1.86E+00	5.72E-01	2.91E-03	7.90E-02	7.27E-02	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	1.98E-01	2.95E+00	8.52E-01	3.81E-03	1.19E-01	1.09E-01	1.98E-01	2.95E+00	8.52E-01	3.81E-03	1.19E-01	1.09E-01
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	3.88E-02	3.35E-02	4.72E-01	6.73E-04	5.49E-03	2.47E-03	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	1.03E-02	3.08E-02	7.95E-01	2.41E-04	1.94E-03	1.93E-03	3.43E-03	1.03E-02	2.65E-01	8.05E-05	6.45E-04	6.44E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	6.08E-02	7.70E-01	5.54E-01	1.05E-03	4.12E-02	3.79E-02	3.04E-02	3.85E-01	2.77E-01	5.26E-04	2.06E-02	1.89E-02
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	3.71E-01	5.52E+00	1.60E+00	7.15E-03	2.22E-01	2.05E-01	1.24E-01	1.84E+00	5.33E-01	2.38E-03	7.41E-02	6.82E-02
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	3.84E-02	5.77E-01	6.09E-01	1.18E-03	3.13E-02	2.88E-02	1.92E-02	2.89E-01	3.05E-01	5.91E-04	1.57E-02	1.44E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	6.23E-02	5.04E-01	4.95E-01	9.55E-04	3.16E-02	2.91E-02	3.12E-02	2.52E-01	2.47E-01	4.78E-04	1.58E-02	1.45E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	1.22E-01	1.62E+00	9.99E-01	4.95E-03	5.25E-02	4.83E-02	6.09E-02	8.09E-01	4.99E-01	2.47E-03	2.63E-02	2.42E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	4.65E-02	5.65E-01	5.35E-01	9.51E-04	3.77E-02	3.47E-02	4.65E-02	5.65E-01	5.35E-01	9.51E-04	3.77E-02	3.47E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	-	-	-	-	-	-	2.85E-02	3.46E-01	3.28E-01	5.83E-04	2.31E-02	2.13E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2	-	-	-	-	-	-	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
						Total	**5.26E+00**	**5.56E+01**	**3.52E+01**	**1.09E-01**	**2.30E+00**	**2.09E+00**	**2.59E+00**	**2.65E+01**	**1.61E+01**	**5.05E-02**	**1.09E+00**	**9.88E-01**

Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC2 & LV1	CC2 & LV2	CC3							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC3) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	6.00E-03	6.29E-02	4.10E-02	6.97E-05	4.52E-03	4.16E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	6.48E-03	7.87E-02	7.46E-02	1.33E-04	5.26E-03	4.83E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	-	-	-	-	-	-
	Truck		2.7692	2.7692		5.5384	-	-	-	-	-	-
	Water pump	3.5 hp				0	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	6.00E-03	6.29E-02	4.10E-02	6.97E-05	4.52E-03	4.16E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	Truck		2.7692			2.7692	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.30E-01	1.09E+00	1.27E+00	2.71E-03	5.15E-02	4.74E-02
	Crane 50'	200 hp	9.4118			9.4118	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	4.18E-02	4.15E-01	2.02E-01	1.10E-03	1.28E-02	1.18E-02
	Loader	190 hp	28.2352	14.2656		42.5008	-	-	-	-	-	-
	Chainsaw		56.4706	28.2353	28.2353	112.9412	5.08E-01	7.96E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	-	-	-	-	-	-
	Dump truck	20cy/24 ton		0.1487		0.1487	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Air Compressor	50 hp				0	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Crane 210'	230 hp				0	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	1.66E-01	2.09E+00	3.06E+00	5.29E-03	1.31E-01	1.20E-01
	Excavator	430 hp	80	32	48	160	3.10E-01	4.12E+00	2.55E+00	1.26E-02	1.34E-01	1.23E-01
	Loader	190 hp	112	64	48	224	3.61E-01	5.72E+00	1.98E+00	9.08E-03	2.16E-01	1.98E-01
	Front end loader	180 hp				0	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	5.35E-02	8.48E-01	2.93E-01	1.35E-03	3.20E-02	2.94E-02
	3/4 ton pickup		112	64	48	224	4.95E-02	4.27E-02	6.01E-01	8.58E-04	7.01E-03	3.14E-03
	Chainsaw		3.3028	3.3028		6.6056	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	2.48E-03	1.44E-02	9.60E-03	2.45E-05	1.08E-03	9.93E-04
	Truck		39.6577	6.1748	6.1748	52.0073	1.24E-02	1.75E-01	2.30E-02	1.94E-04	4.04E-03	2.41E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	2.15E-03	3.02E-02	3.97E-03	3.35E-05	6.99E-04	4.17E-04
	Suburban	3/4 ton				0	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Truck	75 ton				0	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	9.71E-03	8.38E-03	1.18E-01	1.68E-04	1.37E-03	6.16E-04
	Crane 210'	230 hp	18.8235			18.8235	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	1.98E-01	2.95E+00	8.52E-01	3.81E-03	1.19E-01	1.09E-01
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	3.43E-03	1.03E-02	2.65E-01	8.05E-05	6.45E-04	6.44E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	3.04E-02	3.85E-01	2.77E-01	5.26E-04	2.06E-02	1.89E-02
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	1.24E-01	1.84E+00	5.33E-01	2.38E-03	7.41E-02	6.82E-02
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	1.92E-02	2.89E-01	3.05E-01	5.91E-04	1.57E-02	1.44E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	3.12E-02	2.52E-01	2.47E-01	4.78E-04	1.58E-02	1.45E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	6.09E-02	8.09E-01	4.99E-01	2.47E-03	2.63E-02	2.42E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.32E-02	2.82E-01	2.67E-01	4.75E-04	1.88E-02	1.73E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	-	-	-	-	-	-
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup			2		2	-	-	-	-	-	-
						Total	**2.21E+00**	**2.19E+01**	**1.50E+01**	**4.55E-02**	**9.07E-01**	**8.25E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

	Data from EMFAC2011 (g/hr)
	Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's I	1/1/2018
Birthday of M	1/15/2018
Washington'	2/19/2018
Memorial Da	5/28/2018
Independenc	7/4/2018
Labor Day	9/3/2018
Columbus D	10/8/2018
Veterans Da	11/12/2018
Thanksgivin	11/22/2018
Christmas D	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC2 Equipment Report.pdf
CC3 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV1 Equipment Report.pdf
LV2 Equipment Report.pdf

Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per constr																	
			CC2 & LV1	CC2 & LV2	CC3																		
	Equipment	Equipment	Hours of Operation			Annual	Annual Hours by Site				Peak Daily Emissions (CC2) - 2019 (pounds per day)						Peak Daily Emissions (LV1) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	CC2	LV1	LV2 - Yr 2	CC3	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	4			4	1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.3333	0.8889	0.4444	1.3333	1.20E-02	1.26E-01	8.21E-02	1.39E-04	9.04E-03	8.32E-03	4.00E-03	4.19E-02	2.74E-02	4.64E-05	3.01E-03	2.77E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	2.624	2.624		2.624	1.30E-02	1.57E-01	1.49E-01	2.65E-04	1.05E-02	9.67E-03	6.48E-03	7.87E-02	7.46E-02	1.33E-04	5.26E-03	4.83E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833		10.9583	5.625		-	-	-	-	-	-	1.08E-01	1.72E+00	5.93E-01	2.73E-03	6.47E-02	5.96E-02
	Truck		2.7692	2.7692		5.5384		2.7692	2.7692		-	-	-	-	-	-	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
	Water pump	3.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	4			4	1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.3333	0.8889	0.4444	1.3333	1.20E-02	1.26E-01	8.21E-02	1.39E-04	9.04E-03	8.32E-03	4.00E-03	4.19E-02	2.74E-02	4.64E-05	3.01E-03	2.77E-03
	Loader/Backhoe	75 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8		4	4		-	-	-	-	-	-	3.95E-02	6.27E-01	2.17E-01	9.96E-04	2.36E-02	2.17E-02
	Truck		2.7692			2.7692		2.7692			-	-	-	-	-	-	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	14.1176	14.1176	0.0148	14.1176	2.59E-01	2.19E+00	2.55E+00	5.42E-03	1.03E-01	9.47E-02	1.30E-01	1.09E+00	1.27E+00	2.71E-03	5.15E-02	4.74E-02
	Crane 50'	200 hp	9.4118			9.4118		9.4118			-	-	-	-	-	-	5.62E-02	8.10E-01	2.49E-01	1.27E-03	3.44E-02	3.16E-02
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	9.4118			9.4118	8.36E-02	8.30E-01	4.05E-01	2.20E-03	2.56E-02	2.35E-02	-	-	-	-	-	-
	Loader	190 hp	28.2352	14.2656		42.5008	14.1176	14.1176	0.0148		2.13E-01	3.38E+00	1.17E+00	5.37E-03	1.27E-01	1.17E-01	1.06E-01	1.68E+00	5.81E-01	2.67E-03	6.34E-02	5.83E-02
	Chainsaw		56.4706	28.2353	28.2353	112.9412	28.2353	28.2353		28.2353	1.02E+00	1.59E-02	1.84E+00	2.05E-04	2.89E-03	2.89E-03	5.08E-01	7.96E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176			0.0176		-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148			0.0148		-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp		0.0148		0.0148			0.0148		-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	20cy/24 ton		0.1487		0.1487			0.1487		-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	3.3028				6.22E-02	5.07E-01	2.31E-01	1.30E-03	1.61E-02	1.48E-02	-	-	-	-	-	-
	Air Compressor	50 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	3.3028				4.24E-02	6.32E-01	1.83E-01	8.18E-04	2.55E-02	2.34E-02	-	-	-	-	-	-
	Crane 210'	230 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208		128	32	48	-	-	-	-	-	-	4.44E-01	5.57E+00	8.16E+00	1.41E-02	3.48E-01	3.20E-01
	Excavator	430 hp	80	32	48	160	16	64	16	48	2.07E-01	2.75E+00	1.70E+00	8.41E-03	8.93E-02	8.21E-02	4.14E-01	5.50E+00	3.40E+00	1.68E-02	1.79E-01	1.64E-01
	Loader	190 hp	112	64	48	224	48	64	16	48	7.21E-01	1.14E+01	3.95E+00	1.82E-02	4.31E-01	3.97E-01	4.81E-01	7.62E+00	2.63E+00	1.21E-02	2.87E-01	2.64E-01
	Front end loader	180 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	5.413	15.3324		5.413	1.07E-01	1.70E+00	5.86E-01	2.70E-03	6.40E-02	5.88E-02	1.52E-01	2.40E+00	8.30E-01	3.82E-03	9.06E-02	8.33E-02
	3/4 ton pickup		112	64	48	224	48	64	16	48	9.90E-02	8.55E-02	1.20E+00	1.72E-03	1.40E-02	6.29E-03	6.60E-02	5.70E-02	8.02E-01	1.14E-03	9.34E-03	4.19E-03
	Chainsaw		3.3028	3.3028		6.6056	3.3028				1.19E-01	1.86E-03	2.15E-01	2.39E-05	3.38E-04	3.38E-04	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	3.735	10.575		3.735	4.96E-03	2.87E-02	1.92E-02	4.89E-05	2.16E-03	1.99E-03	7.03E-03	4.06E-02	2.72E-02	6.93E-05	3.06E-03	2.81E-03
	Truck		39.6577	6.1748	6.1748	52.0073	6.1748	33.4829		6.1748	2.49E-02	3.50E-01	4.60E-02	3.88E-04	8.09E-03	4.82E-03	6.74E-02	9.49E-01	1.25E-01	1.05E-03	2.19E-02	1.31E-02
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	1.0671	3.0214		1.0671	4.30E-03	6.05E-02	7.95E-03	6.71E-05	1.40E-03	8.34E-04	6.08E-03	8.56E-02	1.12E-02	9.50E-05	1.98E-03	1.18E-03
	Suburban	3/4 ton				0					-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	4			4	1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04	-	-	-	-	-	-
	Truck	75 ton				0					-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	9.4118	9.4118		9.4118	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03	9.71E-03	8.38E-03	1.18E-01	1.68E-04	1.37E-03	6.16E-04
	Crane 210'	230 hp	18.8235			18.8235		18.8235			-	-	-	-	-	-	1.29E-01	1.86E+00	5.72E-01	2.91E-03	7.90E-02	7.27E-02
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	18.8235			18.8235	3.96E-01	5.89E+00	1.70E+00	7.62E-03	2.37E-01	2.18E-01	-	-	-	-	-	-
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	18.8235	18.8235		18.8235	3.88E-02	3.35E-02	4.72E-01	6.73E-04	5.49E-03	2.47E-03	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0					-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0					-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	11.7647	23.5294		11.7647	6.86E-03	2.06E-02	5.30E-01	1.61E-04	1.29E-03	1.29E-03	6.86E-03	2.06E-02	5.30E-01	1.61E-04	1.29E-03	1.29E-03
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	5.8824	5.8824		5.8824	6.08E-02	7.70E-01	5.54E-01	1.05E-03	4.12E-02	3.79E-02	3.04E-02	3.85E-01	2.77E-01	5.26E-04	2.06E-02	1.89E-02
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	11.7647	23.5294		11.7647	2.47E-01	3.68E+00	1.07E+00	4.77E-03	1.48E-01	1.36E-01	2.47E-01	3.68E+00	1.07E+00	4.77E-03	1.48E-01	1.36E-01
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	5.8824	5.8824		5.8824	3.84E-02	5.77E-01	6.09E-01	1.18E-03	3.13E-02	2.88E-02	1.92E-02	2.89E-01	3.05E-01	5.91E-04	1.57E-02	1.44E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	5.8824	5.8824		5.8824	6.23E-02	5.04E-01	4.95E-01	9.55E-04	3.16E-02	2.91E-02	3.12E-02	2.52E-01	2.47E-01	4.78E-04	1.58E-02	1.45E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	9.4118	9.4118		9.4118	1.22E-01	1.62E+00	9.99E-01	4.95E-03	5.25E-02	4.83E-02	6.09E-02	8.09E-01	4.99E-01	2.47E-03	2.63E-02	2.42E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	4.65E-02	5.65E-01	5.35E-01	9.51E-04	3.77E-02	3.47E-02	2.32E-02	2.82E-01	2.67E-01	4.75E-04	1.88E-02	1.73E-02
	Loader/Backhoe	92 hp		9.4118		9.4118			9.4118		-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory roller	44 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0					-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2			2		-	-	-	-	-	-	-	-	-	-	-	-
						Total					4.12E+00	3.86E+01	2.22E+01	7.10E-02	1.54E+00	1.40E+00	3.21E+00	3.64E+01	2.41E+01	7.33E-02	1.53E+00	1.39E+00

Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC2 & LV1	CC2 & LV2	CC3							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (LV2 - Yr 2) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	2.00E-03	2.09E-02	1.37E-02	2.32E-05	1.51E-03	1.39E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	5.56E-02	8.81E-01	3.05E-01	1.40E-03	3.32E-02	3.06E-02
	Truck		2.7692	2.7692		5.5384	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
	Water pump	3.5 hp				0	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	2.00E-03	2.09E-02	1.37E-02	2.32E-05	1.51E-03	1.39E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	3.95E-02	6.27E-01	2.17E-01	9.96E-04	2.36E-02	2.17E-02
	Truck		2.7692			2.7692	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.36E-04	1.15E-03	1.33E-03	2.84E-06	5.40E-05	4.96E-05
	Crane 50'	200 hp	9.4118			9.4118	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	-	-	-	-	-	-
	Loader	190 hp	28.2352	14.2656		42.5008	1.12E-04	1.78E-03	6.15E-04	2.83E-06	6.71E-05	6.17E-05
	Chainsaw		56.4706	28.2353	28.2353	112.9412	-	-	-	-	-	-
	1 ton pickup			0.0176		0.0176	1.02E-05	1.30E-05	1.38E-04	3.16E-07	2.51E-06	1.10E-06
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	2.06E-04	2.57E-03	1.49E-03	6.93E-06	1.01E-04	9.26E-05
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	1.52E-04	2.28E-03	8.45E-04	3.11E-06	8.84E-05	8.13E-05
	Dump truck	20cy/24 ton		0.1487		0.1487	2.99E-04	4.21E-03	5.54E-04	4.67E-06	9.74E-05	5.81E-05
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Air Compressor	50 hp				0	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Crane 210'	230 hp				0	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	1.11E-01	1.39E+00	2.04E+00	3.53E-03	8.70E-02	8.01E-02
	Excavator	430 hp	80	32	48	160	1.03E-01	1.37E+00	8.49E-01	4.21E-03	4.46E-02	4.11E-02
	Loader	190 hp	112	64	48	224	1.20E-01	1.91E+00	6.59E-01	3.03E-03	7.18E-02	6.61E-02
	Front end loader	180 hp				0	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	-	-	-	-	-	-
	3/4 ton pickup		112	64	48	224	1.65E-02	1.42E-02	2.00E-01	2.86E-04	2.34E-03	1.05E-03
	Chainsaw		3.3028	3.3028		6.6056	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	-	-	-	-	-	-
	Truck		39.6577	6.1748	6.1748	52.0073	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	-	-	-	-	-	-
	Suburban	3/4 ton				0	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	-	-	-	-	-	-
	Truck	75 ton				0	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	-	-	-	-	-	-
	Crane 210'	230 hp	18.8235			18.8235	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	-	-	-	-	-	-
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	-	-	-	-	-	-
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	-	-	-	-	-	-
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	-	-	-	-	-	-
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	-	-	-	-	-	-
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	-	-	-	-	-	-
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.32E-02	2.82E-01	2.67E-01	4.75E-04	1.88E-02	1.73E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	2.85E-02	3.46E-01	3.28E-01	5.83E-04	2.31E-02	2.13E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup			2		2	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
						Total	**5.29E-01**	**7.22E+00**	**4.97E+00**	**1.50E-02**	**3.16E-01**	**2.87E-01**

Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

50 15 days per construction period (5 days per week)

Activity	Equipment Type	Equipment Size	Hours of Operation LV3 & LV4 4/1-6/9	Hours of Operation LV2 6/10-6/30	Annual Hours	Emission Factors - 2020 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck				0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	Crane 44'	80 hp	49.6732	0.4444	50.1176	0.174	1.838	1.301	0.002	0.130	0.120	189.389	0.018	0.000
	Loader/Backhoe	75 hp	34.624		34.624	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Truck		34.1719	2.7692	36.9411	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Water pump	3.5 hp			0	4.688	2.102	56.569	0.006	0.058	0.058	177.791	0.267	0.301
Water Control - Removal	Flatbed Truck				0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	Crane 44'	80 hp		0.4444	0.4444	0.174	1.838	1.301	0.002	0.130	0.120	189.389	0.018	0.000
	Loader/Backhoe	75 hp	32		32	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Truck		34.1719		34.1719	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	0.170	1.377	1.804	0.004	0.065	0.060	341.375	0.015	0.000
	Crane 50'	200 hp			0	0.091	1.315	0.442	0.002	0.054	0.050	203.318	0.012	0.000
	Man lift	210 hp			0	0.068	0.631	0.345	0.002	0.020	0.018	192.930	0.006	0.000
	Loader	190 hp	5.9294	0.0074	5.9368	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Chainsaw		5.8824	0.0147	5.8971	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	1 ton pickup			0.0088	0.0088	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Front end loader	540 hp	5.9294	0.0074	5.9368	0.083	1.001	0.621	0.003	0.039	0.036	293.384	0.015	0.000
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	0.107	1.553	0.604	0.002	0.060	0.056	234.962	0.014	0.000
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Demolition	Air Compressor	250 hp			0	0.121	0.919	0.470	0.003	0.029	0.027	237.872	0.011	0.000
	Air Compressor	50 hp			0	0.882	1.143	50.704	0.004	0.024	0.023	307.059	0.050	0.070
	Crane 126'	350 hp			0	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
	Crane 50'	263 hp			0	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
	Crane 210'	230 hp			0	0.091	1.315	0.442	0.002	0.054	0.050	203.318	0.012	0.000
	Excavator	115 hp		40	40	0.094	1.180	1.881	0.003	0.071	0.065	278.045	0.020	0.000
	Excavator	430 hp	80	20	100	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
	Loader	190 hp		20	20	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Front end loader	180 hp			0	0.087	1.238	0.573	0.003	0.041	0.038	270.061	0.014	0.000
	Loader/Backhoe	75 hp	350		350	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
	Tractor/crawler/dozer	250 hp	50.068		50.068	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	3/4 ton pickup		72	20	92	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Chainsaw				0	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	0.067	0.920	1.583	0.003	0.042	0.039	280.063	0.018	0.000
	Vibrating compactor	5.5 hp	5.1724		5.1724	1.925	1.423	73.688	0.004	1.056	1.054	125.971	0.110	0.147
	Vibratory compactor	7.5 hp			0	0.287	1.701	1.166	0.003	0.123	0.114	190.952	0.020	0.000
	Truck		372.9363		372.9363	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Asphalt distributor	3000 gal	22.9363		22.9363	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Suburban	3/4 ton			0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Disposal	Truck	35 ton			0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	Truck	75 ton			0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Bridge Installation	Suburban	3/4 ton			0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Crane 210'	230 hp			0	0.091	1.315	0.442	0.002	0.054	0.050	203.318	0.012	0.000
	Crane 270'	430 hp			0	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
	3/4 ton pickup				0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp			0	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Excavator	430 hp			0	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
	Truck				0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Generator	7.5 hp			0	1.929	1.379	102.648	0.005	0.092	0.092	175.214	0.110	0.144
Highway Replacement	Vibrating compactor	5.5 hp			0	1.925	1.423	73.688	0.004	1.056	1.054	125.971	0.110	0.147
	Tractor/crawler/dozer	250 hp			0	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Truck				0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Asphalt distributor	3000 gal			0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Asphalt paver	120 hp			0	0.161	1.839	1.815	0.003	0.135	0.124	261.328	0.031	0.000
	Vibrating roller/compactor	33 hp			0	0.492	1.848	2.208	0.003	0.116	0.106	235.507	0.044	0.000
	Chip spreader truck				0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Line striper	23 hp			0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Flatbed Truck				0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	3/4 ton pickup				0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp			0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Crane 80'	130 hp			0	0.128	1.605	1.231	0.002	0.086	0.079	208.066	0.015	0.000
	Crane 114'	430 hp			0	0.076	1.113	0.348	0.002	0.045	0.041	163.241	0.009	0.000
	Auger drill	100 hp			0	0.102	1.541	1.761	0.003	0.080	0.073	291.259	0.010	0.000
	Water pump	80 hp			0	0.203	1.678	1.780	0.003	0.099	0.091	294.384	0.018	0.000
Landscaping	Excavator	430 hp	144.7059		144.7059	0.048	0.600	0.416	0.002	0.020	0.018	211.854	0.010	0.000
	Loader/Backhoe	75 hp	8	9.4118	17.4118	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
	Loader/Backhoe	92 hp		9.4118	9.4118	0.101	1.226	1.285	0.002	0.077	0.071	195.356	0.012	0.000
	Vibratory roller	44 hp	144.7059		144.7059	0.492	1.848	2.208	0.003	0.116	0.106	235.507	0.044	0.000
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	0.128	1.986	0.719	0.003	0.075	0.069	301.159	0.019	0.000
	Dump truck	12 cy	8	9.4118	17.4118	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	3/4 ton pickup		181.1765		181.1765	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	3/4 ton pickup		8	2	10	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
					Total									

Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

50 15 days per const
LV3 & LV4 LV2

GWP 1 21 310

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-6/9	Hours of Operation 6/10-6/30	Annual Hours	Annual Emissions - 2020 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	7.70E-04	8.13E-03	5.75E-03	9.82E-06	5.77E-04	5.31E-04	8.37E-01	8.17E-05	-	8.39E-01	7.61E-01
	Loader/Backhoe	75 hp	34.624		34.624	2.89E-04	3.51E-03	3.68E-03	6.56E-06	2.22E-04	2.04E-04	5.59E-01	3.57E-05	-	5.60E-01	5.08E-01
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	4.63E-03	7.21E-02	2.61E-02	1.23E-04	2.72E-03	2.50E-03	1.09E+01	7.05E-04	-	1.09E+01	9.92E+00
	Truck		34.1719	2.7692	36.9411	2.70E-04	3.17E-03	5.05E-04	4.34E-06	8.26E-05	4.66E-05	8.71E-01	2.08E-06	1.95E-06	8.72E-01	7.91E-01
	Water pump	3.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	6.83E-06	7.20E-05	5.10E-05	8.71E-08	5.11E-06	4.70E-06	7.42E-03	7.24E-07	-	7.44E-03	6.75E-03
	Loader/Backhoe	75 hp	32		32	2.67E-04	3.24E-03	3.40E-03	6.06E-06	2.05E-04	1.89E-04	5.17E-01	3.30E-05	-	5.18E-01	4.69E-01
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	4.47E-04	6.95E-03	2.52E-03	1.19E-05	2.62E-04	2.41E-04	1.05E+00	6.80E-05	-	1.06E+00	9.58E-01
	Truck		34.1719		34.1719	2.50E-04	2.93E-03	4.68E-04	4.02E-06	7.64E-05	4.31E-05	8.06E-01	1.92E-06	1.81E-06	8.06E-01	7.32E-01
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	1.89E-04	1.53E-03	2.01E-03	4.27E-06	7.22E-05	6.64E-05	3.80E-01	1.71E-05	-	3.80E-01	3.45E-01
	Crane 50'	200 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	1.59E-04	2.47E-03	8.94E-04	4.21E-06	9.31E-05	8.56E-05	3.74E-01	2.42E-05	-	3.75E-01	3.40E-01
	Chainsaw		5.8824	0.0147	5.8971	3.98E-04	6.24E-06	7.20E-04	8.02E-08	1.13E-06	1.13E-06	1.95E-03	2.47E-05	2.14E-06	3.13E-03	2.84E-03
	1 ton pickup			0.0088	0.0088	1.60E-08	2.21E-08	2.19E-07	5.91E-10	4.66E-09	2.02E-09	1.98E-04	1.96E-08	1.02E-08	2.01E-04	1.82E-04
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	2.07E-04	3.23E-03	1.17E-03	5.51E-06	1.22E-04	1.12E-04	4.89E-01	3.16E-05	-	4.90E-01	4.45E-01
	Front end loader	540 hp	5.9294	0.0074	5.9368	2.93E-04	3.54E-03	2.19E-03	1.04E-05	1.37E-04	1.26E-04	1.04E+00	5.16E-05	-	1.04E+00	9.42E-01
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	2.17E-04	3.15E-03	1.23E-03	4.68E-06	1.23E-04	1.13E-04	4.77E-01	2.92E-05	-	4.77E-01	4.33E-01
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	4.35E-04	5.10E-03	8.15E-04	7.00E-06	1.33E-04	7.51E-05	1.40E+00	3.35E-06	3.15E-06	1.41E+00	1.27E+00
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	4.79E-04	5.98E-03	9.54E-03	1.65E-05	3.58E-04	3.29E-04	1.41E+00	1.01E-04	-	1.41E+00	1.28E+00
	Excavator	430 hp	80	20	100	2.29E-03	2.85E-02	1.97E-02	9.86E-05	9.38E-04	8.63E-04	1.00E+01	4.64E-04	-	1.01E+01	9.12E+00
	Loader	190 hp		20	20	5.34E-04	8.32E-03	3.01E-03	1.42E-05	3.14E-04	2.88E-04	1.26E+00	8.14E-05	-	1.26E+00	1.15E+00
	Front end loader	180 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	2.92E-03	3.55E-02	3.72E-02	6.63E-05	2.24E-03	2.06E-03	5.65E+00	3.61E-04	-	5.66E+00	5.13E+00
	Tractor/crawler/dozer	250 hp	50.068		50.068	1.76E-03	2.74E-02	9.92E-03	4.68E-05	1.03E-03	9.50E-04	4.16E+00	2.68E-04	-	4.16E+00	3.77E+00
	3/4 ton pickup		72	20	92	3.16E-04	2.85E-04	3.84E-03	6.16E-06	4.99E-05	2.22E-05	2.06E+00	2.05E-04	1.07E-04	2.10E+00	1.91E+00
	Chainsaw				0	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	2.04E-04	2.81E-03	4.83E-03	9.61E-06	1.29E-04	1.19E-04	8.54E-01	5.52E-05	-	8.56E-01	7.76E-01
	Vibrating compactor	5.5 hp	5.1724		5.1724	6.04E-05	4.46E-05	2.31E-03	1.13E-07	3.31E-05	3.30E-05	3.95E-03	3.44E-06	4.60E-06	5.45E-03	4.94E-03
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	2.73E-03	3.20E-02	5.10E-03	4.38E-05	8.33E-04	4.70E-04	8.79E+00	2.10E-05	1.97E-05	8.80E+00	7.98E+00
	Asphalt distributor	3000 gal	22.9363		22.9363	1.68E-04	1.97E-03	3.14E-04	2.70E-06	5.13E-05	2.89E-05	5.41E-01	1.29E-06	1.21E-06	5.41E-01	4.91E-01
	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	3.32E-03	4.12E-02	2.85E-02	1.43E-04	1.36E-03	1.25E-03	1.45E+01	6.72E-04	-	1.45E+01	1.32E+01
	Loader/Backhoe	75 hp	8	9.4118	17.4118	1.45E-04	1.76E-03	1.85E-03	3.30E-06	1.12E-04	1.03E-04	2.81E-01	1.80E-05	-	2.82E-01	2.55E-01
	Loader/Backhoe	92 hp		9.4118	9.4118	9.62E-05	1.17E-03	1.23E-03	2.19E-06	7.40E-05	6.81E-05	1.86E-01	1.19E-05	-	1.87E-01	1.69E-01
	Vibratory roller	44 hp	144.7059		144.7059	3.45E-03	1.30E-02	1.55E-02	2.14E-05	8.12E-04	7.47E-04	1.65E+00	3.12E-04	-	1.66E+00	1.51E+00
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	5.09E-03	7.92E-02	2.87E-02	1.35E-04	2.98E-03	2.75E-03	1.20E+01	7.75E-04	-	1.20E+01	1.09E+01
	Dump truck	12 cy	8	9.4118	17.4118	1.27E-04	1.49E-03	2.38E-04	2.05E-06	3.89E-05	2.20E-05	4.11E-01	9.79E-07	9.21E-07	4.11E-01	3.73E-01
	3/4 ton pickup		181.1765		181.1765	6.22E-04	5.61E-04	7.57E-03	1.21E-05	9.83E-05	4.37E-05	4.07E+00	4.04E-04	2.11E-04	4.14E+00	3.76E+00
	3/4 ton pickup		8	2	10	3.43E-05	3.09E-05	4.18E-04	6.70E-07	5.42E-06	2.41E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01	2.07E-01
					Total	**3.32E-02**	**4.00E-01**	**2.31E-01**	**8.26E-04**	**1.63E-02**	**1.45E-02**	**8.79E+01**	**4.89E-03**	**3.65E-04**	**8.81E+01**	**7.99E+01**

Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

			50	15	days per const													
			LV3 & LV4	LV2														
	Equipment	Equipment	Hours of Operation		Annual	Peak Daily Emissions (LV3 & LV4) - 2020 (pounds per day)						Peak Daily Emissions (LV2) - 2020 (pounds per day)					
Activity	Type	Size	4/1-6/9	6/10-6/30	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	6.11E-02	6.44E-01	4.56E-01	7.79E-04	4.57E-02	4.21E-02	1.82E-03	1.92E-02	1.36E-02	2.32E-05	1.36E-03	1.25E-03
	Loader/Backhoe	75 hp	34.624		34.624	2.31E-02	2.81E-01	2.94E-01	5.25E-04	1.77E-02	1.63E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	3.59E-01	5.59E+00	2.02E+00	9.53E-03	2.11E-01	1.94E-01	3.75E-02	5.84E-01	2.11E-01	9.96E-04	2.20E-02	2.02E-02
	Truck		34.1719	2.7692	36.9411	2.00E-02	2.34E-01	3.74E-02	3.21E-04	6.11E-03	3.45E-03	5.40E-03	6.33E-02	1.01E-02	8.68E-05	1.65E-03	9.31E-04
	Water pump	3.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	-	-	-	-	-	-	1.82E-03	1.92E-02	1.36E-02	2.32E-05	1.36E-03	1.25E-03
	Loader/Backhoe	75 hp	32		32	2.13E-02	2.59E-01	2.72E-01	4.85E-04	1.64E-02	1.51E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	2.45E-02	3.81E-01	1.38E-01	6.50E-04	1.44E-02	1.32E-02	3.75E-02	5.84E-01	2.11E-01	9.96E-04	2.20E-02	2.02E-02
	Truck		34.1719		34.1719	2.00E-02	2.34E-01	3.74E-02	3.21E-04	6.11E-03	3.45E-03	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	1.51E-02	1.22E-01	1.60E-01	3.41E-04	5.77E-03	5.31E-03	6.29E-05	5.09E-04	6.67E-04	1.42E-06	2.40E-05	2.21E-05
	Crane 50'	200 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	1.27E-02	1.97E-01	7.14E-02	3.37E-04	7.44E-03	6.84E-03	5.27E-05	8.21E-04	2.97E-04	1.40E-06	3.09E-05	2.85E-05
	Chainsaw		5.8824	0.0147	5.8971	3.18E-02	4.98E-04	5.75E-02	6.40E-06	9.04E-05	9.02E-05	2.65E-04	4.15E-06	4.79E-04	5.33E-08	7.53E-07	7.52E-07
	1 ton pickup			0.0088	0.0088	-	-	-	-	-	-	4.28E-06	5.90E-06	5.84E-05	1.58E-07	1.24E-06	5.39E-07
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	1.65E-02	2.58E-01	9.32E-02	4.39E-04	9.71E-03	8.93E-03	1.38E-04	2.15E-03	7.77E-04	3.66E-06	8.09E-05	7.44E-05
	Front end loader	540 hp	5.9294	0.0074	5.9368	2.34E-02	2.83E-01	1.75E-01	8.33E-04	1.10E-02	1.01E-02	9.72E-05	1.18E-03	7.29E-04	3.46E-06	4.57E-05	4.20E-05
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	1.73E-02	2.52E-01	9.79E-02	3.74E-04	9.79E-03	9.01E-03	7.20E-05	1.05E-03	4.07E-04	1.56E-06	4.07E-05	3.75E-05
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	3.48E-02	4.08E-01	6.51E-02	5.59E-04	1.06E-02	6.00E-03	1.45E-04	1.70E-03	2.71E-04	2.33E-06	4.43E-05	2.50E-05
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	-	-	-	-	-	-	1.28E-01	1.60E+00	2.54E+00	4.41E-03	9.54E-02	8.78E-02
	Excavator	430 hp	80	20	100	1.47E-01	1.82E+00	1.26E+00	6.31E-03	6.00E-02	5.52E-02	1.22E-01	1.52E+00	1.05E+00	5.26E-03	5.00E-02	4.60E-02
	Loader	190 hp		20	20	-	-	-	-	-	-	1.43E-01	2.22E+00	8.03E-01	3.78E-03	8.36E-02	7.69E-02
	Front end loader	180 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	2.33E-01	2.84E+00	2.97E+00	5.30E-03	1.79E-01	1.65E-01	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	50.068		50.068	1.41E-01	2.19E+00	7.94E-01	3.74E-03	8.26E-02	7.60E-02	-	-	-	-	-	-
	3/4 ton pickup		72	20	92	1.98E-02	1.78E-02	2.41E-01	3.86E-04	3.12E-03	1.39E-03	1.83E-02	1.65E-02	2.23E-01	3.57E-04	2.89E-03	1.29E-03
	Chainsaw				0	-	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	1.63E-02	2.25E-01	3.86E-01	7.69E-04	1.03E-02	9.49E-03	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	5.1724		5.1724	4.83E-03	3.57E-03	1.85E-01	9.01E-06	2.65E-03	2.64E-03	-	-	-	-	-	-
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	2.18E-01	2.56E+00	4.08E-01	3.51E-03	6.67E-02	3.76E-02	-	-	-	-	-	-
	Asphalt distributor	3000 gal	22.9363		22.9363	1.34E-02	1.57E-01	2.51E-02	2.16E-04	4.10E-03	2.31E-03	-	-	-	-	-	-
	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	2.66E-01	3.29E+00	2.28E+00	1.14E-02	1.09E-01	9.98E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	8	9.4118	17.4118	5.33E-03	6.48E-02	6.80E-02	1.21E-04	4.10E-03	3.77E-03	2.09E-02	2.54E-01	2.67E-01	4.75E-04	1.61E-02	1.48E-02
	Loader/Backhoe	92 hp		9.4118	9.4118	-	-	-	-	-	-	2.57E-02	3.12E-01	3.27E-01	5.83E-04	1.97E-02	1.81E-02
	Vibratory roller	44 hp	144.7059		144.7059	2.76E-01	1.04E+00	1.24E+00	1.71E-03	6.50E-02	5.98E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	4.07E-01	6.34E+00	2.29E+00	1.08E-02	2.39E-01	2.20E-01	-	-	-	-	-	-
	Dump truck	12 cy	8	9.4118	17.4118	4.68E-03	5.48E-02	8.76E-03	7.52E-05	1.43E-03	8.07E-04	1.83E-02	2.15E-01	3.43E-02	2.95E-04	5.61E-03	3.17E-03
	3/4 ton pickup		181.1765		181.1765	4.97E-02	4.48E-02	6.06E-01	9.71E-04	7.86E-03	3.49E-03	-	-	-	-	-	-
	3/4 ton pickup		8	2	10	2.20E-03	1.98E-03	2.67E-02	4.29E-05	3.47E-04	1.54E-04	1.83E-03	1.65E-03	2.23E-02	3.57E-05	2.89E-04	1.29E-04
					Total	**2.48E+00**	**2.98E+01**	**1.68E+01**	**6.09E-02**	**1.21E+00**	**1.07E+00**	**5.63E-01**	**7.41E+00**	**5.73E+00**	**1.73E-02**	**3.22E-01**	**2.92E-01**

Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2020	
Speed of Onsite Trucks	10	mph

			50	15	days per const
			LV3 & LV4	LV2	
Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-6/9	6/10-6/30	Annual Hours
Water Control - Installation	Flatbed Truck				0
	Crane 44'	80 hp	49.6732	0.4444	50.1176
	Loader/Backhoe	75 hp	34.624		34.624
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318
	Truck		34.1719	2.7692	36.9411
	Water pump	3.5 hp			0
Water Control - Removal	Flatbed Truck				0
	Crane 44'	80 hp		0.4444	0.4444
	Loader/Backhoe	75 hp	32		32
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059
	Truck		34.1719		34.1719
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368
	Crane 50'	200 hp			0
	Man lift	210 hp			0
	Loader	190 hp	5.9294	0.0074	5.9368
	Chainsaw		5.8824	0.0147	5.8971
	1 ton pickup			0.0088	0.0088
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971
	Front end loader	540 hp	5.9294	0.0074	5.9368
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378
Demolition	Air Compressor	250 hp			0
	Air Compressor	50 hp			0
	Crane 126'	350 hp			0
	Crane 50'	263 hp			0
	Crane 210'	230 hp			0
	Excavator	115 hp		40	40
	Excavator	430 hp	80	20	100
	Loader	190 hp		20	20
	Front end loader	180 hp			0
	Loader/Backhoe	75 hp	350		350
	Tractor/crawler/dozer	250 hp	50.068		50.068
	3/4 ton pickup		72	20	92
	Chainsaw				0
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893
	Vibrating compactor	5.5 hp	5.1724		5.1724
	Vibratory compactor	7.5 hp			0
	Truck		372.9363		372.9363
	Asphalt distributor	3000 gal	22.9363		22.9363
	Suburban	3/4 ton			0
Disposal	Truck	35 ton			0
	Truck	75 ton			0
Bridge Installation	Suburban	3/4 ton			0
	Crane 210'	230 hp			0
	Crane 270'	430 hp			0
	3/4 ton pickup				0
	Tractor/crawler/dozer	250 hp			0
	Excavator	430 hp			0
	Truck				0
	Generator	7.5 hp			0
Highway Replacement	Vibrating compactor	5.5 hp			0
	Tractor/crawler/dozer	250 hp			0
	Truck				0
	Asphalt distributor	3000 gal			0
	Asphalt paver	120 hp			0
	Vibrating roller/compactor	33 hp			0
	Chip spreader truck				0
	Line striper	23 hp			0
	Flatbed Truck				0
	3/4 ton pickup				0
Abutments	Roto trowel concrete finisher	9 hp			0
	Crane 80'	130 hp			0
	Crane 114'	430 hp			0
	Auger drill	100 hp			0
	Water pump	80 hp			0
Landscaping	Excavator	430 hp	144.7059		144.7059
	Loader/Backhoe	75 hp	8	9.4118	17.4118
	Loader/Backhoe	92 hp		9.4118	9.4118
	Vibratory roller	44 hp	144.7059		144.7059
	Tractor/crawler/dozer	250 hp	144.7059		144.7059
	Dump truck	12 cy	8	9.4118	17.4118
	3/4 ton pickup		181.1765		181.1765
	3/4 ton pickup		8	2	10
					Total

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL
Gasoline	0.994	0.992	0.998	117 (VEHICL

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019

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http://beta.opm.gov/policy-data-oversight/snow-dismissal-proced

Source:
CC1 Equipment Report.pdf
CC2 Equipment Report.pdf
CC3 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV1 Equipment Report.pdf
LV2 Equipment Report.pdf
LV3 and LV4 Equipment Report.pdf

Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per construction period (5 days per week)										
			CC1 & CC4	CC1 & CC5	LV2											
	Equipment	Equipment	Hours of Operation			Annual	Emission Factors - 2019 (g/hp-hr or g/hr)									
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	
Water Control - Installation	Flatbed Truck		4	12		16	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.191	2.005	1.309	0.002	0.144	0.133	189.389	0.020	0.000	
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000	
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Truck		0.3077		2.7692	3.0769	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Water pump	3.5 hp		4		4	4.688	2.102	56.579	0.006	0.058	0.058	177.791	0.267	0.301	
Water Control - Removal	Flatbed Truck		4	12		16	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.191	2.005	1.309	0.002	0.144	0.133	189.389	0.020	0.000	
	Loader/Backhoe	75 hp				0	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000	
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Truck		0.3077			0.3077	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	0.184	1.549	1.804	0.004	0.073	0.067	341.375	0.017	0.000	
	Crane 50'	200 hp	9.4118	18.8236		28.2354	0.102	1.465	0.449	0.002	0.062	0.057	203.318	0.012	0.000	
	Man lift	210 hp				0	0.072	0.714	0.348	0.002	0.022	0.020	192.930	0.006	0.000	
	Loader	190 hp	28.2353	37.6471		65.8824	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Chainsaw		56.7647	75.2941	0.2941	132.3529	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	
	1 ton pickup		0.1765		0.1765	0.353	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Front end loader	540 hp	0.2964		0.2964	0.5928	0.088	1.092	0.634	0.003	0.043	0.039	293.384	0.015	0.000	
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	0.113	1.687	0.627	0.002	0.066	0.060	234.962	0.015	0.000	
	Dump truck	20cy/24 ton			1.4866	1.4866	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	0.128	1.044	0.475	0.003	0.033	0.031	237.872	0.012	0.000	
	Air Compressor	50 hp		32		32	0.932	1.229	50.033	0.004	0.024	0.023	307.059	0.053	0.072	
	Crane 126'	350 hp	5.1111	5.1111		10.2222	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000	
	Crane 50'	263 hp	44.4571	44.4571		88.9142	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000	
	Crane 210'	230 hp	16	16		32	0.102	1.465	0.449	0.002	0.062	0.057	203.318	0.012	0.000	
	Excavator	115 hp	32	16	24	72	0.103	1.287	1.887	0.003	0.080	0.074	278.045	0.022	0.000	
	Excavator	430 hp	8	8	12	28	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000	
	Loader	190 hp	72	64	12	148	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Front end loader	180 hp	4.6667	4.6667		9.3334	0.093	1.355	0.579	0.003	0.045	0.042	270.061	0.015	0.000	
	Loader/Backhoe	75 hp	11.1	11.1		22.2	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000	
	Tractor/crawler/dozer	250 hp	4	4		8	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	3/4 ton pickup		72	80	12	164	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
	Chainsaw		44.4571	44.4571		88.9142	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039	
Road Realignment	Vibratory roller	145 hp				0	0.072	1.013	1.585	0.003	0.047	0.043	280.063	0.019	0.000	
	Vibrating compactor	5.5 hp	4	4		8	1.926	1.423	73.693	0.004	1.056	1.054	125.971	0.110	0.147	
	Vibratory compactor	7.5 hp				0	0.301	1.743	1.166	0.003	0.131	0.121	190.952	0.020	0.000	
	Truck		16	16		32	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Asphalt distributor	3000 gal	4	4		8	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Suburban	3/4 ton	4	4		8	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
Disposal	Truck	35 ton	40	40		80	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	
	Truck	75 ton	11.2	11.2		22.4	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
Bridge Installation	Suburban	3/4 ton	12	12		24	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
	Crane 210'	230 hp	24	24		48	0.102	1.465	0.449	0.002	0.062	0.057	203.318	0.012	0.000	
	Crane 270'	430 hp	24	24		48	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000	
	3/4 ton pickup		24	24		48	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
	Tractor/crawler/dozer	250 hp	8	8		16	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Excavator	430 hp	0.6137	0.6137		1.2274	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000	
	Truck		2.9609	2.9609		5.9218	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Generator	7.5 hp	15.8865	15.8865		31.773	1.953	1.388	102.758	0.005	0.092	0.092	175.214	0.111	0.144	
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	1.926	1.423	73.693	0.004	1.056	1.054	125.971	0.110	0.147	
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Truck		4.3678	4.3678		8.7356	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Asphalt paver	120 hp	0.208	0.208		0.416	0.170	1.940	1.825	0.003	0.144	0.132	261.328	0.033	0.000	
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000	
	Chip spreader truck		0.64	0.64		1.28	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	Line striper	23 hp	0.0713	0.0713		0.1426	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021	
	Flatbed Truck		0.0713	0.0713		0.1426	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	
	3/4 ton pickup		0.0713	0.0713		0.1426	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
Abutments	Roto trowel concrete finisher	9 hp				0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021	
	Crane 80'	130 hp				0	0.135	1.714	1.233	0.002	0.092	0.084	208.066	0.016	0.000	
	Crane 114'	430 hp				0	0.083	1.238	0.358	0.002	0.050	0.046	163.241	0.009	0.000	
	Auger drill	100 hp				0	0.111	1.669	1.761	0.003	0.091	0.083	291.259	0.010	0.000	
	Water pump	80 hp				0	0.225	1.823	1.789	0.003	0.114	0.105	294.384	0.020	0.000	
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	0.051	0.680	0.420	0.002	0.022	0.020	211.854	0.010	0.000	
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000	
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	0.112	1.361	1.289	0.002	0.091	0.084	195.356	0.014	0.000	
	Vibratory roller	44 hp				0	0.544	1.906	2.256	0.003	0.129	0.119	235.507	0.049	0.000	
	Tractor/crawler/dozer	250 hp				0	0.135	2.132	0.737	0.003	0.080	0.074	301.159	0.021	0.000	
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	
	3/4 ton pickup					0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
	3/4 ton pickup		4	4	2	10	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	
						Total										

Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const							GWP	1	21	310		
			CC1 & CC4	CC1 & CC5	LV2													
	Equipment	Equipment	Hours of Operation			Annual	Annual Emissions - 2019 (tons per year)											Metric Tons
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e		CO2e/yr
Water Control - Installation	Flatbed Truck		4	12		16	9.74E-05	1.05E-04	1.35E-03	1.07E-06	8.45E-06	3.64E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01		3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	6.00E-05	6.28E-04	4.10E-04	6.97E-07	4.52E-05	4.16E-05	5.94E-02	6.30E-06	-	5.95E-02		5.40E-02
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	5.53E-05	6.72E-04	6.37E-04	1.13E-06	4.49E-05	4.13E-05	9.65E-02	6.69E-06	-	9.66E-02		8.77E-02
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	4.63E-04	7.33E-03	2.53E-03	1.17E-05	2.76E-04	2.54E-04	1.04E+00	7.08E-05	-	1.04E+00		9.41E-01
	Truck		0.3077		2.7692	3.0769	2.32E-05	3.27E-04	4.30E-05	3.63E-07	7.56E-06	4.51E-06	7.28E-02	1.73E-07	1.63E-07	7.28E-02		6.61E-02
	Water pump	3.5 hp		4		4	7.23E-05	3.24E-05	8.73E-04	9.47E-08	8.94E-07	8.93E-07	2.74E-03	4.12E-06	4.65E-06	4.27E-03		3.88E-03
Water Control - Removal	Flatbed Truck		4	12		16	9.74E-05	1.05E-04	1.35E-03	1.07E-06	8.45E-06	3.64E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01		3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	6.00E-05	6.28E-04	4.10E-04	6.97E-07	4.52E-05	4.16E-05	5.94E-02	6.30E-06	-	5.95E-02		5.40E-02
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	3.95E-04	6.27E-03	2.17E-03	9.96E-06	2.36E-04	2.17E-04	8.85E-01	6.05E-05	-	8.87E-01		8.04E-01
	Truck		0.3077			0.3077	2.32E-06	3.27E-05	4.30E-06	3.63E-08	7.56E-07	4.51E-07	7.28E-03	1.73E-08	1.63E-08	7.28E-03		6.61E-03
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	2.28E-03	1.92E-02	2.24E-02	4.76E-05	9.05E-04	8.32E-04	4.23E+00	2.05E-04	-	4.24E+00		3.84E+00
	Crane 50'	200 hp	9.4118	18.8236		28.2354	6.32E-04	9.12E-03	2.80E-03	1.42E-05	3.87E-04	3.56E-04	1.27E+00	7.58E-05	-	1.27E+00		1.15E+00
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Loader	190 hp	28.2353	37.6471		65.8824	1.86E-03	2.94E-02	1.02E-02	4.68E-05	1.11E-03	1.02E-03	4.16E+00	2.84E-04	-	4.16E+00		3.78E+00
	Chainsaw		56.7647	75.2941	0.2941	132.3529	8.94E-03	1.40E-04	1.62E-02	1.80E-06	2.54E-05	2.54E-05	4.37E-02	5.55E-04	4.80E-05	7.02E-02		6.37E-02
	1 ton pickup		0.1765		0.1765	0.353	7.65E-07	9.81E-07	1.04E-05	2.37E-08	1.89E-07	8.27E-08	7.92E-03	7.88E-07	4.11E-07	8.07E-03		7.32E-03
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	2.18E-05	3.46E-04	1.19E-04	5.49E-07	1.30E-05	1.20E-05	4.88E-02	3.34E-06	-	4.89E-02		4.43E-02
	Front end loader	540 hp	0.2964		0.2964	0.5928	3.09E-05	3.85E-04	2.24E-04	1.04E-06	1.51E-05	1.39E-05	1.04E-01	5.42E-06	-	1.04E-01		9.40E-02
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	1.14E-05	1.71E-04	6.35E-05	2.34E-07	6.64E-06	6.11E-06	2.38E-02	1.54E-06	-	2.38E-02		2.16E-02
	Dump truck	20cy/24 ton			1.4866	1.4866	1.12E-05	1.58E-04	2.08E-05	1.75E-07	3.65E-06	2.18E-06	3.52E-02	8.36E-08	7.87E-08	3.52E-02		3.19E-02
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	3.14E-03	2.56E-02	1.16E-02	6.56E-05	8.14E-04	7.49E-04	5.83E+00	2.83E-04	-	5.83E+00		5.29E+00
	Air Compressor	50 hp		32		32	1.64E-03	2.17E-03	8.82E-02	6.58E-06	4.15E-05	4.14E-05	5.42E-01	9.35E-05	1.27E-04	5.83E-01		5.29E-01
	Crane 126'	350 hp	5.1111	5.1111		10.2222	3.28E-04	4.88E-03	1.41E-03	6.32E-06	1.97E-04	1.81E-04	6.44E-01	3.69E-05	-	6.45E-01		5.85E-01
	Crane 50'	263 hp	44.4571	44.4571		88.9142	2.14E-03	3.19E-02	9.23E-03	4.13E-05	1.29E-03	1.18E-03	4.21E+00	2.41E-04	-	4.21E+00		3.82E+00
	Crane 210'	230 hp	16	16		32	8.24E-04	1.19E-02	3.64E-03	1.86E-05	5.04E-04	4.63E-04	1.65E+00	9.88E-05	-	1.65E+00		1.50E+00
	Excavator	115 hp	32	16	24	72	9.36E-04	1.17E-02	1.72E-02	2.98E-05	7.34E-04	6.76E-04	2.54E+00	1.97E-04	-	2.54E+00		2.31E+00
	Excavator	430 hp	8	8	12	28	6.79E-04	9.02E-03	5.57E-03	2.76E-05	2.93E-04	2.69E-04	2.81E+00	1.37E-04	-	2.81E+00		2.55E+00
	Loader	190 hp	72	64	12	148	4.17E-03	6.61E-02	2.28E-02	1.05E-04	2.49E-03	2.29E-03	9.33E+00	6.38E-04	-	9.35E+00		8.48E+00
	Front end loader	180 hp	4.6667	4.6667		9.3334	1.71E-04	2.51E-03	1.07E-03	5.63E-06	8.41E-05	7.74E-05	5.00E-01	2.71E-05	-	5.01E-01		4.54E-01
	Loader/Backhoe	75 hp	11.1	11.1		22.2	2.06E-04	2.50E-03	2.37E-03	4.21E-06	1.67E-04	1.53E-04	3.59E-01	2.49E-05	-	3.59E-01		3.26E-01
	Tractor/crawler/dozer	250 hp	4	4		8	2.97E-04	4.70E-03	1.62E-03	7.47E-06	1.77E-04	1.63E-04	6.64E-01	4.54E-05	-	6.65E-01		6.03E-01
	3/4 ton pickup		72	80	12	164	6.34E-04	5.48E-04	7.70E-03	1.10E-05	8.98E-05	4.03E-05	3.68E+00	3.66E-04	1.91E-04	3.75E+00		3.40E+00
	Chainsaw		44.4571	44.4571		88.9142	6.00E-03	9.40E-05	1.09E-02	1.21E-06	1.71E-05	1.70E-05	2.93E-02	3.73E-04	3.22E-05	4.72E-02		4.28E-02
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Vibrating compactor	5.5 hp	4	4		8	9.34E-05	6.90E-05	3.57E-03	1.74E-07	5.12E-05	5.11E-05	6.11E-03	5.33E-06	7.11E-06	8.43E-03		7.64E-03
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Truck		16	16		32	2.42E-04	3.40E-03	4.47E-04	3.77E-06	7.86E-05	4.69E-05	7.57E-01	1.80E-06	1.69E-06	7.57E-01		6.87E-01
	Asphalt distributor	3000 gal	4	4		8	6.04E-05	8.50E-04	1.12E-04	9.43E-07	1.96E-05	1.17E-05	1.89E-01	4.50E-07	4.23E-07	1.89E-01		1.72E-01
	Suburban	3/4 ton	4	4		8	3.09E-05	2.67E-05	3.76E-04	5.36E-07	4.38E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01		1.66E-01
Disposal	Truck	35 ton	40	40		80	4.87E-04	5.25E-04	6.75E-03	5.33E-06	4.22E-05	1.82E-05	1.80E+00	4.06E-04	1.88E-04	1.86E+00		1.69E+00
	Truck	75 ton	11.2	11.2		22.4	1.69E-04	2.38E-03	3.13E-04	2.64E-06	5.50E-05	3.28E-05	5.30E-01	1.26E-06	1.19E-06	5.30E-01		4.81E-01
Bridge Installation	Suburban	3/4 ton	12	12		24	9.28E-05	8.01E-05	1.13E-03	1.61E-06	1.31E-05	5.90E-06	5.39E-01	5.35E-05	2.79E-05	5.48E-01		4.98E-01
	Crane 210'	230 hp	24	24		48	1.24E-03	1.78E-02	5.47E-03	2.78E-05	7.56E-04	6.95E-04	2.47E+00	1.48E-04	-	2.48E+00		2.25E+00
	Crane 270'	430 hp	24	24		48	1.89E-03	2.82E-02	8.15E-03	3.65E-05	1.13E-03	1.04E-03	3.71E+00	2.13E-04	-	3.72E+00		3.37E+00
	3/4 ton pickup		24	24		48	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00		9.95E-01
	Tractor/crawler/dozer	250 hp	8	8		16	5.93E-04	9.40E-03	3.25E-03	1.49E-05	3.54E-04	3.26E-04	1.33E+00	9.07E-05	-	1.33E+00		1.21E+00
	Excavator	430 hp	0.6137	0.6137		1.2274	2.98E-05	3.95E-04	2.44E-04	1.21E-06	1.28E-05	1.18E-05	1.23E-01	6.02E-06	-	1.23E-01		1.12E-01
	Truck		2.9609	2.9609		5.9218	4.47E-05	6.29E-04	8.27E-05	6.98E-07	1.45E-05	8.67E-06	1.40E-01	3.33E-07	3.13E-07	1.40E-01		1.27E-01
	Generator	7.5 hp	15.8865	15.8865		31.773	5.13E-04	3.65E-04	2.70E-02	1.31E-06	2.42E-05	2.42E-05	4.60E-02	2.92E-05	3.79E-05	5.84E-02		5.30E-02
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	8.52E-05	6.29E-05	3.26E-03	1.59E-07	4.67E-05	4.66E-05	5.57E-03	4.86E-06	6.48E-06	7.68E-03		6.97E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	1.50E-04	2.38E-03	8.21E-04	3.78E-06	8.96E-05	8.24E-05	3.36E-01	2.29E-05	-	3.36E-01		3.05E-01
	Truck		4.3678	4.3678		8.7356	6.60E-05	9.28E-04	1.22E-04	1.03E-06	2.15E-05	1.28E-05	2.07E-01	4.91E-07	4.62E-07	2.07E-01		1.88E-01
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	7.47E-05	1.05E-03	1.38E-04	1.17E-06	2.43E-05	1.45E-05	2.34E-01	5.56E-07	5.24E-07	2.34E-01		2.12E-01
	Asphalt paver	120 hp	0.208	0.208		0.416	9.36E-06	1.07E-04	1.00E-04	1.69E-07	7.90E-06	7.26E-06	1.44E-02	1.82E-06	-	1.44E-02		1.31E-02
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	3.36E-05	1.18E-04	1.39E-04	1.88E-07	7.97E-06	7.34E-06	1.45E-02	3.03E-06	-	1.46E-02		1.32E-02
	Chip spreader truck		0.64	0.64		1.28	9.66E-06	1.36E-04	1.79E-05	1.51E-07	3.14E-06	1.87E-06	3.03E-02	7.20E-08	6.77E-08	3.03E-02		2.75E-02
	Line striper	23 hp	0.0713	0.0713		0.1426	3.99E-07	1.19E-06	3.08E-05	9.35E-09	7.50E-08	7.48E-08	9.41E-04	2.27E-08	7.71E-08	9.66E-04		8.76E-04
	Flatbed Truck		0.0713	0.0713		0.1426	8.68E-07	9.36E-07	1.20E-05	9.49E-09	7.53E-08	3.24E-08	3.20E-03	7.24E-07	3.36E-07	3.32E-03		3.01E-03
	3/4 ton pickup		0.0713	0.0713		0.1426	5.52E-07	4.76E-07	6.70E-06	9.56E-09	7.80E-08	3.50E-08	3.20E-03	3.18E-07	1.66E-07	3.26E-03		2.96E-03
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-		-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	4.56E-04	6.06E-03	3.75E-03	1.86E-05	1.97E-04	1.81E-04	1.89E+00	9.24E-05	-	1.89E+00		1.72E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	4.36E-04	5.29E-03	5.01E-03	8.92E-06	3.53E-04	3.25E-04	7.60E-01	5.27E-05	-	7.61E-01		6.91E-01
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	2.67E-04	3.25E-03	3.08E-03	5.47E-06	2.17E-04	1.99E-04	4.66E-01	3.23E-05	-	4.67E-01		4.24E-01
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.55E-04	5.00E-03	6.57E-04	5.55E-06	1.16E-04	6.89E-05	1.11E+00	2.65E-06	2.49E-06	1.11E+00		1.01E+00
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-		-
	3/4 ton pickup		4	4	2	10	3.87E-05	3.34E-05	4.70E-04	6.70E-07	5.47E-06	2.46E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01		2.07E-01
						Total	**4.39E-02**	**3.37E-01**	**3.22E-01**	**6.16E-04**	**1.37E-02**	**1.24E-02**	**6.38E+01**	**5.33E-03**	**8.31E-04**	**6.42E+01**		**5.83E+01**

Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const												
			CC1 & CC4	CC1 & CC5	LV2													
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC1 & CC4) - 2019 (pounds per day)						Peak Daily Emissions (CC1 & CC5) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	1.95E-02	2.10E-02	2.70E-01	2.13E-04	1.69E-03	7.28E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	7.99E-03	8.38E-02	5.47E-02	9.29E-05	6.03E-03	5.55E-03	6.00E-03	6.29E-02	4.10E-02	6.97E-05	4.52E-03	4.16E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	6.48E-03	7.87E-02	7.46E-02	1.33E-04	5.26E-03	4.83E-03	8.28E-03	1.01E-01	9.52E-02	1.69E-04	6.71E-03	6.17E-03
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	5.46E-02	8.65E-01	2.99E-01	1.37E-03	3.26E-02	3.00E-02	-	-	-	-	-	-
	Truck		0.3077		2.7692	3.0769	6.20E-04	8.72E-03	1.15E-03	9.67E-06	2.02E-04	1.20E-04	-	-	-	-	-	-
	Water pump	3.5 hp		4		4	-	-	-	-	-	-	1.93E-02	8.65E-03	2.33E-01	2.53E-05	2.39E-04	2.38E-04
Water Control - Removal	Flatbed Truck		4	12		16	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	1.95E-02	2.10E-02	2.70E-01	2.13E-04	1.69E-03	7.28E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	7.99E-03	8.38E-02	5.47E-02	9.29E-05	6.03E-03	5.55E-03	6.00E-03	6.29E-02	4.10E-02	6.97E-05	4.52E-03	4.16E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	5.27E-02	8.36E-01	2.89E-01	1.33E-03	3.15E-02	2.90E-02	-	-	-	-	-	-
	Truck		0.3077			0.3077	6.20E-04	8.72E-03	1.15E-03	9.67E-06	2.02E-04	1.20E-04	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	2.60E-01	2.20E+00	2.56E+00	5.45E-03	1.03E-01	9.52E-02	3.45E-01	2.91E+00	3.39E+00	7.23E-03	1.37E-01	1.26E-01
	Crane 50'	200 hp	9.4118	18.8236		28.2354	5.62E-02	8.10E-01	2.49E-01	1.27E-03	3.44E-02	3.16E-02	1.12E-01	1.62E+00	4.97E-01	2.53E-03	6.87E-02	6.32E-02
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	2.12E-01	3.36E+00	1.16E+00	5.34E-03	1.27E-01	1.17E-01	2.83E-01	4.48E+00	1.55E+00	7.12E-03	1.69E-01	1.56E-01
	Chainsaw		56.7647	75.2941	0.2941	132.3529	1.02E+00	1.60E-02	1.85E+00	2.06E-04	2.91E-03	2.90E-03	1.36E+00	2.12E-02	2.45E+00	2.73E-04	3.86E-03	3.85E-03
	1 ton pickup		0.1765		0.1765	0.353	1.02E-04	1.31E-04	1.38E-03	3.17E-06	2.52E-05	1.10E-05	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	2.91E-03	4.61E-02	1.59E-02	7.32E-05	1.74E-03	1.60E-03	-	-	-	-	-	-
	Front end loader	540 hp	0.2964		0.2964	0.5928	4.12E-03	5.14E-02	2.98E-02	1.39E-04	2.02E-03	1.85E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	1.53E-03	2.28E-02	8.46E-03	3.11E-05	8.85E-04	8.14E-04	-	-	-	-	-	-
	Dump truck	20cy/24 ton			1.4866	1.4866	-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	4.19E-01	3.41E+00	1.55E+00	8.74E-03	1.08E-01	9.98E-02	4.19E-01	3.41E+00	1.55E+00	8.74E-03	1.08E-01	9.98E-02
	Air Compressor	50 hp		32		32	-	-	-	-	-	-	4.38E-01	5.78E-01	2.35E+01	1.76E-03	1.11E-02	1.10E-02
	Crane 126'	350 hp	5.1111	5.1111		10.2222	4.37E-02	6.51E-01	1.88E-01	8.43E-04	2.62E-02	2.41E-02	4.37E-02	6.51E-01	1.88E-01	8.43E-04	2.62E-02	2.41E-02
	Crane 50'	263 hp	44.4571	44.4571		88.9142	2.86E-01	4.25E+00	1.23E+00	5.51E-03	1.71E-01	1.58E-01	2.86E-01	4.25E+00	1.23E+00	5.51E-03	1.71E-01	1.58E-01
	Crane 210'	230 hp	16	16		32	1.10E-01	1.58E+00	4.86E-01	2.47E-03	6.72E-02	6.18E-02	1.10E-01	1.58E+00	4.86E-01	2.47E-03	6.72E-02	6.18E-02
	Excavator	115 hp	32	16	24	72	1.11E-01	1.39E+00	2.04E+00	3.53E-03	8.70E-02	8.01E-02	5.55E-02	6.96E-01	1.02E+00	1.76E-03	4.35E-02	4.00E-02
	Excavator	430 hp	8	8	12	28	5.17E-02	6.87E-01	4.25E-01	2.10E-03	2.23E-02	2.05E-02	5.17E-02	6.87E-01	4.25E-01	2.10E-03	2.23E-02	2.05E-02
	Loader	190 hp	72	64	12	148	5.41E-01	8.57E+00	2.96E+00	1.36E-02	3.23E-01	2.97E-01	4.81E-01	7.62E+00	2.63E+00	1.21E-02	2.87E-01	2.64E-01
	Front end loader	180 hp	4.6667	4.6667		9.3334	2.28E-02	3.35E-01	1.43E-01	7.50E-04	1.12E-02	1.03E-02	2.28E-02	3.35E-01	1.43E-01	7.50E-04	1.12E-02	1.03E-02
	Loader/Backhoe	75 hp	11.1	11.1		22.2	2.74E-02	3.33E-01	3.15E-01	5.61E-04	2.22E-02	2.05E-02	2.74E-02	3.33E-01	3.15E-01	5.61E-04	2.22E-02	2.05E-02
	Tractor/crawler/dozer	250 hp	4	4		8	3.95E-02	6.27E-01	2.17E-01	9.96E-04	2.36E-02	2.17E-02	3.95E-02	6.27E-01	2.17E-01	9.96E-04	2.36E-02	2.17E-02
	3/4 ton pickup		72	80	12	164	7.43E-02	6.41E-02	9.02E-01	1.29E-03	1.05E-02	4.72E-03	8.25E-02	7.12E-02	1.00E+00	1.43E-03	1.17E-02	5.24E-03
	Chainsaw		44.4571	44.4571		88.9142	8.00E-01	1.25E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03	8.00E-01	1.25E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	1.25E-02	9.20E-03	4.77E-01	2.32E-05	6.83E-03	6.82E-03	1.25E-02	9.20E-03	4.77E-01	2.32E-05	6.83E-03	6.82E-03
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	3.22E-02	4.54E-01	5.96E-02	5.03E-04	1.05E-02	6.25E-03	3.22E-02	4.54E-01	5.96E-02	5.03E-04	1.05E-02	6.25E-03
	Asphalt distributor	3000 gal	4	4		8	8.05E-03	1.13E-01	1.49E-02	1.26E-04	2.62E-03	1.56E-03	8.05E-03	1.13E-01	1.49E-02	1.26E-04	2.62E-03	1.56E-03
	Suburban	3/4 ton	4	4		8	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04
Disposal	Truck	35 ton	40	40		80	6.49E-02	7.00E-02	9.00E-01	7.10E-04	5.63E-03	2.43E-03	6.49E-02	7.00E-02	9.00E-01	7.10E-04	5.63E-03	2.43E-03
	Truck	75 ton	11.2	11.2		22.4	2.26E-02	3.17E-01	4.17E-02	3.52E-04	7.33E-03	4.37E-03	2.26E-02	3.17E-01	4.17E-02	3.52E-04	7.33E-03	4.37E-03
Bridge Installation	Suburban	3/4 ton	12	12		24	1.24E-02	1.07E-02	1.50E-01	2.15E-04	1.75E-03	7.86E-04	1.24E-02	1.07E-02	1.50E-01	2.15E-04	1.75E-03	7.86E-04
	Crane 210'	230 hp	24	24		48	1.65E-01	2.38E+00	7.29E-01	3.71E-03	1.01E-01	9.27E-02	1.65E-01	2.38E+00	7.29E-01	3.71E-03	1.01E-01	9.27E-02
	Crane 270'	430 hp	24	24		48	2.52E-01	3.76E+00	1.09E+00	4.86E-03	1.51E-01	1.39E-01	2.52E-01	3.76E+00	1.09E+00	4.86E-03	1.51E-01	1.39E-01
	3/4 ton pickup		24	24		48	2.48E-02	2.14E-02	3.01E-01	4.29E-04	3.50E-03	1.57E-03	2.48E-02	2.14E-02	3.01E-01	4.29E-04	3.50E-03	1.57E-03
	Tractor/crawler/dozer	250 hp	8	8		16	7.91E-02	1.25E+00	4.33E-01	1.99E-03	4.73E-02	4.35E-02	7.91E-02	1.25E+00	4.33E-01	1.99E-03	4.73E-02	4.35E-02
	Excavator	430 hp	0.6137	0.6137		1.2274	3.97E-03	5.27E-02	3.26E-02	1.61E-04	1.71E-03	1.58E-03	3.97E-03	5.27E-02	3.26E-02	1.61E-04	1.71E-03	1.58E-03
	Truck		2.9609	2.9609		5.9218	5.96E-03	8.39E-02	1.10E-02	9.31E-05	1.94E-03	1.16E-03	5.96E-03	8.39E-02	1.10E-02	9.31E-05	1.94E-03	1.16E-03
	Generator	7.5 hp	15.8865	15.8865		31.773	6.84E-02	4.86E-02	3.60E+00	1.75E-04	3.23E-03	3.22E-03	6.84E-02	4.86E-02	3.60E+00	1.75E-04	3.23E-03	3.22E-03
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	1.14E-02	8.39E-03	4.35E-01	2.12E-05	6.23E-03	6.22E-03	1.14E-02	8.39E-03	4.35E-01	2.12E-05	6.23E-03	6.22E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	2.00E-02	3.17E-01	1.09E-01	5.03E-04	1.19E-02	1.10E-02	2.00E-02	3.17E-01	1.09E-01	5.03E-04	1.19E-02	1.10E-02
	Truck		4.3678	4.3678		8.7356	8.79E-03	1.24E-01	1.63E-02	1.37E-04	2.86E-03	1.71E-03	8.79E-03	1.24E-01	1.63E-02	1.37E-04	2.86E-03	1.71E-03
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	9.96E-03	1.40E-01	1.84E-02	1.56E-04	3.24E-03	1.93E-03	9.96E-03	1.40E-01	1.84E-02	1.56E-04	3.24E-03	1.93E-03
	Asphalt paver	120 hp	0.208	0.208		0.416	1.25E-03	1.42E-02	1.34E-02	2.25E-05	1.05E-03	9.69E-04	1.25E-03	1.42E-02	1.34E-02	2.25E-05	1.05E-03	9.69E-04
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	4.48E-03	1.57E-02	1.86E-02	2.50E-05	1.06E-03	9.78E-04	4.48E-03	1.57E-02	1.86E-02	2.50E-05	1.06E-03	9.78E-04
	Chip spreader truck		0.64	0.64		1.28	1.29E-03	1.81E-02	2.38E-03	2.01E-05	4.19E-04	2.50E-04	1.29E-03	1.81E-02	2.38E-03	2.01E-05	4.19E-04	2.50E-04
	Line striper	23 hp	0.0713	0.0713		0.1426	5.32E-05	1.59E-04	4.11E-03	1.25E-06	1.00E-05	9.98E-06	5.32E-05	1.59E-04	4.11E-03	1.25E-06	1.00E-05	9.98E-06
	Flatbed Truck		0.0713	0.0713		0.1426	1.16E-04	1.25E-04	1.60E-03	1.27E-06	1.00E-05	4.32E-06	1.16E-04	1.25E-04	1.60E-03	1.27E-06	1.00E-05	4.32E-06
	3/4 ton pickup		0.0713	0.0713		0.1426	7.35E-05	6.35E-05	8.93E-04	1.27E-06	1.04E-05	4.67E-06	7.35E-05	6.35E-05	8.93E-04	1.27E-06	1.04E-05	4.67E-06
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	6.09E-02	8.09E-01	4.99E-01	2.47E-03	2.63E-02	2.42E-02	6.09E-02	8.09E-01	4.99E-01	2.47E-03	2.63E-02	2.42E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	4.65E-02	5.65E-01	5.35E-01	9.51E-04	3.77E-02	3.47E-02	4.65E-02	5.65E-01	5.35E-01	9.51E-04	3.77E-02	3.47E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	1.43E-02	1.73E-01	1.64E-01	2.92E-04	1.16E-02	1.06E-02	2.85E-02	3.46E-01	3.28E-01	5.83E-04	2.31E-02	2.13E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04
						Total	**5.21E+00**	**4.17E+01**	**2.86E+01**	**7.50E-02**	**1.69E+00**	**1.53E+00**	**6.02E+00**	**4.16E+01**	**5.30E+01**	**7.61E-02**	**1.68E+00**	**1.52E+00**

Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC1 & CC4	CC1 & CC5	LV2							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (LV2) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	2.00E-03	2.09E-02	1.37E-02	2.32E-05	1.51E-03	1.39E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	6.88E-02	1.09E+00	3.77E-01	1.73E-03	4.11E-02	3.78E-02
	Truck		0.3077		2.7692	3.0769	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
	Water pump	3.5 hp		4		4	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	12		16	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	2.00E-03	2.09E-02	1.37E-02	2.32E-05	1.51E-03	1.39E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	5.27E-02	8.36E-01	2.89E-01	1.33E-03	3.15E-02	2.90E-02
	Truck		0.3077			0.3077	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	1.36E-03	1.15E-02	1.34E-02	2.84E-05	5.40E-04	4.97E-04
	Crane 50'	200 hp	9.4118	18.8236		28.2354	-	-	-	-	-	-
	Man lift	210 hp				0	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	-	-	-	-	-	-
	Chainsaw		56.7647	75.2941	0.2941	132.3529	5.29E-03	8.30E-05	9.58E-03	1.07E-06	1.51E-05	1.50E-05
	1 ton pickup		0.1765		0.1765	0.353	1.02E-04	1.31E-04	1.38E-03	3.17E-06	2.52E-05	1.10E-05
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	2.91E-03	4.61E-02	1.59E-02	7.32E-05	1.74E-03	1.60E-03
	Front end loader	540 hp	0.2964		0.2964	0.5928	4.12E-03	5.14E-02	2.98E-02	1.39E-04	2.02E-03	1.85E-03
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	1.53E-03	2.28E-02	8.46E-03	3.11E-05	8.85E-04	8.14E-04
	Dump truck	20cy/24 ton			1.4866	1.4866	2.99E-03	4.21E-02	5.53E-03	4.67E-05	9.74E-04	5.81E-04
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Air Compressor	50 hp		32		32	-	-	-	-	-	-
	Crane 126'	350 hp	5.1111	5.1111		10.2222	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	8.32E-02	1.04E+00	1.53E+00	2.65E-03	6.53E-02	6.01E-02
	Excavator	430 hp	8	8	12	28	7.76E-02	1.03E+00	6.37E-01	3.15E-03	3.35E-02	3.08E-02
	Loader	190 hp	72	64	12	148	9.02E-02	1.43E+00	4.94E-01	2.27E-03	5.39E-02	4.96E-02
	Front end loader	180 hp	4.6667	4.6667		9.3334	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	1.24E-02	1.07E-02	1.50E-01	2.15E-04	1.75E-03	7.86E-04
	Chainsaw		44.4571	44.4571		88.9142	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-
	Truck		16	16		32	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.32E-02	2.82E-01	2.67E-01	4.75E-04	1.88E-02	1.73E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	2.85E-02	3.46E-01	3.28E-01	5.83E-04	2.31E-02	2.13E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
						Total	**4.85E-01**	**6.63E+00**	**4.25E+00**	**1.32E-02**	**2.86E-01**	**2.60E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	10/10/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017

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http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const																	
			CC1 & CC4	CC1 & CC5	LV2						Peak Daily Emissions (CC1) - 2019 (pounds per day)						Peak Daily Emissions (CC4) - 2019 (pounds per day)					
	Equipment	Equipment	Hours of Operation			Annual	Annual Hours by Site																
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	CC1	CC4	CC5	LV2 - Yr 1	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	4		8		1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.3333	0.4444		0.4444	1.20E-02	1.26E-01	8.21E-02	1.39E-04	9.04E-03	8.32E-03	2.00E-03	2.09E-02	1.37E-02	2.32E-05	1.51E-03	1.39E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	2.624		0.7273		1.30E-02	1.57E-01	1.49E-01	2.65E-04	1.05E-02	9.67E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788		5.5208		6.958	-	-	-	-	-	-	5.46E-02	8.65E-01	2.99E-01	1.37E-03	3.26E-02	3.00E-02
	Truck		0.3077		2.7692	3.0769		0.3077		2.7692	-	-	-	-	-	-	6.20E-04	8.72E-03	1.15E-03	9.67E-06	2.02E-04	1.20E-04
	Water pump	3.5 hp		4		4			4		-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	12		16	4		8		1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.3333	0.4444		0.4444	1.20E-02	1.26E-01	8.21E-02	1.39E-04	9.04E-03	8.32E-03	2.00E-03	2.09E-02	1.37E-02	2.32E-05	1.51E-03	1.39E-03
	Loader/Backhoe	75 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666		5.3333		5.3333	-	-	-	-	-	-	5.27E-02	8.36E-01	2.89E-01	1.33E-03	3.15E-02	2.90E-02
	Truck		0.3077			0.3077		0.3077			-	-	-	-	-	-	6.20E-04	8.72E-03	1.15E-03	9.67E-06	2.02E-04	1.20E-04
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	28.2353	0.1482	9.4118	0.1482	5.18E-01	4.37E+00	5.09E+00	1.08E-02	2.06E-01	1.89E-01	1.36E-03	1.15E-02	1.34E-02	2.84E-05	5.40E-04	4.97E-04
	Crane 50'	200 hp	9.4118	18.8236		28.2354	9.4118		9.4118		1.12E-01	1.62E+00	4.97E-01	2.53E-03	6.87E-02	6.32E-02	-	-	-	-	-	-
	Man lift	210 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	28.2353		9.4118		4.24E-01	6.72E+00	2.32E+00	1.07E-02	2.54E-01	2.33E-01	-	-	-	-	-	-
	Chainsaw		56.7647	75.2941	0.2941	132.3529	56.4706	0.2941	18.8235	0.2941	2.03E+00	3.19E-02	3.68E+00	4.09E-04	5.79E-03	5.77E-03	5.29E-03	8.30E-05	9.58E-03	1.07E-06	1.51E-05	1.50E-05
	1 ton pickup		0.1765		0.1765	0.353		0.1765		0.1765	-	-	-	-	-	-	1.02E-04	1.31E-04	1.38E-03	3.17E-06	2.52E-05	1.10E-05
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882		0.2941		0.2941	-	-	-	-	-	-	2.91E-03	4.61E-02	1.59E-02	7.32E-05	1.74E-03	1.60E-03
	Front end loader	540 hp	0.2964		0.2964	0.5928		0.2964		0.2964	-	-	-	-	-	-	4.12E-03	5.14E-02	2.98E-02	1.39E-04	2.02E-03	1.85E-03
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964		0.1482		0.1482	-	-	-	-	-	-	1.53E-03	2.28E-02	8.46E-03	3.11E-05	8.85E-04	8.14E-04
	Dump truck	20cy/24 ton			1.4866	1.4866				1.4866	-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	44.4571				8.37E-01	6.82E+00	3.10E+00	1.75E-02	2.17E-01	2.00E-01	-	-	-	-	-	-
	Air Compressor	50 hp		32		32			32		-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp	5.1111	5.1111		10.2222	5.1111				8.74E-02	1.30E+00	3.77E-01	1.69E-03	5.24E-02	4.82E-02	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	44.4571				5.71E-01	8.51E+00	2.46E+00	1.10E-02	3.43E-01	3.15E-01	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	16				2.20E-01	3.17E+00	9.72E-01	4.95E-03	1.34E-01	1.24E-01	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	16	16		24	1.11E-01	1.39E+00	2.04E+00	3.53E-03	8.70E-02	8.01E-02	5.55E-02	6.96E-01	1.02E+00	1.76E-03	4.35E-02	4.00E-02
	Excavator	430 hp	8	8	12	28	8			12	1.03E-01	1.37E+00	8.49E-01	4.21E-03	4.46E-02	4.11E-02	-	-	-	-	-	-
	Loader	190 hp	72	64	12	148	64	8		12	9.62E-01	1.52E+01	5.27E+00	2.42E-02	5.75E-01	5.29E-01	6.01E-02	9.53E-01	3.29E-01	1.51E-03	3.59E-02	3.30E-02
	Front end loader	180 hp	4.6667	4.6667		9.3334	4.6667				4.57E-02	6.69E-01	2.86E-01	1.50E-03	2.24E-02	2.06E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	11.1				5.48E-02	6.66E-01	6.31E-01	1.12E-03	4.45E-02	4.09E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	4				7.91E-02	1.25E+00	4.33E-01	1.99E-03	4.73E-02	4.35E-02	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	64	8	16	12	1.32E-01	1.14E-01	1.60E+00	2.29E-03	1.87E-02	8.38E-03	8.25E-03	7.12E-03	1.00E-01	1.43E-04	1.17E-03	5.24E-04
	Chainsaw		44.4571	44.4571		88.9142	44.4571				1.60E+00	2.51E-02	2.90E+00	3.22E-04	4.56E-03	4.55E-03	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	4				2.49E-02	1.84E-02	9.53E-01	4.65E-05	1.37E-02	1.36E-02	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	16				6.44E-02	9.07E-01	1.19E-01	1.01E-03	2.10E-02	1.25E-02	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	4				1.61E-02	2.27E-01	2.98E-02	2.51E-04	5.24E-03	3.12E-03	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	4				8.25E-03	7.12E-03	1.00E-01	1.43E-04	1.17E-03	5.24E-04	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	40				1.30E-01	1.40E-01	1.80E+00	1.42E-03	1.13E-02	4.85E-03	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	11.2				4.51E-02	6.35E-01	8.34E-02	7.04E-04	1.47E-02	8.75E-03	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	12				2.48E-02	2.14E-02	3.01E-01	4.29E-04	3.50E-03	1.57E-03	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	24				3.30E-01	4.75E+00	1.46E+00	7.42E-03	2.01E-01	1.85E-01	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	24				5.04E-01	7.51E+00	2.17E+00	9.72E-03	3.02E-01	2.78E-01	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	24				4.95E-02	4.27E-02	6.01E-01	8.58E-04	7.01E-03	3.14E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	8				1.58E-01	2.51E+00	8.67E-01	3.98E-03	9.45E-02	8.70E-02	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	0.6137				7.94E-03	1.05E-01	6.51E-02	3.23E-04	3.42E-03	3.15E-03	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	2.9609				1.19E-02	1.68E-01	2.20E-02	1.86E-04	3.88E-03	2.31E-03	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	15.8865				1.37E-01	9.73E-02	7.20E+00	3.50E-04	6.46E-03	6.45E-03	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	3.648				2.27E-02	1.68E-02	8.69E-01	4.24E-05	1.25E-02	1.24E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	2.0218				4.00E-02	6.34E-01	2.19E-01	1.01E-03	2.39E-02	2.20E-02	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	4.3678				1.76E-02	2.48E-01	3.25E-02	2.75E-04	5.72E-03	3.41E-03	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	4.9474				1.99E-02	2.80E-01	3.68E-02	3.11E-04	6.48E-03	3.86E-03	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	0.208				2.50E-03	2.85E-02	2.68E-02	4.50E-05	2.11E-03	1.94E-03	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	0.848				8.95E-03	3.14E-02	3.71E-02	5.01E-05	2.13E-03	1.96E-03	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	0.64				2.58E-03	3.63E-02	4.77E-03	4.02E-05	8.38E-04	5.00E-04	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	0.0713				1.06E-04	3.19E-04	8.21E-03	2.49E-06	2.00E-05	2.00E-05	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	0.0713				2.31E-04	2.50E-04	3.21E-03	2.53E-06	2.01E-05	8.65E-06	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	0.0713				1.47E-04	1.27E-04	1.79E-03	2.55E-06	2.08E-05	9.34E-06	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	9.4118				1.22E-01	1.62E+00	9.99E-01	4.95E-03	5.25E-02	4.83E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	4.65E-02	5.65E-01	5.35E-01	9.51E-04	3.77E-02	3.47E-02	2.32E-02	2.82E-01	2.67E-01	4.75E-04	1.88E-02	1.73E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295		4.7059	9.4118	9.4118	-	-	-	-	-	-	1.43E-02	1.73E-01	1.64E-01	2.92E-04	1.16E-02	1.06E-02
	Vibratory roller	44 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0					-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2	2	2	2	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
						Total					9.79E+00	7.49E+01	5.18E+01	1.35E-01	3.00E+00	2.72E+00	3.10E-01	4.27E+00	2.64E+00	7.56E-03	1.90E-01	1.72E-01

Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC1 & CC4	CC1 & CC5	LV2							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC5) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	-	-	-	-	-	-
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	1.80E-03	2.18E-02	2.07E-02	3.67E-05	1.46E-03	1.34E-03
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	-	-	-	-	-	-
	Truck		0.3077		2.7692	3.0769	-	-	-	-	-	-
	Water pump	3.5 hp		4		4	1.93E-02	8.65E-03	2.33E-01	2.53E-05	2.39E-04	2.38E-04
Water Control - Removal	Flatbed Truck		4	12		16	1.30E-02	1.40E-02	1.80E-01	1.42E-04	1.13E-03	4.85E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	-	-	-	-	-	-
	Truck		0.3077			0.3077	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	8.64E-02	7.28E-01	8.48E-01	1.81E-03	3.43E-02	3.16E-02
	Crane 50'	200 hp	9.4118	18.8236		28.2354	5.62E-02	8.10E-01	2.49E-01	1.27E-03	3.44E-02	3.16E-02
	Man lift	210 hp				0	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	7.07E-02	1.12E+00	3.87E-01	1.78E-03	4.23E-02	3.89E-02
	Chainsaw		56.7647	75.2941	0.2941	132.3529	3.39E-01	5.31E-03	6.13E-01	6.82E-05	9.64E-04	9.62E-04
	1 ton pickup		0.1765		0.1765	0.353	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	-	-	-	-	-	-
	Front end loader	540 hp	0.2964		0.2964	0.5928	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	-	-	-	-	-	-
	Dump truck	20cy/24 ton			1.4866	1.4866	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Air Compressor	50 hp		32		32	4.38E-01	5.78E-01	2.35E+01	1.76E-03	1.11E-02	1.10E-02
	Crane 126'	350 hp	5.1111	5.1111		10.2222	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	-	-	-	-	-	-
	Excavator	430 hp	8	8	12	28	-	-	-	-	-	-
	Loader	190 hp	72	64	12	148	-	-	-	-	-	-
	Front end loader	180 hp	4.6667	4.6667		9.3334	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	1.65E-02	1.42E-02	2.00E-01	2.86E-04	2.34E-03	1.05E-03
	Chainsaw		44.4571	44.4571		88.9142	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-
	Truck		16	16		32	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.32E-02	2.82E-01	2.67E-01	4.75E-04	1.88E-02	1.73E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	2.85E-02	3.46E-01	3.28E-01	5.83E-04	2.31E-02	2.13E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
						Total	**1.13E+00**	**4.21E+00**	**2.71E+01**	**8.70E-03**	**1.78E-01**	**1.60E-01**

Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

			15	15	15	days per construction period (5 days per week)								
			CC2 & LV1	CC2 & LV2	CC3									
	Equipment	Equipment	Hours of Operation			Annual	Emission Factors - 2021 (g/hp-hr or g/hr)							
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck		4	4	4	12	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.155	1.651	1.295	0.002	0.115	0.106	189.389	0.017	0.000
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Truck		2.7692	2.7692		5.5384	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Water pump	3.5 hp				0	4.683	2.100	56.696	0.006	0.058	0.058	177.791	0.267	0.301
Water Control - Removal	Flatbed Truck		4	4	4	12	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.155	1.651	1.295	0.002	0.115	0.106	189.389	0.017	0.000
	Loader/Backhoe	75 hp				0	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
	Tractor/crawler/dozer	250 hp	4	4		8	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Truck		2.7692			2.7692	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	0.159	1.228	1.806	0.004	0.058	0.053	341.375	0.014	0.000
	Crane 50'	200 hp	9.4118			9.4118	0.083	1.182	0.436	0.002	0.048	0.044	203.318	0.011	0.000
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	0.064	0.546	0.342	0.002	0.017	0.016	192.930	0.006	0.000
	Loader	190 hp	28.2352	14.2656		42.5008	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Chainsaw		56.4706	28.2353	28.2353	112.9412	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	1 ton pickup			0.0176		0.0176	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp				0	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Front end loader	540 hp		0.0148		0.0148	0.081	0.956	0.609	0.003	0.037	0.034	293.384	0.014	0.000
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	0.100	1.405	0.585	0.002	0.055	0.051	234.962	0.014	0.000
	Dump truck	20cy/24 ton		0.1487		0.1487	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	0.113	0.790	0.465	0.003	0.026	0.024	237.872	0.010	0.000
	Air Compressor	50 hp				0	0.837	1.059	50.665	0.004	0.024	0.023	307.059	0.048	0.067
	Crane 126'	350 hp				0	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	Crane 50'	263 hp	3.3028	3.3028		6.6056	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	Crane 210'	230 hp				0	0.083	1.182	0.436	0.002	0.048	0.044	203.318	0.011	0.000
	Excavator	115 hp	128	32	48	208	0.087	1.088	1.876	0.003	0.061	0.056	278.045	0.019	0.000
	Excavator	430 hp	80	32	48	160	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
	Loader	190 hp	112	64	48	224	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Front end loader	180 hp				0	0.080	1.085	0.567	0.003	0.036	0.033	270.061	0.013	0.000
	Loader/Backhoe	75 hp				0	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	3/4 ton pickup		112	64	48	224	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Chainsaw		3.3028	3.3028		6.6056	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
Road Realignment	Vibratory roller	145 hp				0	0.060	0.794	1.582	0.003	0.037	0.034	280.063	0.017	0.000
	Vibrating compactor	5.5 hp				0	1.920	1.419	73.684	0.004	1.056	1.054	125.971	0.110	0.146
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	0.263	1.633	1.166	0.003	0.110	0.101	190.952	0.020	0.000
	Truck		39.6577	6.1748	6.1748	52.0073	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Suburban	3/4 ton				0	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Disposal	Truck	35 ton	4	4	4	12	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
	Truck	75 ton				0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Crane 210'	230 hp	18.8235			18.8235	0.083	1.182	0.436	0.002	0.048	0.044	203.318	0.011	0.000
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp				0	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Excavator	430 hp				0	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
	Truck					0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Generator	7.5 hp				0	1.906	1.364	102.604	0.005	0.092	0.092	175.214	0.109	0.143
Highway Replacement	Vibrating compactor	5.5 hp				0	1.920	1.419	73.684	0.004	1.056	1.054	125.971	0.110	0.146
	Tractor/crawler/dozer	250 hp				0	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Truck					0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Asphalt distributor	3000 gal				0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Asphalt paver	120 hp				0	0.144	1.673	1.805	0.003	0.119	0.109	261.328	0.029	0.000
	Vibrating roller/compactor	33 hp				0	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
	Chip spreader truck					0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Line striper	23 hp				0	0.110	0.330	8.519	0.003	0.021	0.021	260.327	0.006	0.021
	Flatbed Truck					0	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
	3/4 ton pickup					0	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	0.110	0.330	8.519	0.003	0.021	0.021	260.327	0.006	0.021
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	0.119	1.473	1.230	0.002	0.079	0.072	208.066	0.014	0.000
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	0.070	0.992	0.340	0.002	0.040	0.037	163.241	0.008	0.000
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	0.090	1.375	1.760	0.003	0.066	0.061	291.259	0.009	0.000
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	0.183	1.531	1.770	0.003	0.086	0.079	294.384	0.017	0.000
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	0.045	0.509	0.413	0.002	0.017	0.016	211.854	0.009	0.000
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
	Loader/Backhoe	92 hp		9.4118		9.4118	0.090	1.104	1.282	0.002	0.065	0.060	195.356	0.012	0.000
	Vibratory roller	44 hp				0	0.445	1.794	2.165	0.003	0.103	0.095	235.507	0.040	0.000
	Tractor/crawler/dozer	250 hp				0	0.121	1.858	0.703	0.003	0.070	0.064	301.158	0.018	0.000
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	3/4 ton pickup					0	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	3/4 ton pickup			2		2	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
						Total									

Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

			15	15	15	days per const											
			CC2 & LV1	CC2 & LV2	CC3							GWP	1	21	310		
	Equipment	Equipment	Hours of Operation			Annual	Annual Emissions - 2021 (tons per year)										Metric Tons
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2elyr
Water Control - Installation	Flatbed Truck		4	4	4	12	5.20E-05	5.98E-05	7.17E-04	7.99E-07	6.23E-06	2.64E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	7.29E-05	7.77E-04	6.09E-04	1.04E-06	5.40E-05	4.96E-05	8.91E-02	7.99E-06	-	8.92E-02	8.10E-02
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	7.82E-05	9.58E-04	1.11E-03	1.99E-06	5.65E-05	5.19E-05	1.70E-01	1.01E-05	-	1.70E-01	1.54E-01
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	5.55E-04	8.49E-03	3.21E-03	1.55E-05	3.20E-04	2.94E-04	1.38E+00	8.40E-05	-	1.38E+00	1.25E+00
	Truck		2.7692	2.7692		5.5384	4.27E-05	3.05E-04	8.11E-05	6.49E-07	1.13E-05	5.97E-06	1.30E-01	3.11E-07	2.93E-07	1.30E-01	1.18E-01
	Water pump	3.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	5.20E-05	5.98E-05	7.17E-04	7.99E-07	6.23E-06	2.64E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	7.29E-05	7.77E-04	6.09E-04	1.04E-06	5.40E-05	4.96E-05	8.91E-02	7.99E-06	-	8.92E-02	8.10E-02
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	2.68E-04	4.10E-03	1.55E-03	7.47E-06	1.54E-04	1.42E-04	6.64E-01	4.05E-05	-	6.65E-01	6.03E-01
	Truck		2.7692			2.7692	2.13E-05	1.52E-04	4.05E-05	3.24E-07	5.64E-06	2.99E-06	6.50E-02	1.56E-07	1.47E-07	6.51E-02	5.90E-02
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.69E-03	1.30E-02	1.91E-02	4.07E-05	6.14E-04	5.65E-04	3.61E+00	1.52E-04	-	3.62E+00	3.28E+00
	Crane 50'	200 hp	9.4118			9.4118	1.73E-04	2.45E-03	9.05E-04	4.75E-06	9.96E-05	9.16E-05	4.22E-01	2.26E-05	-	4.22E-01	3.83E-01
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	4.16E-04	3.57E-03	2.23E-03	1.24E-05	1.12E-04	1.03E-04	1.26E+00	3.76E-05	-	1.26E+00	1.14E+00
	Loader	190 hp	28.2352	14.2656		42.5008	1.08E-03	1.65E-02	6.26E-03	3.02E-05	6.22E-04	5.73E-04	2.68E+00	1.64E-04	-	2.68E+00	2.44E+00
	Chainsaw		56.4706	28.2353	28.2353	112.9412	7.62E-03	1.19E-04	1.38E-02	1.54E-06	2.17E-05	2.17E-05	3.73E-02	4.74E-04	4.09E-05	5.99E-02	5.44E-02
	1 ton pickup			0.0176		0.0176	2.68E-08	4.01E-08	3.71E-07	1.19E-09	9.25E-09	3.97E-09	3.95E-04	3.93E-08	2.05E-08	4.02E-04	3.65E-04
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	7.15E-07	8.42E-06	5.36E-06	2.60E-08	3.26E-07	3.00E-07	2.58E-03	1.22E-07	-	2.59E-03	2.35E-03
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	5.08E-07	7.11E-06	2.96E-06	1.17E-08	2.80E-07	2.57E-07	1.19E-03	6.90E-08	-	1.19E-03	1.08E-03
	Dump truck	20cy/24 ton		0.1487		0.1487	1.15E-06	8.19E-06	2.18E-06	1.74E-08	3.03E-07	1.60E-07	3.49E-03	8.36E-09	7.87E-09	3.49E-03	3.17E-03
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	2.07E-04	1.44E-03	8.46E-04	4.87E-06	4.66E-05	4.28E-05	4.33E-01	1.86E-05	-	4.33E-01	3.93E-01
	Air Compressor	50 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	1.35E-04	1.90E-03	6.50E-04	3.07E-06	7.64E-05	7.03E-05	3.13E-01	1.62E-05	-	3.13E-01	2.84E-01
	Crane 210'	230 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	2.29E-03	2.87E-02	4.95E-02	8.60E-05	1.62E-03	1.49E-03	7.33E+00	4.88E-04	-	7.34E+00	6.66E+00
	Excavator	430 hp	80	32	48	160	3.42E-03	3.86E-02	3.14E-02	1.58E-04	1.29E-03	1.19E-03	1.61E+01	7.05E-04	-	1.61E+01	1.46E+01
	Loader	190 hp	112	64	48	224	5.70E-03	8.72E-02	3.30E-02	1.59E-04	3.28E-03	3.02E-03	1.41E+01	8.62E-04	-	1.41E+01	1.28E+01
	Front end loader	180 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	1.06E-03	1.62E-02	6.12E-03	2.95E-05	6.08E-04	5.60E-04	2.62E+00	1.60E-04	-	2.62E+00	2.38E+00
	3/4 ton pickup		112	64	48	224	6.74E-04	6.41E-04	8.28E-03	1.50E-05	1.20E-04	5.31E-05	5.03E+00	5.00E-04	2.61E-04	5.12E+00	4.64E+00
	Chainsaw		3.3028	3.3028		6.6056	4.46E-04	6.99E-06	8.07E-04	8.98E-08	1.27E-06	1.27E-06	2.18E-03	2.77E-05	2.39E-06	3.50E-03	3.18E-03
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	4.73E-05	2.94E-04	2.10E-04	5.35E-07	1.99E-05	1.83E-05	3.44E-02	3.61E-06	-	3.45E-02	3.13E-02
	Truck		39.6577	6.1748	6.1748	52.0073	4.01E-04	2.86E-03	7.61E-04	6.09E-06	1.06E-04	5.61E-05	1.22E+00	2.92E-06	2.75E-06	1.22E+00	1.11E+00
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	4.80E-05	3.43E-04	9.11E-05	7.29E-07	1.27E-05	6.71E-06	1.46E-01	3.50E-07	3.29E-07	1.46E-01	1.33E-01
	Suburban	3/4 ton				0	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	5.20E-05	5.98E-05	7.17E-04	7.99E-07	6.23E-06	2.64E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Truck	75 ton				0	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	1.13E-04	1.08E-04	1.39E-03	2.53E-06	2.02E-05	8.92E-06	8.45E-01	8.40E-05	4.38E-05	8.60E-01	7.80E-01
	Crane 210'	230 hp	18.8235			18.8235	3.97E-04	5.64E-03	2.08E-03	1.09E-05	2.29E-04	2.11E-04	9.70E-01	5.20E-05	-	9.71E-01	8.81E-01
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	1.88E-03	2.65E-02	9.09E-03	4.29E-05	1.07E-03	9.83E-04	4.37E+00	2.27E-04	-	4.37E+00	3.97E+00
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	2.27E-04	2.15E-04	2.78E-03	5.06E-06	4.05E-05	1.78E-05	1.69E+00	1.68E-04	8.76E-05	1.72E+00	1.56E+00
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	6.44E-05	1.93E-04	4.97E-03	1.51E-06	1.21E-05	1.21E-05	1.52E-01	3.67E-06	1.24E-05	1.56E-01	1.41E-01
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	4.00E-04	4.97E-03	4.15E-03	7.89E-06	2.65E-04	2.44E-04	7.02E-01	4.73E-05	-	7.03E-01	6.37E-01
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	1.96E-03	2.77E-02	9.47E-03	4.47E-05	1.11E-03	1.02E-03	4.55E+00	2.36E-04	-	4.56E+00	4.13E+00
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	2.34E-04	3.57E-03	4.57E-03	8.86E-06	1.71E-04	1.57E-04	7.55E-01	2.38E-05	-	7.56E-01	6.86E-01
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	3.80E-04	3.18E-03	3.67E-03	7.17E-06	1.78E-04	1.63E-04	6.11E-01	3.43E-05	-	6.12E-01	5.55E-01
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	8.05E-04	9.08E-03	7.38E-03	3.71E-05	3.04E-04	2.79E-04	3.78E+00	1.66E-04	-	3.78E+00	3.43E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	3.51E-04	4.29E-03	4.99E-03	8.92E-06	2.53E-04	2.33E-04	7.60E-01	4.51E-05	-	7.61E-01	6.90E-01
	Loader/Backhoe	92 hp		9.4118		9.4118	8.60E-05	1.05E-03	1.22E-03	2.19E-06	6.21E-05	5.71E-05	1.86E-01	1.11E-05	-	1.87E-01	1.69E-01
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.63E-04	2.59E-03	6.89E-04	5.51E-06	9.58E-05	5.07E-05	1.10E+00	2.65E-06	2.49E-06	1.11E+00	1.00E+00
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2	6.02E-06	5.72E-06	7.39E-05	1.34E-07	1.08E-06	4.74E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
						Total	**3.39E-02**	**3.19E-01**	**2.40E-01**	**7.68E-04**	**1.31E-02**	**1.19E-02**	**7.93E+01**	**5.07E-03**	**5.41E-04**	**7.95E+01**	**7.22E+01**

Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

			15	15	15	days per const												
			CC2 & LV1	CC2 & LV2	CC3													
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC2 & LV1) - 2021 (pounds per day)						Peak Daily Emissions (CC2 & LV2) - 2021 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	8.10E-03	8.63E-02	6.77E-02	1.16E-04	6.00E-03	5.52E-03	6.48E-03	6.90E-02	5.41E-02	9.29E-05	4.80E-03	4.41E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	1.04E-02	1.28E-01	1.48E-01	2.65E-04	7.53E-03	6.93E-03	5.21E-03	6.38E-02	7.42E-02	1.33E-04	3.76E-03	3.46E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	9.78E-02	1.50E+00	5.67E-01	2.73E-03	5.63E-02	5.18E-02	5.02E-02	7.68E-01	2.91E-01	1.40E-03	2.89E-02	2.66E-02
	Truck		2.7692	2.7692		5.5384	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04
	Water pump	3.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	8.10E-03	8.63E-02	6.77E-02	1.16E-04	6.00E-03	5.52E-03	6.48E-03	6.90E-02	5.41E-02	9.29E-05	4.80E-03	4.41E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	3.57E-02	5.46E-01	2.07E-01	9.96E-04	2.06E-02	1.89E-02	3.57E-02	5.46E-01	2.07E-01	9.96E-04	2.06E-02	1.89E-02
	Truck		2.7692			2.7692	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	2.25E-01	1.73E+00	2.55E+00	5.42E-03	8.19E-02	7.53E-02	1.12E-01	8.67E-01	1.28E+00	2.71E-03	4.10E-02	3.77E-02
	Crane 50'	200 hp	9.4118			9.4118	4.60E-02	6.54E-01	2.41E-01	1.27E-03	2.66E-02	2.44E-02	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	3.70E-02	3.17E-01	1.98E-01	1.10E-03	9.96E-03	9.16E-03	3.70E-02	3.17E-01	1.98E-01	1.10E-03	9.96E-03	9.16E-03
	Loader	190 hp	28.2352	14.2656		42.5008	1.91E-01	2.93E+00	1.11E+00	5.34E-03	1.10E-01	1.01E-01	9.67E-02	1.48E+00	5.60E-01	2.70E-03	5.57E-02	5.13E-02
	Chainsaw		56.4706	28.2353	28.2353	112.9412	1.02E+00	1.59E-02	1.84E+00	2.05E-04	2.89E-03	2.89E-03	5.08E-01	7.96E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176	-	-	-	-	-	-	7.14E-06	1.07E-05	9.88E-05	3.16E-07	2.47E-06	1.06E-06
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	-	-	-	-	-	-	1.91E-04	2.24E-03	1.43E-03	6.93E-06	8.70E-05	8.00E-05
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	-	-	-	-	-	-	1.35E-04	1.89E-03	7.89E-04	3.11E-06	7.46E-05	6.86E-05
	Dump truck	20cy/24 ton		0.1487		0.1487	-	-	-	-	-	-	3.06E-04	2.18E-03	5.81E-04	4.65E-06	8.07E-05	4.27E-05
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	2.75E-02	1.92E-01	1.13E-01	6.50E-04	6.21E-03	5.71E-03	2.75E-02	1.92E-01	1.13E-01	6.50E-04	6.21E-03	5.71E-03
	Air Compressor	50 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	1.80E-02	2.53E-01	8.67E-02	4.09E-04	1.02E-02	9.37E-03	1.80E-02	2.53E-01	8.67E-02	4.09E-04	1.02E-02	9.37E-03
	Crane 210'	230 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	3.76E-01	4.71E+00	8.12E+00	1.41E-02	2.65E-01	2.44E-01	9.39E-02	1.18E+00	2.03E+00	3.53E-03	6.64E-02	6.11E-02
	Excavator	430 hp	80	32	48	160	4.56E-01	5.14E+00	4.18E+00	2.10E-02	1.72E-01	1.58E-01	1.82E-01	2.06E+00	1.67E+00	8.41E-03	6.89E-02	6.33E-02
	Loader	190 hp	112	64	48	224	7.60E-01	1.16E+01	4.40E+00	2.12E-02	4.37E-01	4.02E-01	4.34E-01	6.64E+00	2.51E+00	1.21E-02	2.50E-01	2.30E-01
	Front end loader	180 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	1.85E-01	2.83E+00	1.07E+00	5.17E-03	1.07E-01	9.81E-02	4.83E-02	7.39E-01	2.80E-01	1.35E-03	2.78E-02	2.56E-02
	3/4 ton pickup		112	64	48	224	8.99E-02	8.55E-02	1.10E+00	2.01E-03	1.61E-02	7.08E-03	5.14E-02	4.88E-02	6.31E-01	1.15E-03	9.18E-03	4.04E-03
	Chainsaw		3.3028	3.3028		6.6056	5.95E-02	9.32E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04	5.95E-02	9.32E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	8.29E-03	5.15E-02	3.68E-02	9.37E-05	3.48E-03	3.20E-03	2.16E-03	1.34E-02	9.60E-03	2.45E-05	9.08E-04	8.35E-04
	Truck		39.6577	6.1748	6.1748	52.0073	8.15E-02	5.82E-01	1.55E-01	1.24E-03	2.15E-02	1.14E-02	1.27E-02	9.06E-02	2.41E-02	1.93E-04	3.35E-03	1.78E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	8.40E-03	6.00E-02	1.60E-02	1.28E-04	2.22E-03	1.18E-03	2.19E-03	1.57E-02	4.17E-03	3.33E-05	5.79E-04	3.07E-04
	Suburban	3/4 ton				0	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Truck	75 ton				0	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03	7.56E-03	7.18E-03	9.28E-02	1.69E-04	1.35E-03	5.95E-04
	Crane 210'	230 hp	18.8235			18.8235	1.06E-01	1.50E+00	5.55E-01	2.91E-03	6.11E-02	5.62E-02	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	1.67E-01	2.36E+00	8.08E-01	3.81E-03	9.49E-02	8.73E-02	1.67E-01	2.36E+00	8.08E-01	3.81E-03	9.49E-02	8.73E-02
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	3.02E-02	2.87E-02	3.71E-01	6.74E-04	5.40E-03	2.38E-03	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	1.03E-02	3.09E-02	7.95E-01	2.41E-04	1.94E-03	1.93E-03	3.43E-03	1.03E-02	2.65E-01	8.05E-05	6.45E-04	6.44E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	5.34E-02	6.62E-01	5.53E-01	1.05E-03	3.53E-02	3.25E-02	2.67E-02	3.31E-01	2.77E-01	5.26E-04	1.77E-02	1.63E-02
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	3.14E-01	4.42E+00	1.51E+00	7.15E-03	1.78E-01	1.64E-01	1.05E-01	1.47E+00	5.05E-01	2.38E-03	5.93E-02	5.46E-02
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	3.12E-02	4.76E-01	6.09E-01	1.18E-03	2.28E-02	2.09E-02	1.56E-02	2.38E-01	3.04E-01	5.91E-04	1.14E-02	1.05E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	5.06E-02	4.24E-01	4.90E-01	9.55E-04	2.37E-02	2.18E-02	2.53E-02	2.12E-01	2.45E-01	4.78E-04	1.18E-02	1.09E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	1.07E-01	1.21E+00	9.84E-01	4.95E-03	4.05E-02	3.73E-02	5.37E-02	6.05E-01	4.92E-01	2.47E-03	2.03E-02	1.86E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	3.74E-02	4.58E-01	5.32E-01	9.51E-04	2.70E-02	2.48E-02	3.74E-02	4.58E-01	5.32E-01	9.51E-04	2.70E-02	2.48E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	-	-	-	-	-	-	2.29E-02	2.81E-01	3.26E-01	5.83E-04	1.66E-02	1.52E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.87E-02	2.76E-01	7.35E-02	5.88E-04	1.02E-02	5.41E-03	3.87E-02	2.76E-01	7.35E-02	5.88E-04	1.02E-02	5.41E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2	-	-	-	-	-	-	1.61E-03	1.53E-03	1.97E-02	3.58E-05	2.87E-04	1.26E-04
						Total	**4.73E+00**	**4.55E+01**	**3.41E+01**	**1.09E-01**	**1.88E+00**	**1.70E+00**	**2.33E+00**	**2.18E+01**	**1.54E+01**	**5.05E-02**	**8.92E-01**	**8.07E-01**

Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC2 & LV1	CC2 & LV2	CC3							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC3) - 2021 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	4.86E-03	5.18E-02	4.06E-02	6.97E-05	3.60E-03	3.31E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	5.21E-03	6.38E-02	7.42E-02	1.33E-04	3.76E-03	3.46E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	-	-	-	-	-	-
	Truck		2.7692	2.7692		5.5384	-	-	-	-	-	-
	Water pump	3.5 hp				0	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	4.86E-03	5.18E-02	4.06E-02	6.97E-05	3.60E-03	3.31E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	Truck		2.7692			2.7692	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.12E-01	8.66E-01	1.27E+00	2.71E-03	4.09E-02	3.77E-02
	Crane 50'	200 hp	9.4118			9.4118	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	3.70E-02	3.17E-01	1.98E-01	1.10E-03	9.96E-03	9.16E-03
	Loader	190 hp	28.2352	14.2656		42.5008	-	-	-	-	-	-
	Chainsaw		56.4706	28.2353	28.2353	112.9412	5.08E-01	7.96E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	-	-	-	-	-	-
	Dump truck	20cy/24 ton		0.1487		0.1487	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Air Compressor	50 hp				0	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Crane 210'	230 hp				0	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	1.41E-01	1.77E+00	3.04E+00	5.29E-03	9.95E-02	9.16E-02
	Excavator	430 hp	80	32	48	160	2.74E-01	3.09E+00	2.51E+00	1.26E-02	1.03E-01	9.50E-02
	Loader	190 hp	112	64	48	224	3.26E-01	4.98E+00	1.89E+00	9.08E-03	1.87E-01	1.72E-01
	Front end loader	180 hp				0	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	4.83E-02	7.39E-01	2.80E-01	1.35E-03	2.78E-02	2.56E-02
	3/4 ton pickup		112	64	48	224	3.85E-02	3.66E-02	4.73E-01	8.60E-04	6.88E-03	3.03E-03
	Chainsaw		3.3028	3.3028		6.6056	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	2.16E-03	1.34E-02	9.60E-03	2.45E-05	9.08E-04	8.35E-04
	Truck		39.6577	6.1748	6.1748	52.0073	1.27E-02	9.06E-02	2.41E-02	1.93E-04	3.35E-03	1.78E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	2.19E-03	1.57E-02	4.17E-03	3.33E-05	5.79E-04	3.07E-04
	Suburban	3/4 ton				0	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Truck	75 ton				0	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	7.56E-03	7.18E-03	9.28E-02	1.69E-04	1.35E-03	5.95E-04
	Crane 210'	230 hp	18.8235			18.8235	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	1.67E-01	2.36E+00	8.08E-01	3.81E-03	9.49E-02	8.73E-02
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	3.43E-03	1.03E-02	2.65E-01	8.05E-05	6.45E-04	6.44E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	2.67E-02	3.31E-01	2.77E-01	5.26E-04	1.77E-02	1.63E-02
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	1.05E-01	1.47E+00	5.05E-01	2.38E-03	5.93E-02	5.46E-02
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	1.56E-02	2.38E-01	3.04E-01	5.91E-04	1.14E-02	1.05E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	2.53E-02	2.12E-01	2.45E-01	4.78E-04	1.18E-02	1.09E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	5.37E-02	6.05E-01	4.92E-01	2.47E-03	2.03E-02	1.86E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	1.87E-02	2.29E-01	2.66E-01	4.75E-04	1.35E-02	1.24E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	-	-	-	-	-	-
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.93E-02	1.38E-01	3.67E-02	2.94E-04	5.11E-03	2.71E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup			2		2	-	-	-	-	-	-
						Total	**1.99E+00**	**1.77E+01**	**1.44E+01**	**4.55E-02**	**7.33E-01**	**6.65E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's I	1/1/2018
Birthday of M	1/15/2018
Washington'	2/19/2018
Memorial Da	5/28/2018
Independenc	7/4/2018
Labor Day	9/3/2018
Columbus D	10/8/2018
Veterans Da	11/12/2018
Thanksgivin	11/22/2018
Christmas D	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

			15	15	15	days per const																	
			CC2 & LV1	CC2 & LV2	CC3																		
	Equipment	Equipment	Hours of Operation			Annual	Annual Hours by Site				Peak Daily Emissions (CC2) - 2021 (pounds per day)						Peak Daily Emissions (LV1) - 2021 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	CC2	LV1	LV2 - Yr 2	CC3	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	4			4	9.25E-03	1.06E-02	1.28E-01	1.42E-04	1.11E-03	4.69E-04	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.3333	0.8889	0.4444	1.3333	9.73E-03	1.04E-01	8.12E-02	1.39E-04	7.19E-03	6.62E-03	3.24E-03	3.45E-02	2.71E-02	4.64E-05	2.40E-03	2.21E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	2.624	2.624		2.624	1.04E-02	1.28E-01	1.48E-01	2.65E-04	7.53E-03	6.93E-03	5.21E-03	6.38E-02	7.42E-02	1.33E-04	3.76E-03	3.46E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833		10.9583	5.625		-	-	-	-	-	-	9.78E-02	1.50E+00	5.67E-01	2.73E-03	5.63E-02	5.18E-02
	Truck		2.7692	2.7692		5.5384		2.7692	2.7692		-	-	-	-	-	-	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04
	Water pump	3.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	4			4	9.25E-03	1.06E-02	1.28E-01	1.42E-04	1.11E-03	4.69E-04	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.3333	0.8889	0.4444	1.3333	9.73E-03	1.04E-01	8.12E-02	1.39E-04	7.19E-03	6.62E-03	3.24E-03	3.45E-02	2.71E-02	4.64E-05	2.40E-03	2.21E-03
	Loader/Backhoe	75 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8		4	4		-	-	-	-	-	-	3.57E-02	5.46E-01	2.07E-01	9.96E-04	2.06E-02	1.89E-02
	Truck		2.7692			2.7692		2.7692			-	-	-	-	-	-	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	14.1176	14.1176	0.0148	14.1176	2.25E-01	1.73E+00	2.55E+00	5.42E-03	8.19E-02	7.53E-02	1.12E-01	8.66E-01	1.27E+00	2.71E-03	4.09E-02	3.77E-02
	Crane 50'	200 hp	9.4118			9.4118		9.4118			-	-	-	-	-	-	4.60E-02	6.54E-01	2.41E-01	1.27E-03	2.66E-02	2.44E-02
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	9.4118			9.4118	7.40E-02	6.34E-01	3.97E-01	2.20E-03	1.99E-02	1.83E-02	-	-	-	-	-	-
	Loader	190 hp	28.2352	14.2656		42.5008	14.1176	14.1176	0.0148		1.92E-01	2.94E+00	1.11E+00	5.37E-03	1.11E-01	1.02E-01	9.57E-02	1.47E+00	5.55E-01	2.67E-03	5.51E-02	5.07E-02
	Chainsaw		56.4706	28.2353	28.2353	112.9412	28.2353	28.2353		28.2353	1.02E+00	1.59E-02	1.84E+00	2.05E-04	2.89E-03	2.89E-03	5.08E-01	7.96E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176			0.0176		-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148			0.0148		-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp		0.0148		0.0148			0.0148		-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	20cy/24 ton		0.1487		0.1487			0.1487		-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	3.3028				5.51E-02	3.84E-01	2.26E-01	1.30E-03	1.24E-02	1.14E-02	-	-	-	-	-	-
	Air Compressor	50 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	3.3028				3.59E-02	5.06E-01	1.73E-01	8.18E-04	2.04E-02	1.87E-02	-	-	-	-	-	-
	Crane 210'	230 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208		128	32	48	-	-	-	-	-	-	3.76E-01	4.71E+00	8.12E+00	1.41E-02	2.65E-01	2.44E-01
	Excavator	430 hp	80	32	48	160	16	64	16	48	1.82E-01	2.06E+00	1.67E+00	8.41E-03	6.89E-02	6.33E-02	3.65E-01	4.11E+00	3.34E+00	1.68E-02	1.38E-01	1.27E-01
	Loader	190 hp	112	64	48	224	48	64	16	48	6.51E-01	9.96E+00	3.77E+00	1.82E-02	3.75E-01	3.45E-01	4.34E-01	6.64E+00	2.51E+00	1.21E-02	2.50E-01	2.30E-01
	Front end loader	180 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	5.413	15.3324		5.413	9.66E-02	1.48E+00	5.60E-01	2.70E-03	5.56E-02	5.12E-02	1.37E-01	2.09E+00	7.93E-01	3.82E-03	7.88E-02	7.25E-02
	3/4 ton pickup		112	64	48	224	48	64	16	48	7.71E-02	7.33E-02	9.46E-01	1.72E-03	1.38E-02	6.07E-03	5.14E-02	4.88E-02	6.31E-01	1.15E-03	9.18E-03	4.04E-03
	Chainsaw		3.3028	3.3028		6.6056	3.3028				1.19E-01	1.86E-03	2.15E-01	2.39E-05	3.38E-04	3.38E-04	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	3.735	10.575		3.735	4.33E-03	2.69E-02	1.92E-02	4.89E-05	1.82E-03	1.67E-03	6.13E-03	3.81E-02	2.72E-02	6.93E-05	2.57E-03	2.36E-03
	Truck		39.6577	6.1748	6.1748	52.0073	6.1748	33.4829		6.1748	2.54E-02	1.81E-01	4.82E-02	3.86E-04	6.70E-03	3.55E-03	6.88E-02	4.92E-01	1.31E-01	1.05E-03	1.82E-02	9.63E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	1.0671	3.0214		1.0671	4.39E-03	3.13E-02	8.33E-03	6.67E-05	1.16E-03	6.14E-04	6.21E-03	4.44E-02	1.18E-02	9.44E-05	1.64E-03	8.69E-04
	Suburban	3/4 ton				0					-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	4			4	9.25E-03	1.06E-02	1.28E-01	1.42E-04	1.11E-03	4.69E-04	-	-	-	-	-	-
	Truck	75 ton				0					-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	9.4118	9.4118		9.4118	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03	7.56E-03	7.18E-03	9.28E-02	1.69E-04	1.35E-03	5.95E-04
	Crane 210'	230 hp	18.8235			18.8235		18.8235			-	-	-	-	-	-	1.06E-01	1.50E+00	5.55E-01	2.91E-03	6.11E-02	5.62E-02
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	18.8235			18.8235	3.35E-01	4.72E+00	1.62E+00	7.62E-03	1.90E-01	1.75E-01	-	-	-	-	-	-
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	18.8235	18.8235		18.8235	3.02E-02	2.87E-02	3.71E-01	6.74E-04	5.40E-03	2.38E-03	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0					-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0					-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0					-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	11.7647	23.5294		11.7647	6.87E-03	2.06E-02	5.30E-01	1.61E-04	1.29E-03	1.29E-03	6.87E-03	2.06E-02	5.30E-01	1.61E-04	1.29E-03	1.29E-03
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	5.8824	5.8824		5.8824	5.34E-02	6.62E-01	5.53E-01	1.05E-03	3.53E-02	3.25E-02	2.67E-02	3.31E-01	2.77E-01	5.26E-04	1.77E-02	1.63E-02
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	11.7647	23.5294		11.7647	2.09E-01	2.95E+00	1.01E+00	4.77E-03	1.19E-01	1.09E-01	2.09E-01	2.95E+00	1.01E+00	4.77E-03	1.19E-01	1.09E-01
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	5.8824	5.8824		5.8824	3.12E-02	4.76E-01	6.09E-01	1.18E-03	2.28E-02	2.09E-02	1.56E-02	2.38E-01	3.04E-01	5.91E-04	1.14E-02	1.05E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	5.8824	5.8824		5.8824	5.06E-02	4.24E-01	4.90E-01	9.55E-04	2.37E-02	2.18E-02	2.53E-02	2.12E-01	2.45E-01	4.78E-04	1.18E-02	1.09E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	9.4118	9.4118		9.4118	1.07E-01	1.21E+00	9.84E-01	4.95E-03	4.05E-02	3.73E-02	5.37E-02	6.05E-01	4.92E-01	2.47E-03	2.03E-02	1.86E-02
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	3.74E-02	4.58E-01	5.32E-01	9.51E-04	2.70E-02	2.48E-02	1.87E-02	2.29E-01	2.66E-01	4.75E-04	1.35E-02	1.24E-02
	Loader/Backhoe	92 hp		9.4118		9.4118			9.4118		-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory roller	44 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0					-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	9.4118	9.4118	9.4118	9.4118	3.87E-02	2.76E-01	7.35E-02	5.88E-04	1.02E-02	5.41E-03	1.93E-02	1.38E-01	3.67E-02	2.94E-04	5.11E-03	2.71E-03
	3/4 ton pickup					0					-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2			2		-	-	-	-	-	-	-	-	-	-	-	-
						Total					**3.73E+00**	**3.16E+01**	**2.12E+01**	**7.10E-02**	**1.27E+00**	**1.15E+00**	**2.87E+00**	**2.97E+01**	**2.35E+01**	**7.33E-02**	**1.24E+00**	**1.12E+00**

Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

			15	15	15	days per const						
			CC2 & LV1	CC2 & LV2	CC3							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (LV2 - Yr 2) - 2021 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.62E-03	1.73E-02	1.35E-02	2.32E-05	1.20E-03	1.10E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	5.02E-02	7.68E-01	2.91E-01	1.40E-03	2.89E-02	2.66E-02
	Truck		2.7692	2.7692		5.5384	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04
	Water pump	3.5 hp				0	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	-	-	-	-	-	-
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.62E-03	1.73E-02	1.35E-02	2.32E-05	1.20E-03	1.10E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	3.57E-02	5.46E-01	2.07E-01	9.96E-04	2.06E-02	1.89E-02
	Truck		2.7692			2.7692	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.18E-04	9.08E-04	1.34E-03	2.84E-06	4.29E-05	3.95E-05
	Crane 50'	200 hp	9.4118			9.4118	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	-	-	-	-	-	-
	Loader	190 hp	28.2352	14.2656		42.5008	1.01E-04	1.55E-03	5.87E-04	2.83E-06	5.83E-05	5.37E-05
	Chainsaw		56.4706	28.2353	28.2353	112.9412	-	-	-	-	-	-
	1 ton pickup			0.0176		0.0176	7.14E-06	1.07E-05	9.88E-05	3.16E-07	2.47E-06	1.06E-06
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	1.91E-04	2.24E-03	1.43E-03	6.93E-06	8.70E-05	8.00E-05
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	1.35E-04	1.89E-03	7.89E-04	3.11E-06	7.46E-05	6.86E-05
	Dump truck	20cy/24 ton		0.1487		0.1487	3.06E-04	2.18E-03	5.81E-04	4.65E-06	8.07E-05	4.27E-05
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Air Compressor	50 hp				0	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Crane 210'	230 hp				0	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	9.39E-02	1.18E+00	2.03E+00	3.53E-03	6.64E-02	6.11E-02
	Excavator	430 hp	80	32	48	160	9.12E-02	1.03E+00	8.36E-01	4.21E-03	3.44E-02	3.17E-02
	Loader	190 hp	112	64	48	224	1.09E-01	1.66E+00	6.29E-01	3.03E-03	6.25E-02	5.75E-02
	Front end loader	180 hp				0	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	-	-	-	-	-	-
	3/4 ton pickup		112	64	48	224	1.28E-02	1.22E-02	1.58E-01	2.87E-04	2.29E-03	1.01E-03
	Chainsaw		3.3028	3.3028		6.6056	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	-	-	-	-	-	-
	Truck		39.6577	6.1748	6.1748	52.0073	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	-	-	-	-	-	-
	Suburban	3/4 ton				0	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	-	-	-	-	-	-
	Truck	75 ton				0	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	-	-	-	-	-	-
	Crane 210'	230 hp	18.8235			18.8235	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	-	-	-	-	-	-
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	-	-	-	-	-	-
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	-	-	-	-	-	-
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	-	-	-	-	-	-
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	-	-	-	-	-	-
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	-	-	-	-	-	-
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	1.87E-02	2.29E-01	2.66E-01	4.75E-04	1.35E-02	1.24E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	2.29E-02	2.81E-01	3.26E-01	5.83E-04	1.66E-02	1.52E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.93E-02	1.38E-01	3.67E-02	2.94E-04	5.11E-03	2.71E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup			2		2	1.61E-03	1.53E-03	1.97E-02	3.58E-05	2.87E-04	1.26E-04
						Total	**4.65E-01**	**5.93E+00**	**4.84E+00**	**1.50E-02**	**2.55E-01**	**2.30E-01**

Construction Equipment - Upstream Barriers - Year 3
Alternative 3

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

50 days per construction period (5 days per week)
LV3 & LV4: 50
LV2: 15

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-6/9 LV3 & LV4	Hours of Operation 6/10-6/30 LV2	Annual Hours	Emission Factors - 2023 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck				0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135
	Crane 44'	80 hp	49.6732	0.4444	50.1176	0.131	1.404	1.284	0.002	0.093	0.086	189.389	0.015	0.000
	Loader/Backhoe	75 hp	34.624		34.624	0.073	0.894	1.278	0.002	0.044	0.041	195.356	0.010	0.000
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Truck		34.1719	2.7692	36.9411	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Water pump	3.5 hp			0	4.687	2.102	56.571	0.006	0.058	0.058	177.791	0.267	0.301
Water Control - Removal	Flatbed Truck				0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135
	Crane 44'	80 hp		0.4444	0.4444	0.131	1.404	1.284	0.002	0.093	0.086	189.389	0.015	0.000
	Loader/Backhoe	75 hp	32		32	0.073	0.894	1.278	0.002	0.044	0.041	195.356	0.010	0.000
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Truck		34.1719		34.1719	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	0.139	0.961	1.806	0.004	0.045	0.041	341.375	0.013	0.000
	Crane 50'	200 hp			0	0.071	0.930	0.427	0.002	0.039	0.036	203.318	0.010	0.000
	Man lift	210 hp			0	0.058	0.430	0.338	0.002	0.013	0.012	192.930	0.005	0.000
	Loader	190 hp	5.9294	0.0074	5.9368	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Chainsaw		5.8824	0.0147	5.8971	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
	1 ton pickup			0.0088	0.0088	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Front end loader	540 hp	5.9294	0.0074	5.9368	0.068	0.697	0.590	0.003	0.027	0.025	293.384	0.013	0.000
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	0.085	1.062	0.554	0.002	0.044	0.040	234.962	0.012	0.000
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
Demolition	Air Compressor	250 hp			0	0.103	0.605	0.461	0.003	0.020	0.018	237.872	0.009	0.000
	Air Compressor	50 hp			0	0.782	0.953	52.049	0.004	0.024	0.023	307.059	0.045	0.064
	Crane 126'	350 hp			0	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
	Crane 50'	263 hp			0	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
	Crane 210'	230 hp			0	0.071	0.930	0.427	0.002	0.039	0.036	203.318	0.010	0.000
	Excavator	115 hp		40	40	0.073	0.909	1.870	0.003	0.044	0.041	278.045	0.017	0.000
	Excavator	430 hp	80	20	100	0.039	0.341	0.410	0.002	0.012	0.011	211.854	0.008	0.000
	Loader	190 hp		20	20	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Front end loader	180 hp			0	0.063	0.745	0.558	0.003	0.025	0.023	270.061	0.012	0.000
	Loader/Backhoe	75 hp	350		350	0.073	0.894	1.278	0.002	0.044	0.041	195.356	0.010	0.000
	Tractor/crawler/dozer	250 hp	50.068		50.068	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	3/4 ton pickup		72	20	92	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Chainsaw				0	7.291	0.114	13.187	0.001	0.021	0.021	35.644	0.453	0.039
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	0.046	0.557	1.580	0.003	0.025	0.023	280.063	0.015	0.000
	Vibrating compactor	5.5 hp	5.1724		5.1724	1.926	1.423	73.677	0.004	1.056	1.054	125.971	0.110	0.147
	Vibratory compactor	7.5 hp			0	0.205	1.471	1.166	0.003	0.079	0.073	190.952	0.020	0.000
	Truck		372.9363		372.9363	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Asphalt distributor	3000 gal	22.9363		22.9363	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Suburban	3/4 ton			0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
Disposal	Truck	35 ton			0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135
	Truck	75 ton			0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
Bridge Installation	Suburban	3/4 ton			0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Crane 210'	230 hp			0	0.071	0.930	0.427	0.002	0.039	0.036	203.318	0.010	0.000
	Crane 270'	430 hp			0	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
	3/4 ton pickup				0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Tractor/crawler/dozer	250 hp			0	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Excavator	430 hp			0	0.039	0.341	0.410	0.002	0.012	0.011	211.854	0.008	0.000
	Truck				0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Generator	7.5 hp			0	1.898	1.356	102.593	0.005	0.092	0.092	175.215	0.108	0.143
Highway Replacement	Vibrating compactor	5.5 hp			0	1.926	1.423	73.677	0.004	1.056	1.054	125.971	0.110	0.147
	Tractor/crawler/dozer	250 hp			0	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Truck				0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Asphalt distributor	3000 gal			0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Asphalt paver	120 hp			0	0.120	1.423	1.788	0.003	0.094	0.086	261.328	0.026	0.000
	Vibrating roller/compactor	33 hp			0	0.366	1.695	2.095	0.003	0.080	0.074	235.507	0.033	0.000
	Chip spreader truck				0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Line striper	23 hp			0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Flatbed Truck				0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135
	3/4 ton pickup				0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp			0	0.110	0.330	8.518	0.003	0.021	0.021	260.327	0.006	0.021
	Crane 80'	130 hp			0	0.101	1.216	1.229	0.002	0.064	0.059	208.066	0.012	0.000
	Crane 114'	430 hp			0	0.056	0.723	0.327	0.002	0.029	0.027	163.241	0.008	0.000
	Auger drill	100 hp			0	0.078	1.184	1.760	0.003	0.051	0.047	291.259	0.009	0.000
	Water pump	80 hp			0	0.158	1.313	1.763	0.003	0.066	0.060	294.384	0.014	0.000
Landscaping	Excavator	430 hp	144.7059		144.7059	0.039	0.341	0.410	0.002	0.012	0.011	211.854	0.008	0.000
	Loader/Backhoe	75 hp	8	9.4118	17.4118	0.073	0.894	1.278	0.002	0.044	0.041	195.356	0.010	0.000
	Loader/Backhoe	92 hp		9.4118	9.4118	0.073	0.894	1.278	0.002	0.044	0.041	195.356	0.010	0.000
	Vibratory roller	44 hp	144.7059		144.7059	0.366	1.695	2.095	0.003	0.080	0.074	235.507	0.033	0.000
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	0.098	1.367	0.680	0.003	0.053	0.049	301.159	0.017	0.000
	Dump truck	12 cy	8	9.4118	17.4118	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	3/4 ton pickup		181.1765		181.1765	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	3/4 ton pickup		8	2	10	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
					Total									

Construction Equipment - Upstream Barriers - Year 3
Alternative 3

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

			50	15	days per const											
			LV3 & LV4	LV2							GWP	1	21	310		
	Equipment	Equipment	Hours of Operation		Annual	Annual Emissions - 2023 (tons per year)										Metric Tons
Activity	Type	Size	4/1-6/9	6/10-6/30	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	5.81E-04	6.21E-03	5.68E-03	9.82E-06	4.11E-04	3.78E-04	8.37E-01	6.41E-05	-	8.38E-01	7.61E-01
	Loader/Backhoe	75 hp	34.624		34.624	2.08E-04	2.56E-03	3.66E-03	6.56E-06	1.26E-04	1.16E-04	5.59E-01	2.97E-05	-	5.60E-01	5.08E-01
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	3.55E-03	4.96E-02	2.47E-02	1.23E-04	1.92E-03	1.77E-03	1.09E+01	6.01E-04	-	1.09E+01	9.92E+00
	Truck		34.1719	2.7692	36.9411	2.59E-04	1.01E-03	4.92E-04	4.30E-06	7.33E-05	3.81E-05	8.61E-01	2.08E-06	1.95E-06	8.62E-01	7.82E-01
	Water pump	3.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	5.15E-06	5.50E-05	5.03E-05	8.71E-08	3.64E-06	3.35E-06	7.42E-03	5.69E-07	-	7.43E-03	6.74E-03
	Loader/Backhoe	75 hp	32		32	1.93E-04	2.37E-03	3.38E-03	6.06E-06	1.17E-04	1.07E-04	5.17E-01	2.74E-05	-	5.17E-01	4.69E-01
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	3.43E-04	4.79E-03	2.38E-03	1.19E-05	1.86E-04	1.71E-04	1.05E+00	5.80E-05	-	1.06E+00	9.58E-01
	Truck		34.1719		34.1719	2.40E-04	9.36E-04	4.55E-04	3.98E-06	6.78E-05	3.53E-05	7.97E-01	1.92E-06	1.81E-06	7.97E-01	7.23E-01
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	1.54E-04	1.07E-03	2.01E-03	4.27E-06	4.98E-05	4.58E-05	3.80E-01	1.39E-05	-	3.80E-01	3.45E-01
	Crane 50'	200 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	1.22E-04	1.70E-03	8.45E-04	4.21E-06	6.59E-05	6.06E-05	3.74E-01	2.06E-05	-	3.75E-01	3.40E-01
	Chainsaw		5.8824	0.0147	5.8971	3.98E-04	6.24E-06	7.20E-04	8.02E-08	1.13E-06	1.13E-06	1.95E-03	2.47E-05	2.14E-06	3.13E-03	2.84E-03
	1 ton pickup			0.0088	0.0088	9.23E-09	1.66E-08	1.35E-07	5.93E-10	4.56E-09	1.93E-09	1.98E-04	1.96E-08	1.02E-08	2.01E-04	1.82E-04
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	1.59E-04	2.22E-03	1.10E-03	5.51E-06	8.61E-05	7.92E-05	4.89E-01	2.69E-05	-	4.90E-01	4.45E-01
	Front end loader	540 hp	5.9294	0.0074	5.9368	2.39E-04	2.46E-03	2.08E-03	1.04E-05	9.52E-05	8.76E-05	1.04E+00	4.46E-05	-	1.04E+00	9.41E-01
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	1.73E-04	2.15E-03	1.12E-03	4.68E-06	8.85E-05	8.14E-05	4.77E-01	2.51E-05	-	4.77E-01	4.33E-01
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	4.17E-04	1.63E-03	7.93E-04	6.93E-06	1.18E-04	6.14E-05	1.39E+00	3.35E-06	3.15E-06	1.39E+00	1.26E+00
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	3.68E-04	4.61E-03	9.48E-03	1.65E-05	2.25E-04	2.07E-04	1.41E+00	8.42E-05	-	1.41E+00	1.28E+00
	Excavator	430 hp	80	20	100	1.82E-03	1.62E-02	1.94E-02	9.86E-05	5.47E-04	5.03E-04	1.00E+01	4.00E-04	-	1.00E+01	9.12E+00
	Loader	190 hp		20	20	4.10E-04	5.72E-03	2.85E-03	1.42E-05	2.22E-04	2.04E-04	1.26E+00	6.94E-05	-	1.26E+00	1.15E+00
	Front end loader	180 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	2.11E-03	2.59E-02	3.70E-02	6.63E-05	1.28E-03	1.17E-03	5.65E+00	3.00E-04	-	5.66E+00	5.13E+00
	Tractor/crawler/dozer	250 hp	50.068		50.068	1.35E-03	1.89E-02	9.38E-03	4.68E-05	7.31E-04	6.73E-04	4.16E+00	2.29E-04	-	4.16E+00	3.77E+00
	3/4 ton pickup		72	20	92	2.07E-04	2.24E-04	2.66E-03	6.18E-06	4.87E-05	2.11E-05	2.06E+00	2.05E-04	1.07E-04	2.10E+00	1.91E+00
	Chainsaw				0	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	1.42E-04	1.70E-03	4.82E-03	9.61E-06	7.75E-05	7.13E-05	8.54E-01	4.45E-05	-	8.55E-01	7.76E-01
	Vibrating compactor	5.5 hp	5.1724		5.1724	6.04E-05	4.46E-05	2.31E-03	1.13E-07	3.31E-05	3.30E-05	3.95E-03	3.45E-06	4.60E-06	5.45E-03	4.94E-03
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	2.61E-03	1.02E-02	4.97E-03	4.34E-05	7.40E-04	3.85E-04	8.69E+00	2.10E-05	1.97E-05	8.70E+00	7.89E+00
	Asphalt distributor	3000 gal	22.9363		22.9363	1.61E-04	6.28E-04	3.05E-04	2.67E-06	4.55E-05	2.37E-05	5.35E-01	1.29E-06	1.21E-06	5.35E-01	4.85E-01
	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	2.64E-03	2.34E-02	2.81E-02	1.43E-04	7.91E-04	7.28E-04	1.45E+01	5.78E-04	-	1.45E+01	1.32E+01
	Loader/Backhoe	75 hp	8	9.4118	17.4118	1.05E-04	1.29E-03	1.84E-03	3.30E-06	6.35E-05	5.84E-05	2.81E-01	1.49E-05	-	2.82E-01	2.55E-01
	Loader/Backhoe	92 hp		9.4118	9.4118	6.95E-05	8.53E-04	1.22E-03	2.19E-06	4.21E-05	3.88E-05	1.86E-01	9.90E-06	-	1.87E-01	1.69E-01
	Vibratory roller	44 hp	144.7059		144.7059	2.57E-03	1.19E-02	1.47E-02	2.14E-05	5.62E-04	5.17E-04	1.65E+00	2.32E-04	-	1.66E+00	1.50E+00
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	3.90E-03	5.45E-02	2.71E-02	1.35E-04	2.11E-03	1.94E-03	1.20E+01	6.60E-04	-	1.20E+01	1.09E+01
	Dump truck	12 cy	8	9.4118	17.4118	1.22E-04	4.77E-04	2.32E-04	2.03E-06	3.46E-05	1.80E-05	4.06E-01	9.79E-07	9.21E-07	4.06E-01	3.69E-01
	3/4 ton pickup		181.1765		181.1765	4.08E-04	4.42E-04	5.24E-03	1.22E-05	9.60E-05	4.16E-05	4.07E+00	4.04E-04	2.11E-04	4.14E+00	3.76E+00
	3/4 ton pickup		8	2	10	2.25E-05	2.44E-05	2.89E-04	6.71E-07	5.30E-06	2.30E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01	2.07E-01
					Total	**2.61E-02**	**2.56E-01**	**2.21E-01**	**8.25E-04**	**1.11E-02**	**9.68E-03**	**8.77E+01**	**4.22E-03**	**3.65E-04**	**8.79E+01**	**7.98E+01**

Construction Equipment - Upstream Barriers - Year 3
Alternative 3

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

			50	15	days per const													
			LV3 & LV4	LV2														
	Equipment	Equipment	Hours of Operation		Annual	Peak Daily Emissions (LV3 & LV4) - 2023 (pounds per day)						Peak Daily Emissions (LV2) - 2023 (pounds per day)					
Activity	Type	Size	4/1-6/9	6/10-6/30	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	4.60E-02	4.92E-01	4.50E-01	7.79E-04	3.26E-02	3.00E-02	1.37E-03	1.47E-02	1.34E-02	2.32E-05	9.72E-04	8.94E-04
	Loader/Backhoe	75 hp	34.624		34.624	1.67E-02	2.05E-01	2.93E-01	5.25E-04	1.01E-02	9.30E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	2.75E-01	3.85E+00	1.91E+00	9.53E-03	1.49E-01	1.37E-01	2.88E-02	4.02E-01	2.00E-01	9.96E-04	1.56E-02	1.43E-02
	Truck		34.1719	2.7692	36.9411	1.92E-02	7.49E-02	3.64E-02	3.18E-04	5.43E-03	2.82E-03	5.18E-03	2.02E-02	9.83E-03	8.59E-05	1.47E-03	7.62E-04
	Water pump	3.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	-	-	-	-	-	-	1.37E-03	1.47E-02	1.34E-02	2.32E-05	9.72E-04	8.94E-04
	Loader/Backhoe	75 hp	32		32	1.54E-02	1.89E-01	2.71E-01	4.85E-04	9.34E-03	8.59E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	1.88E-02	2.62E-01	1.30E-01	6.50E-04	1.02E-02	9.36E-03	2.88E-02	4.02E-01	2.00E-01	9.96E-04	1.56E-02	1.43E-02
	Truck		34.1719		34.1719	1.92E-02	7.49E-02	3.64E-02	3.18E-04	5.43E-03	2.82E-03	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	1.23E-02	8.55E-02	1.61E-01	3.41E-04	3.98E-03	3.66E-03	5.13E-05	3.55E-04	6.68E-04	1.42E-06	1.66E-05	1.52E-05
	Crane 50'	200 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	9.73E-03	1.36E-01	6.75E-02	3.37E-04	5.27E-03	4.84E-03	4.05E-05	5.65E-04	2.81E-04	1.40E-06	2.19E-05	2.02E-05
	Chainsaw		5.8824	0.0147	5.8971	3.18E-02	4.98E-04	5.75E-02	6.40E-06	9.04E-05	9.02E-05	2.65E-04	4.15E-06	4.79E-04	5.33E-08	7.53E-07	7.52E-07
	1 ton pickup			0.0088	0.0088	-	-	-	-	-	-	2.46E-06	4.42E-06	3.59E-05	1.58E-07	1.22E-06	5.14E-07
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	1.27E-02	1.77E-01	8.81E-02	4.39E-04	6.87E-03	6.32E-03	1.06E-04	1.48E-03	7.34E-04	3.66E-06	5.73E-05	5.27E-05
	Front end loader	540 hp	5.9294	0.0074	5.9368	1.91E-02	1.97E-01	1.66E-01	8.33E-04	7.61E-03	7.00E-03	7.95E-05	8.19E-04	6.93E-04	3.46E-06	3.17E-05	2.91E-05
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	1.38E-02	1.72E-01	8.99E-02	3.74E-04	7.07E-03	6.50E-03	5.75E-05	7.16E-04	3.74E-04	1.56E-06	2.94E-05	2.70E-05
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	3.34E-02	1.30E-01	6.33E-02	5.53E-04	9.44E-03	4.91E-03	1.39E-04	5.43E-04	2.64E-04	2.31E-06	3.93E-05	2.04E-05
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	-	-	-	-	-	-	9.82E-02	1.23E+00	2.53E+00	4.41E-03	6.00E-02	5.52E-02
	Excavator	430 hp	80	20	100	1.17E-01	1.03E+00	1.24E+00	6.31E-03	3.50E-02	3.22E-02	9.73E-02	8.62E-01	1.04E+00	5.26E-03	2.92E-02	2.68E-02
	Loader	190 hp		20	20	-	-	-	-	-	-	1.09E-01	1.53E+00	7.59E-01	3.78E-03	5.92E-02	5.45E-02
	Front end loader	180 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	1.69E-01	2.07E+00	2.96E+00	5.30E-03	1.02E-01	9.40E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	50.068		50.068	1.08E-01	1.51E+00	7.50E-01	3.74E-03	5.85E-02	5.38E-02	-	-	-	-	-	-
	3/4 ton pickup		72	20	92	1.30E-02	1.41E-02	1.66E-01	3.87E-04	3.05E-03	1.32E-03	1.20E-02	1.30E-02	1.54E-01	3.58E-04	2.83E-03	1.22E-03
	Chainsaw				0	-	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	1.13E-02	1.36E-01	3.86E-01	7.69E-04	6.20E-03	5.70E-03	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	5.1724		5.1724	4.83E-03	3.57E-03	1.85E-01	9.01E-06	2.65E-03	2.64E-03	-	-	-	-	-	-
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	2.09E-01	8.17E-01	3.97E-01	3.47E-03	5.92E-02	3.08E-02	-	-	-	-	-	-
	Asphalt distributor	3000 gal	22.9363		22.9363	1.29E-02	5.03E-02	2.44E-02	2.13E-04	3.64E-03	1.89E-03	-	-	-	-	-	-
	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	2.11E-01	1.87E+00	2.25E+00	1.14E-02	6.33E-02	5.82E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	8	9.4118	17.4118	3.85E-03	4.73E-02	6.76E-02	1.21E-04	2.34E-03	2.15E-03	1.51E-02	1.86E-01	2.65E-01	4.75E-04	9.16E-03	8.43E-03
	Loader/Backhoe	92 hp		9.4118	9.4118	-	-	-	-	-	-	1.85E-02	2.28E-01	3.25E-01	5.83E-04	1.12E-02	1.03E-02
	Vibratory roller	44 hp	144.7059		144.7059	2.06E-01	9.52E-01	1.18E+00	1.71E-03	4.50E-02	4.14E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	3.12E-01	4.36E+00	2.17E+00	1.08E-02	1.69E-01	1.56E-01	-	-	-	-	-	-
	Dump truck	12 cy	8	9.4118	17.4118	4.49E-03	1.75E-02	8.52E-03	7.45E-05	1.27E-03	6.60E-04	1.76E-02	6.88E-02	3.34E-02	2.92E-04	4.98E-03	2.59E-03
	3/4 ton pickup		181.1765		181.1765	3.26E-02	3.54E-02	4.19E-01	9.73E-04	7.68E-03	3.33E-03	-	-	-	-	-	-
	3/4 ton pickup		8	2	10	1.44E-03	1.56E-03	1.85E-02	4.30E-05	3.39E-04	1.47E-04	1.20E-03	1.30E-03	1.54E-02	3.58E-05	2.83E-04	1.22E-04
					Total	**1.96E+00**	**1.90E+01**	**1.60E+01**	**6.08E-02**	**8.22E-01**	**7.17E-01**	**4.36E-01**	**4.97E+00**	**5.56E+00**	**1.73E-02**	**2.12E-01**	**1.91E-01**

Construction Equipment - Upstream Barriers - Year 3
Alternative 3

Construction Start Year	2023	
Speed of Onsite Trucks	10	mph

			50	15	days per const
			LV3 & LV4	LV2	
Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-6/9	Hours of Operation 6/10-6/30	Annual Hours
Water Control - Installation	Flatbed Truck				0
	Crane 44'	80 hp	49.6732	0.4444	50.1176
	Loader/Backhoe	75 hp	34.624		34.624
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318
	Truck		34.1719	2.7692	36.9411
	Water pump	3.5 hp			0
Water Control - Removal	Flatbed Truck				0
	Crane 44'	80 hp		0.4444	0.4444
	Loader/Backhoe	75 hp	32		32
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059
	Truck		34.1719		34.1719
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368
	Crane 50'	200 hp			0
	Man lift	210 hp			0
	Loader	190 hp	5.9294	0.0074	5.9368
	Chainsaw		5.8824	0.0147	5.8971
	1 ton pickup			0.0088	0.0088
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971
	Front end loader	540 hp	5.9294	0.0074	5.9368
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378
Demolition	Air Compressor	250 hp			0
	Air Compressor	50 hp			0
	Crane 126'	350 hp			0
	Crane 50'	263 hp			0
	Crane 210'	230 hp			0
	Excavator	115 hp		40	40
	Excavator	430 hp	80	20	100
	Loader	190 hp		20	20
	Front end loader	180 hp			0
	Loader/Backhoe	75 hp	350		350
	Tractor/crawler/dozer	250 hp	50.068		50.068
	3/4 ton pickup		72	20	92
	Chainsaw				0
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893
	Vibrating compactor	5.5 hp	5.1724		5.1724
	Vibratory compactor	7.5 hp			0
	Truck		372.9363		372.9363
	Asphalt distributor	3000 gal	22.9363		22.9363
	Suburban	3/4 ton			0
Disposal	Truck	35 ton			0
	Truck	75 ton			0
Bridge Installation	Suburban	3/4 ton			0
	Crane 210'	230 hp			0
	Crane 270'	430 hp			0
	3/4 ton pickup				0
	Tractor/crawler/dozer	250 hp			0
	Excavator	430 hp			0
	Truck				0
	Generator	7.5 hp			0
Highway Replacement	Vibrating compactor	5.5 hp			0
	Tractor/crawler/dozer	250 hp			0
	Truck				0
	Asphalt distributor	3000 gal			0
	Asphalt paver	120 hp			0
	Vibrating roller/compactor	33 hp			0
	Chip spreader truck				0
	Line striper	23 hp			0
	Flatbed Truck				0
	3/4 ton pickup				0
Abutments	Roto trowel concrete finisher	9 hp			0
	Crane 80'	130 hp			0
	Crane 114'	430 hp			0
	Auger drill	100 hp			0
	Water pump	80 hp			0
Landscaping	Excavator	430 hp	144.7059		144.7059
	Loader/Backhoe	75 hp	8	9.4118	17.4118
	Loader/Backhoe	92 hp		9.4118	9.4118
	Vibratory roller	44 hp	144.7059		144.7059
	Tractor/crawler/dozer	250 hp	144.7059		144.7059
	Dump truck	12 cy	8	9.4118	17.4118
	3/4 ton pickup		181.1765		181.1765
	3/4 ton pickup		8	2	10
					Total

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's	1/1/2019
Birthday of I	1/21/2019
Washington	2/18/2019
Memorial Da	5/27/2019
Independen	7/4/2019
Labor Day	9/2/2019
Columbus D	10/14/2019
Veterans Da	11/11/2019
Thanksgivin	11/28/2019
Christmas D	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Truck Loading/Unloading Fugitive Dust Emissions

Drop Operation Dust Equation (AP-42 Section 13.2.4)

$$E = k(0.0032)\left[\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right]$$

where: E = emission factor (lb/ton)
k = 0.35 for PM10
= 0.053 for PM2.5
U = mean wind speed (mph)
M = material moisture content (%)

Assumptions

Mean wind speed	5 mph	(National Climatic Data Center)
Moisture content	2.4 %	(AP-42 Table 11.9-3 haul truck moisture content)

Emission Factors

PM10 (lb/ton)	PM2.5 (lb/ton)
0.001	0.0001

lb/ton = pounds per ton of material

Construction Data

	Construction Dates	Construction Year	Soil Amount Annual cy	Soil Amount Daily cy
Existing ramp (SB)	9/15 - 11/30	2016	15,700	334
New ramp (NB)	8/7 - 11/19	2021	45,100	1,961
New ramp (SB)	7/11 - 8/6	2021	60,500	776

Assume material handling and grading of sediment from Rindge would not produce fugitive dust.

Construction Year	Soil Amount (cy) Annual	Daily
2016	15,700	334
2017	0	0
2018	0	0
2019	0	0
2020	0	0
2021	105,600	1,961

Loading/Unloading Emissions

Construction Year	PM10 (tpy)	PM2.5 (tpy)	PM10 (lb/day)	PM2.5 (lb/day)	
2016	0.017	0.003	0.366	0.055	
2017	0.000	0.000	0.000	0.000	
2018	0.000	0.000	0.000	0.000	
2019	0.000	0.000	0.000	0.000	
2020	0.000	0.000	0.000	0.000	
2021	0.116	0.018	2.151	0.326	*This occurs in 2066 for Alt 3.*

cy = cubic yards
tpy = tons per year

Conversion factors

1.26	ton/cubic yard	(CalEEMod Default)
2,000	pound/ton	

Sources:
- Wind Statistics: http://www.windfinder.com/windstats/windstatistic_malibu.htm
- South Coast Air Quality Management District. 2011. California Emissions Estimator Model User's Guide Version 2011.1. February.
- USEPA. 2006. Compilation of Air Pollutant Emission Factors (AP-42). Fifth Edition, Volume I. Chapter 13.2.4 Aggregate Handling and Storage Piles. November.

Grading Fugitive Dust Emissions

Grading Dust Equation (AP-42 Table 11.9-1)

PM_{10} 0.60 x 0.051 (S)^2

$PM_{2.5}$ 0.031 x 0.040 (S)^2.5

where: S = mean vehicle speed (mph).

Assumptions

S = 7.1 mph (AP-42 Table 11.9-3)

Emission Factors

PM10 (lb/VMT)	PM2.5 (lb/VMT)
1.543	0.167

lb/VMT = pounds per vehicle mile traveled

Construction Data

Blade width 12 feet (CalEEMod Default)

Number of passes 2 (Access road maintenance information from MII report.)

Dust suppression 61% reduced by water application (CalEEMod Default for water application 3 times a day)

	Construction Dates	Construction Year	Annual Area sq ft	Annual Grading Mile	Daily Area sq ft	Daily Grading Mile
Sherriff's Overlook	9/15 - 11/30	2016	200,000	6.3	50,000	1.6
Diversion Pipeline Installation	2/1 - 2/28	2016-2021	24,600	0.8	1,295	0.0
Cofferdam	2/1 - 2/28	2016-2021	400	0.0	400	0.0
Temporary Access Roads						
Existing ramp (SB)	9/15 - 11/30	2016	12,000	0.4	800	0.0
Existing ramp (SB)	2/1 - 10/31	2017	15,000	0.5	395	0.0
New ramp (NB)	2/1 - 10/31	2017	21,900	0.7	7,300	0.2
New ramp (SB)	2/1 - 10/31	2017	80,000	2.5	1,600	0.1
Access Road Maintenance	2/1 - 11/30	2017-2021	21,655,200	684	128,900	4

Assume material handling and grading of sediment from impoundment would not produce fugitive dust.

Assume minimal grading needed at upstream barrier sites.

Construction Year	Grading Mile Annual	Grading Mile Daily
2016	7.5	1.6
2017	688.0	4.4
2018	684.3	4.1
2019	684.3	4.1
2020	684.3	4.1
2021	684.3	4.1

Uncontrolled Grading Emissions

	PM10 (tpy)	PM2.5 (tpy)	PM10 (lb/day)	PM2.5 (lb/day)
2016	0.006	0.001	2.474	0.267
2017	0.531	0.057	6.811	0.735
2018	0.528	0.057	6.359	0.687
2019	0.528	0.057	6.359	0.687
2020	0.528	0.057	6.359	0.687
2021	0.528	0.057	6.359	0.687

These emissions occur in 2019, 2021, 2023, 2025, 2027, 2029, 2031, 2033, 2035, 2037, 2039, 2041, 2043, 2045, 2048, 2051, 2054, 2057, 2060, 2063, and 2066 for Alts 3a and 3b.

tpy = tons per year

Controlled Grading Emissions

	PM10 (tpy)	PM2.5 (tpy)	PM10 (lb/day)	PM2.5 (lb/day)
2016	0.002	0.000	0.965	0.104
2017	0.207	0.022	2.656	0.287
2018	0.206	0.022	2.480	0.268
2019	0.206	0.022	2.480	0.268
2020	0.206	0.022	2.480	0.268
2021	0.206	0.022	2.480	0.268

tpy = tons per year

Conversion factors

43,560 square feet/acre

5,280 feet/mile

2,000 pound/ton

Sources:

- South Coast Air Quality Management District. 2011. California Emissions Estimator Model User's Guide Version 2011.1. February.

- USEPA. 1998 Compilation of Air Pollutant Emission Factors (AP-42). Fifth Edition, Volume I. Chapter 11.9 Western Surface Coal Mining. July.

Material Handling & Grading

Temporary Access Road Hauling

		Haul Days	Haul Dates	Construction Year Alt 2 & 4	Construction Year Alt 3	Soil cy	Soil cy/day
Existing ramp (SB)	Imported	47	9/15 - 11/30	2016	2016	15,700	334
New ramp (NB)	Exported	23	8/7 - 11/19	2021	2066	45,100	1,961
New ramp (SB)	Exported	78	7/11 - 8/6	2021	2066	60,500	776
				Total		**121,300**	**3,071**

Temporary Access Road Grading

	Construction Hours	Construction Days	Construction Dates	Construction Year Alt 2 & 4	Construction Year Alt 3	Width ft	Length ft	Area sq ft
Existing ramp (SB)	120	15	9/15 - 11/30	2016	2016	12	1,000	12,000
Existing ramp (SB)	315	38	2/1 - 10/31	2017	2017	15	1,000	15,000
New ramp (NB)	23	3	2/1 - 10/31	2017	2017	30	730	21,900
New ramp (SB)	423	50	2/1 - 10/31	2017	2017	40	2,000	80,000
							Total	**128,900**

Other Graded Areas

	Construction Hours	Construction Days	Construction Dates	Construction Year Alt 2 & 4	Construction Year Alt 3	Total Area sq ft	Daily Area sq ft
Sherriff's Overlook	32	4	9/15 - 11/30	2016	2016	200,000	50,000
Diversion Pipeline Installation	155	19	2/1 - 2/28	2016-2021	2016-2066	24,600	1,295
Cofferdam	2	1	2/1 - 2/28	2016-2021	2016-2066	400	400
Access Road Maintenance	340	168	2/1 - 11/30	2017-2021	2016-2066	21,655,200	128,900

Construction days estimated from construction hours.

Assume material handling and grading of sediment from Rindge would not produce fugitive dust.

Alt2_EnvrAirQualityReport.pdf
Alt3_EnvrAirQualityReport.pdf
Alt4_EnvrAirQualityReport.pdf

Paving Emission Factors

Paving Emission Rate

2.62 pound VOC/acre (CalEEMod default)

Construction Data

	Alternatives 2-4	
Wdith	30	feet
Length	58,080	feet
Area	1,742,400	square feet
Site Area	40	acre
Start Date	11/1	
End Date	11/30	
Days	20	

Upstream Barrier CC1 has highway replacement phase but the work is less than 0.05% of Alternatives 2-4. Assume negligible.
Peak day emissions calculated by dividing by the number of days in the construction phase and multiplying by two.

Paving Emissions

	VOC	
	(tpy)	(lb/day)
Emissions	0.052	10.48

tpy = tons per year

Conversion factor

2,000	pounds/ton
43,560	square feet/acre

Source: South Coast Air Quality Management District. 2011. California Emissions Estimator Model User's Guide Version 2011.1. February.

Alt2_EnvrAirQualityReport.pdf
Alt3_EnvrAirQualityReport.pdf
Alt4_EnvrAirQualityReport.pdf
CC1 Equipment Report.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Trucks - Alternative 2a

2016

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sheriff's O	16	5	77	5	9/15/2016	11/30/2016								80	80	80
Ramp Building	20	1,504	30,080	32	9/15/2016	11/30/2016								640	640	640
TOTAL			30,157				0	0	0	0	0	0	0	720	720	720

2017

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sediment	16	22	352	7	2/1/2017	3/31/2017	112	112								
Removal Area & Access	16	11	175	8	2/1/2017	3/31/2017	128	128								
Rd	16	91	1,456	6	2/1/2017	3/31/2017	96	96								
	16	49	784	7	2/1/2017	3/31/2017	112	112								
Dewatering	20	23	460	8	10/16/2017	11/30/2017										160
TOTAL			3,227				448	448	0	0	0	0	0	0	0	160

2018

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2018	2/28/2018	96									
Dewatering	20	4	80	4	2/1/2018	2/28/2018	80									
	20	23	460	8	11/1/2018	11/30/2018										160
Coarse Material (Gravel	16	4,050	64,800	90	4/1/2018	6/7/2018			1,440	1,440						
& Larger) (4/1-7/21)	16	3,052	48,832	109	6/8/2018	7/19/2018					1,744	1,744				
	16	1,417	22,672	109	4/1/2018	7/19/2018			1,744	1,744	1,744	1,744				
Sand to Surfrider Beach (	8	1,632	13,056	136	9/3/2018	9/18/2018								1,088		
Sand to Topanga Beach	20	2,835	56,700	105	7/22/2018	9/2/2018							2,100			
(93,200 cy) (7/22-Labor	20	1,890	37,800	105	9/19/2018	10/15/2018									2,100	
Demolition	16	111	1,776	1	5/1/2018	10/15/2018				16	16	16	16	16	16	
TOTAL			245,152				176	0	1,744	1,760	1,760	1,760	2,116	1,104	2,116	160

2019

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2019	2/28/2019	96									
Dewatering	20	4	80	4	2/1/2019	2/28/2019	80									
	20	23	460	8	11/1/2019	11/30/2019										160
Sand to Topanga Beach	20	371	7,420	53	4/1/2019	4/9/2019			1,060							
Sand to Zuma Beach	20	6,413	128,260	53	4/10/2019	10/15/2019			1,060	1,060	1,060	1,060	1,060	1,060	1,060	
Demolition	16	111	1,776	1	5/1/2019	10/31/2019				16	16	16	16	16	16	
TOTAL			138,748				176	0	1,060	1,076	1,076	1,076	1,076	1,076	1,076	160

2020

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2020	2/28/2020	96									
Dewatering	20	4	80	4	2/1/2020	2/28/2020	80									
	20	23	460	8	11/1/2020	11/30/2020										160
Sand to Zuma Beach (19,	20	1,007	20,140	53	4/1/2020	4/26/2020			1,060							
Fines to landfill (147,700 cy) (4/27-10/15)	16	3,000	48,000	50	4/27/2020	10/15/2020			800	800				800	800	
	16	3,060	48,960	50	6/8/2020	8/23/2020					800	800	800			
	16	1,500	24,000	50	4/27/2020	10/15/2020			800	800	800	800	800	800	800	
Demolition	16	111	1,776	1	5/1/2020	10/31/2020				16	16	16	16	16	16	
TOTAL			144,168				176	0	1,060	816	816	816	816	816	816	160

2021

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2021	2/28/2021	96									
Dewatering	20	4	80	4	2/1/2021	2/28/2021	80									
	20	23	460	8	11/1/2021	11/30/2021										160
Fines to landfill (82,300 cy) (4/1-7/10)	16	2,200	35,200	50	4/1/2021	6/7/2021			800	800						
	16	1,380	22,080	60	6/8/2021	7/10/2021					960	960				
	16	660	10,560	60	4/1/2021	7/10/2021			960	960	960	960				
Material from South	16	3,128	50,048	136	7/11/2021	8/6/2021						2,176				
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	16	442	7,072	34	8/6/2021	8/26/2021							544			
	16	1,456	23,296	28	8/26/2021	11/19/2021								448	448	448
	16	442	7,072	34	8/6/2021	11/19/2021							544	544	544	544
Demolition	16	118	1,894	1	5/1/2021	10/31/2021				16	16	16	16	16	16	
TOTAL			158,514				176	0	960	976	976	2,192	560	560	560	544

Alt2_EnvrAirQualityReport.pdf
Truck Trips Estimate_20130417 v2.xlsx

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Trucks - Alternative 2b

2016

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sheriff's	16	5	77	5	9/15/2016	11/30/2016								80	80	80
Ramp Building	20	1,504	30,080	32	9/15/2016	11/30/2016								640	640	640
TOTAL			30,157				0	0	0	0	0	0	0	720	720	720

2017

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub -	16	22	352	7	2/1/2017	3/31/2017	112	112								
Sediment Removal	16	11	175	8	2/1/2017	3/31/2017	128	128								
Area & Access Rd	16	91	1,456	6	2/1/2017	3/31/2017	96	96								
	16	49	784	7	2/1/2017	3/31/2017	112	112								
Dewatering	20	23	460	8	10/16/2017	11/30/2017										160
TOTAL			3,227				448	448	0	0	0	0	0	0	0	160

2018

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2018	2/28/2018	96									
Dewatering	20	4	80	4	2/1/2018	2/28/2018	80									
	20	23	460	8	11/1/2018	11/30/2018										160
Coarse Material	16	4,050	64,800	90	4/1/2018	6/7/2018			1,440	1,440						
(Gravel & Larger) (4/1-	16	3,052	48,832	109	6/8/2018	7/19/2018					1,744	1,744				
7/21)	16	1,417	22,672	109	4/1/2018	7/19/2018			1,744	1,744	1,744	1,744				
Sand to Surfrider Beac	8	1,632	13,056	136	9/3/2018	9/18/2018								1,088		
Sand to Topanga	20	2,565	51,300	105	7/22/2018	9/2/2018						2,100	2,100			
Beach (93,200 cy)	20	1,890	37,800	105	9/19/2018	10/15/2018								2,100	2,100	
Demolition	16	111	1,776	1	4/1/2018	10/15/2018				16	16	16	16	16	16	
CC1	17	30	495	1	4/1/2018	5/12/2018			17	17						
CC4	18	20	360	2	4/1/2018	4/21/2018			36							
CC5	18	20	360	2	4/22/2018	5/12/2018				36						
LV2	14	20	280	2	5/13/2018	6/2/2018				28						
TOTAL			243,023				176	0	1,744	1,760	1,760	2,116	2,116	2,116	2,116	160

2019

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2019	2/28/2019	96									
Dewatering	20	4	80	4	2/1/2019	2/28/2019	80									
	20	23	460	8	11/1/2019	11/30/2019										160
Sand to Topanga	20	371	7,420	53	4/1/2019	4/9/2019			1,060							
Sand to Zuma Beach	20	6,413	128,260	53	4/10/2019	10/15/2019			1,060	1,060	1,060	1,060	1,060	1,060	1,060	
Demolition	16	111	1,776	1	5/1/2019	10/31/2019				16	16	16	16	16	16	
CC2	17	30	510	1	4/1/2019	5/12/2019			17	17						
LV1	16	20	310	2	4/1/2019	4/21/2019			31							
LV2	14	20	280	2	4/22/2019	5/12/2019				28						
CC3	17	20	340	2	5/13/2019	6/2/2019				34						
TOTAL			140,188				176	0	1,108	1,121	1,076	1,076	1,076	1,076	1,076	160

2020

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2020	2/28/2020	96									
Dewatering	20	4	80	4	2/1/2020	2/28/2020	80									
	20	23	460	8	11/1/2020	11/30/2020										160
Sand to Zuma Beach (	20	1,007	20,140	53	4/1/2020	4/26/2020			1,060							
Fines to landfill	16	3,000	48,000	50	4/27/2020	10/15/2020			800	800				800	800	
(147,700 cy) (4/27-	16	3,060	48,960	50	6/8/2020	8/23/2020					800	800	800			
10/15)	16	1,500	24,000	50	4/27/2020	10/15/2020			800	800	800	800	800	800	800	
Demolition	16	111	1,776	1	5/1/2020	10/31/2020				16	16	16	16	16	16	
LV3 & 4	13	30	390	1	4/1/2020	6/9/2020			13	13						
LV2	14	20	280	2	6/10/2020	7/30/2020					28	28				
TOTAL			144,838				176	0	1,073	829	844	844	816	816	816	160

2021

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2021	2/28/2021	96									
Dewatering	20	4	80	4	2/1/2021	2/28/2021	80									
	20	23	460	8	11/1/2021	11/30/2021										160
Fines to landfill	16	2,200	35,200	50	4/1/2021	6/7/2021			800	800						
(82,300 cy) (4/1-7/10)	16	1,380	22,080	60	6/8/2021	7/10/2021					960	960				
	16	660	10,560	60	4/1/2021	7/10/2021			960	960	960	960				
Material from South	16	3,128	50,048	136	7/11/2021	8/6/2021						2,176				
Material from North	16	442	7,072	34	8/6/2021	8/26/2021							544			
Ramp (to landfill)	16	1,456	23,296	28	8/26/2021	11/19/2021								448	448	448
(45,100 cy) (8/7-	16	442	7,072	34	8/6/2021	11/19/2021							544	544	544	544
Demolition	16	118	1,894	1	5/1/2021	10/31/2021				16	16	16	16	16	16	
TOTAL			158,514				176	0	960	976	976	2,192	560	560	560	704

Alt2_EnvrAirQualityReport.pdf
Truck Trips Estimate_20130417 v2.xlsx

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Trucks - Alternative 3a

2016

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sheriff's Ov	16	5	77	5	9/15/2016	11/30/2016								80	80	80
Temporary Access Road	20	1,504	30,080	32	9/15/2016	11/30/2016								640	640	640
TOTAL			30,157				0	0	0	0	0	0	0	720	720	720

2017

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sediment	16	7	112	7	2/1/2017	3/31/2017	112	112								
Removal	16	2	29	2	2/1/2017	3/31/2017	32	32								
Clear & Grub - Access Rd	16	7	112	4	2/1/2017	3/31/2017	64	64								
	16	31	493	8	2/1/2017	3/31/2017	128	128								
Dewatering	20	23	460	8	11/1/2017	11/30/2017										160
Floodwall	20	216	4,320	8	2/1/2017	10/30/2017	160	160	160	160	160	160	160	160	160	
	20	152	3,040	4	2/1/2017	10/30/2017	80	80	80	80	80	80	80	80	80	
	20	16	320	4	2/1/2017	10/30/2017	80	80	80	80	80	80	80	80	80	
Demolition	16	5	80	1	9/1/2017	10/30/2017								16	16	
TOTAL			8,966				656	656	320	320	320	320	320	336	336	160

2019, 2021, 2023, 2025, 2027, 2029, 2031, 2033, 2035, 2037, 2039, 2041, 2043, 2045, 2048, 2051, 2054, 2057, 2060, 2063

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2019	2/28/2019	96									
Dewatering	20	4	80	4	2/1/2019	2/28/2019	80									
	20	23	460	8	11/1/2019	11/30/2019										160
Demolition	16	5	80	1	9/1/2019	10/31/2019								16	16	
TOTAL			794				176	0	0	0	0	0	0	16	16	160

2066

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2066	2/28/2066	96									
Dewatering	20	4	80	4	2/1/2066	2/28/2066	80									
	20	23	460	8	11/1/2066	11/30/2066										160
Rindge Dam & Spillway De	16	5	80	1	9/1/2066	10/31/2066								16	16	
Rindge Dam Concrete Arc	16	34	544	1	10/1/2066	11/30/2066									16	16
Material from South Ramp	16	3,128	50,048	136	7/11/2066	8/6/2066						2,176				
Material from North Ramp	16	442	7,072	34	8/6/2066	8/26/2066							544			
(to landfill) (45,100 cy)	16	1,456	23,296	28	8/26/2066	11/19/2066								448	448	448
(8/7-11/19)	16	442	7,072	34	8/6/2066	11/19/2066							544	544	544	544
TOTAL			88,826				176	0	0	0	0	2,176	1,088	1,008	1,024	1,168

Alt3_EnvrAirQualityReport.pdf
Truck Trips Estimate_20130417 v2.xlsx

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Trucks - Alternative 3b

2016

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sheriff's Ov	16	5	77	5	9/15/2016	11/30/2016								80	80	80
Temporary Access Road	20	1,504	30,080	32	9/15/2016	11/30/2016								640	640	640
TOTAL			30,157				0	0	0	0	0	0	0	720	720	720

2017

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sediment	16	7	112	7	2/1/2017	3/31/2017	112	112								
Removal	16	2	29	2	2/1/2017	3/31/2017	32	32								
Clear & Grub - Access Rd	16	7	112	4	2/1/2017	3/31/2017	64	64								
	16	31	493	8	2/1/2017	3/31/2017	128	128								
Dewatering	20	23	460	8	11/1/2017	11/30/2017										160
Floodwall	20	216	4,320	8	2/1/2017	10/30/2017	160	160	160	160	160	160	160	160	160	
	20	152	3,040	4	2/1/2017	10/30/2017	80	80	80	80	80	80	80	80	80	
	20	16	320	4	2/1/2017	10/30/2017	80	80	80	80	80	80	80	80	80	
Demolition	16	5	80	1	9/1/2017	10/30/2017								16	16	
TOTAL			8,966				656	656	320	320	320	320	320	336	336	160

2019

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2019	2/28/2019	96									
Dewatering	20	4	80	4	2/1/2019	2/28/2019	80									
	20	23	460	8	11/1/2019	11/30/2019										160
Demolition	16	5	80	1	9/1/2019	10/31/2019								16	16	
CC1	17	30	495	1	4/1/2019	5/12/2019			17	17						
CC4	18	20	360	2	4/1/2019	4/21/2019			36							
CC5	18	20	360	2	4/22/2019	5/12/2019				36						
LV2	14	20	280	2	5/13/2019	6/2/2019				28						
TOTAL			2,289				176	0	53	53	0	0	0	16	16	160

2021

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2021	2/28/2021	96									
Dewatering	20	4	80	4	2/1/2021	2/28/2021	80									
	20	23	460	8	11/1/2021	11/30/2021										160
Demolition	16	5	80	1	9/1/2021	10/31/2021								16	16	
CC2	17	30	510	1	4/1/2021	5/12/2021			17	17						
LV1	16	20	310	2	4/1/2021	4/21/2021			31							
LV2	14	20	280	2	4/22/2021	5/12/2021				28						
CC3	17	20	340	2	5/13/2021	6/2/2021				34						
TOTAL			2,234				176	0	48	45	0	0	0	16	16	160

2023

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2023	2/28/2023	96									
Dewatering	20	4	80	4	2/1/2023	2/28/2023	80									
	20	23	460	8	11/1/2023	11/30/2023										160
Demolition	16	5	80	1	9/1/2023	10/31/2023								16	16	
LV3 & 4	13	30	390	1	4/1/2023	6/9/2023			13	13						
LV2	14	20	280	2	6/10/2023	7/30/2023					28	28				
TOTAL			1,464				176	0	13	13	28	28	0	16	16	160

2025, 2027, 2029, 2031, 2033, 2035, 2037, 2039, 2041, 2043, 2045, 2048, 2051, 2054, 2057, 2060, 2063

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2025	2/28/2025	96									
Dewatering	20	4	80	4	2/1/2025	2/28/2025	80									
	20	23	460	8	11/1/2025	11/30/2025										160
Demolition	16	5	80	1	9/1/2025	10/31/2025								16	16	
TOTAL			794				176	0	0	0	0	0	0	16	16	160

2066

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Daily Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	11	174	6	2/1/2066	2/28/2066	96									
Dewatering	20	4	80	4	2/1/2066	2/28/2066	80									
	20	23	460	8	11/1/2066	11/30/2066										160
Rindge Dam & Spillway De	16	5	80	1	9/1/2066	10/31/2066								16	16	
Rindge Dam Concrete Arc	16	34	544	1	10/1/2066	11/30/2066									16	16
Material from South Ramp	16	3,128	50,048	136	7/11/2066	8/6/2066						2,176				
Material from North Ramp	16	442	7,072	34	8/6/2066	8/26/2066							544			
(to landfill) (45,100 cy)	16	1,456	23,296	28	8/26/2066	11/19/2066								448	448	448
(8/7-11/19)	16	442	7,072	34	8/6/2066	11/19/2066							544	544	544	544
TOTAL			88,826				176	0	0	0	0	2,176	1,088	1,008	1,024	1,168

Alt3_EnvrAirQualityReport.pdf
Truck Trips Estimate_20130417 v2.xlsx

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Trucks - Alternative 4a

2016

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sheriff's	16	5	77	5	9/15/2016	11/30/2016								80	80	80
Temporary Access Road	20	1,504	30,080	32	9/15/2016	11/30/2016								640	640	640
TOTAL			30,157				0	0	0	0	0	0	0	720	720	720

2017

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sediment	16	21	336	7	2/1/2017	3/31/2017	112	112								
Removal Area	16	91	1,453	8	2/1/2017	3/31/2017	128	128								
Clear & Grub - Access Rd	16	11	175	6	2/1/2017	3/31/2017	96	96								
& Cofferdam	16	49	784	7	2/1/2017	3/31/2017	112	112								
Dewatering	20	23	460	8	11/1/2017	11/30/2017										160
Floodwall	20	216	4,320	8	2/1/2017	10/31/2017	160	160	160	160	160	160	160	160	160	
	20	152	3,040	4	2/1/2017	10/31/2017	80	80	80	80	80	80	80	80	80	
	20	16	320	4	2/1/2017	10/31/2017	80	80	80	80	80	80	80	80	80	
TOTAL			10,888				768	768	320	320	320	320	320	320	320	160

2018

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2018	2/28/2018	96									
Dewatering	20	4	80	4	2/1/2018	2/28/2018	80									
	20	23	460	8	11/1/2018	11/30/2018										160
Coarse Material (Gravel &	16	4,050	64,800	90	4/1/2018	6/7/2018			1,440	1,440						
Larger) - 167,000 cy after	16	3,052	48,832	109	6/8/2018	7/19/2018					1,744	1,744				
ramp building (4/1-7/21)	16	1,417	22,672	109	4/1/2018	7/19/2018			1,744	1,744	1,744	1,744				
Sand to Surfrider Beach (3	8	1,632	13,056	136	9/3/2018	9/18/2018								1,088		
Sand to Topanga Beach	20	2,835	56,700	105	7/22/2018	9/2/2018						2,100	2,100			
(93,200 cy) (7/22-Labor	20	630	12,600	105	9/19/2018	10/15/2018								2,100	2,100	
Demolition - Concrete Arc	16	111	1,776	1	5/1/2018	10/31/2018				16	16	16	16	16	16	
Demolition - Notch 5'	16	5	80	1	11/1/2018	11/30/2018										16
TOTAL			221,808				176	0	1,744	1,760	1,760	2,116	2,116	2,116	2,116	176

2019

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2019	2/28/2019	96									
Dewatering	20	4	80	4	2/1/2019	2/28/2019	80									
	20	23	460	8	11/1/2019	11/30/2019										160
Sand to Topanga Beach (7	20	371	7,420	53	4/1/2019	4/9/2019			1,060							
Sand to Zuma Beach (124,	20	5,406	108,120	53	4/10/2019	10/15/2019			1,060	1,060	1,060	1,060	1,060	1,060	1,060	
Demolition	16	111	1,776	1	5/1/2019	10/31/2019				16	16	16	16	16	16	
Demolition - Notch 5'	16	5	80	1	11/1/2019	11/30/2019										16
TOTAL			118,688				176	0	1,060	1,076	1,076	1,076	1,076	1,076	1,076	176

2020

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2020	2/28/2020	96									
Dewatering	20	4	80	4	2/1/2020	2/28/2020	80									
	20	23	460	8	11/1/2020	11/30/2020										160
Sand to Zuma Beach (19,5	20	1,007	20,140	53	4/1/2020	4/26/2020			1,060							
Fines to landfill (147,700	16	2,150	34,400	50	4/27/2020	10/15/2020			800	800				800	800	
cy) (4/27-10/15)	16	3,060	48,960	60	6/8/2020	8/23/2020					960	960	960			
	16	1,320	21,120	60	4/27/2020	10/15/2020			960	960	960	960	960	960	960	
Demolition	16	111	1,776	1	5/1/2020	10/31/2020				16	16	16	16	16	16	
Demolition - Notch 5'	16	5	80	1	11/1/2020	11/30/2020										16
TOTAL			127,768				176	0	1,060	976	976	976	976	976	976	176

2021

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2021	2/28/2021	96									
Dewatering	20	4	80	4	2/1/2021	2/28/2021	80									
	20	23	460	8	11/1/2021	11/30/2021										160
Fines to landfill (82,300	16	2,200	35,200	50	4/1/2021	6/7/2021			800	800						
cy) (4/1-7/10)	16	1,380	22,080	60	6/8/2021	7/10/2021					960	960				
	16	660	10,560	60	4/1/2021	7/10/2021			960	960	960	960				
Material from South Ramp	16	3,128	50,048	136	7/11/2021	8/6/2021						2,176				
Material from North Ramp	16	442	7,072	34	8/6/2021	8/26/2021							544			
(to landfill) (45,100 cy)	16	1,456	23,296	28	8/26/2021	11/19/2021								448	448	448
(8/7-11/19)	16	442	7,072	34	8/6/2021	11/19/2021							544	544	544	544
Rindge Dam & Spillway De	16	118	1,888	1	5/1/2021	10/31/2021				16	16	16	16	16	16	
Rindge Dam Concrete Arc	16	5	80	1	11/1/2021	11/31/2021									16	16
TOTAL			158,588				176	0	960	976	976	2,192	560	560	576	720

Alt4_EnvrAirQualityReport.pdf
Truck Trips Estimate_20130417 v2.xlsx

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Trucks - Alternative 4b

2016

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sheriff's	16	5	77	5	9/15/2016	11/30/2016								80	80	80
Temporary Access Road	20	1,504	30,080	32	9/15/2016	11/30/2016								640	640	640
TOTAL			30,157				0	0	0	0	0	0	0	720	720	720

2017

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear & Grub - Sediment	16	21	336	7	2/1/2017	3/31/2017	112	112								
Removal Area	16	91	1,453	8	2/1/2017	3/31/2017	128	128								
Clear & Grub - Access Rd	16	11	175	6	2/1/2017	3/31/2017	96	96								
& Cofferdam	16	49	784	7	2/1/2017	3/31/2017	112	112								
Dewatering	20	23	460	8	11/1/2017	11/30/2017										160
Floodwall	20	216	4,320	8	2/1/2017	10/31/2017	160	160	160	160	160	160	160	160	160	
	20	152	3,040	4	2/1/2017	10/31/2017	80	80	80	80	80	80	80	80	80	
	20	16	320	4	2/1/2017	10/31/2017	80	80	80	80	80	80	80	80	80	
TOTAL			10,888				768	768	320	320	320	320	320	320	320	160

2018

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2018	2/28/2018	96									
Dewatering	20	4	80	4	2/1/2018	2/28/2018	80									
	20	23	460	8	11/1/2018	11/30/2018										160
Coarse Material (Gravel &	16	4,050	64,800	90	4/1/2018	6/7/2018			1,440	1,440						
Larger) - 167,000 cy after	16	3,052	48,832	109	6/8/2018	7/19/2018					1,744	1,744				
ramp building (4/1-7/21)	16	1,417	22,672	109	4/1/2018	7/19/2018			1,744	1,744	1,744	1,744				
Sand to Surfrider Beach (3	8	1,632	13,056	136	9/3/2018	9/18/2018								1,088		
Sand to Topanga Beach	20	2,835	56,700	105	7/22/2018	9/2/2018						2,100	2,100			
(93,200 cy) (7/22-Labor	20	630	12,600	105	9/19/2018	10/15/2018								2,100	2,100	
Demolition - Concrete Arc	16	111	1,776	1	5/1/2018	10/31/2018				16	16	16	16	16	16	
Demolition - Notch 5'	16	5	80	1	11/1/2018	11/30/2018										16
CC1	17	30	495	1	4/1/2018	5/12/2018			17	17						
CC4	18	20	360	2	4/1/2018	4/21/2018			36							
CC5	18	20	360	2	4/22/2018	5/12/2018				36						
LV2	14	20	280	2	5/13/2018	6/2/2018				28						
TOTAL			223,303				176	0	1,744	1,760	1,760	2,116	2,116	2,116	2,116	176

2019

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2019	2/28/2019	96									
Dewatering	20	4	80	4	2/1/2019	2/28/2019	80									
	20	23	460	8	11/1/2019	11/30/2019										160
Sand to Topanga Beach (7	20	371	7,420	53	4/1/2019	4/9/2019			1,060							
Sand to Zuma Beach (124	20	5,406	108,120	53	4/10/2019	10/15/2019			1,060	1,060	1,060	1,060	1,060	1,060	1,060	
Demolition	16	111	1,776	1	5/1/2019	10/31/2019				16	16	16	16	16	16	
Demolition - Notch 5'	16	5	80	1	11/1/2019	11/30/2019										16
CC2	17	30	510	1	4/1/2019	5/12/2019			17	17						
LV1	16	20	310	2	4/1/2019	4/21/2019			31							
LV2	14	20	280	2	4/22/2019	5/12/2019				28						
CC3	17	20	340	2	5/13/2019	6/2/2019				34						
TOTAL			118,688				176	0	1,108	1,121	1,076	1,076	1,076	1,076	1,076	176

2020

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2020	2/28/2020	96									
Dewatering	20	4	80	4	2/1/2020	2/28/2020	80									
	20	23	460	8	11/1/2020	11/30/2020										160
Sand to Zuma Beach (19,5	20	1,007	20,140	53	4/1/2020	4/26/2020			1,060							
Fines to landfill (147,700	16	2,150	34,400	50	4/27/2020	10/15/2020			800	800				800	800	
cy) (4/27-10/15)	16	3,060	48,960	60	6/8/2020	8/23/2020					960	960	960			
	16	1,320	21,120	60	4/27/2020	10/15/2020			960	960	960	960	960	960	960	
Demolition	16	111	1,776	1	5/1/2020	10/31/2020				16	16	16	16	16	16	
Demolition - Notch 5'	16	5	80	1	11/1/2020	11/30/2020										16
LV3 & 4	13	30	390	1	4/1/2020	6/9/2020			13	13						
LV2	14	20	280	2	6/10/2020	7/30/2020					28	28				
TOTAL			127,768				176	0	1,060	976	976	976	976	976	976	176

2021

Activity	Round Trip (mi)	Total Trips	Total trip (mi)	Daily Trips	Start Date	End Date	Vehicle Miles Traveled									
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Clear Vegetation	16	47	752	6	2/1/2021	2/28/2021	96									
Dewatering	20	4	80	4	2/1/2021	2/28/2021	80									
	20	23	460	8	11/1/2021	11/30/2021										160
Fines to landfill (82,300	16	2,200	35,200	50	4/1/2021	6/7/2021			800	800						
cy) (4/1-7/10)	16	1,380	22,080	60	6/8/2021	7/10/2021					960	960				
	16	660	10,560	60	4/1/2021	7/10/2021			960	960	960	960				
Material from South Ramp	16	3,128	50,048	136	7/11/2021	8/6/2021						2,176				
Material from North Ramp	16	442	7,072	34	8/6/2021	8/26/2021							544			
(to landfill) (45,100 cy)	16	1,456	23,296	28	8/26/2021	11/19/2021								448	448	448
(8/7-11/19)	16	442	7,072	34	8/6/2021	11/19/2021							544	544	544	544
Rindge Dam & Spillway De	16	118	1,888	34	5/1/2021	10/31/2021				544	544	544	544	544	544	
Rindge Dam Concrete Arc	16	5	80	28	11/1/2021	11/31/2021									448	448
TOTAL			158,588				176	0	960	1,504	1,504	2,720	1,088	1,088	1,536	1,152

Alt4_EnvrAirQualityReport.pdf
Truck Trips Estimate_20130417 v2.xlsx

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Distances

Distance from Rindge Dam	One-way (mi)	Round trip (mi)
Landfill	8	16
Surfrider	4	8
Topanga	10	20
Zuma	10	20
Dewatering pipes	--	20
Soil - Access Rd	--	20

Default CalEEMod distance assumed for dewatering pipes and soil hauling distance.

Distance from	One-way to Landfill (mi)	Roundtrip Materials (mi)	Roundtrip All (mi)
CC1	6.5	20	16.5
CC2	7	20	17
CC3	7	20	17
CC4	8	20	18
CC5	8	20	18
LV1	5.5	20	15.5
LV2	4	20	14
LV3 & 4	3	20	13

1/2 dump trucks hauling material away; ½ low boys transporting equipment/supplies/material
Default CalEEMod distance assumed for equipment/supplies/materials hauling distance.

Distance from Floodwall	Round trip (mi)
Concrete trucks	20
Flatbed truck	20
Wide load trucks	20

Default CalEEMod distance assumed for all floodwall-related trips.

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Truck Emissions

Year	Emission Factors (grams per mile)					
	VOC	CO	NOX	PM10	PM2.5	SO2
2016	0.1465257	0.716154	8.2653516	0.1761037	0.1075549	0.016433209
2017	0.1338963	0.6660562	7.5321225	0.1637794	0.0962165	0.016418996
2018	0.1374757	0.6886371	6.8574765	0.1638283	0.0962615	0.01639892
2019	0.1393222	0.7083567	6.1838797	0.164175	0.0965805	0.016328131
2020	0.14319	0.7393589	4.6474456	0.1633283	0.0958015	0.016288944
2021	0.1519309	0.7947986	2.8002572	0.1610611	0.0937157	0.016230592
2023	0.1505101	0.7879792	1.3623216	0.1568155	0.0898098	0.01612573
2025	0.154856	0.8003661	1.3988246	0.1576291	0.0905583	0.016166539
2027	0.1562236	0.8075626	1.4184662	0.1584152	0.0912815	0.016165944
2029	0.1568112	0.8107408	1.4274042	0.1588129	0.0916473	0.016165158
2031	0.1584062	0.8105546	1.4355243	0.158423	0.0912887	0.016182993
2033	0.1585184	0.8112093	1.4381384	0.1585352	0.0913919	0.01618256
2035	0.1585526	0.8114404	1.4396334	0.158591	0.0914432	0.016182272
2037	0.1585526	0.8114404	1.4396334	0.158591	0.0914432	0.016182272
2039	0.1585526	0.8114404	1.4396334	0.158591	0.0914432	0.016182272
2066	0.1585526	0.8114404	1.4396334	0.158591	0.0914432	0.016182272

	EF, g/VMT	
	PM10	PM2.5
Daily	0.300	0.075
Annual	0.273	0.068

Alternative 2a

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	30,157	0.0048709	0.023807	0.2747636	0.0149399	0.0058469	0.000546286
2017	3,227	0.0004763	0.0023693	0.0267933	0.0015548	0.0005853	5.84057E-05
2018	245,152	0.0371506	0.1860932	1.8531236	0.1181305	0.0444778	0.004431546
2019	138,748	0.0213084	0.1083386	0.9457849	0.066911	0.0252217	0.002497283
2020	144,168	0.0227555	0.1174976	0.7385634	0.0693903	0.0260832	0.002588609
2021	158,514	0.0265471	0.1388764	0.4892935	0.0758989	0.0283142	0.002835998

Alternative 2a

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	720	0.2325846	1.1367724	13.119837	0.7564953	0.2899652	0.0260849
2017	448	0.1322456	0.6578449	7.4392645	0.4585358	0.1692242	0.0162166
2018	2,116	0.6413222	3.2124821	31.990027	2.1659909	0.7994921	0.0765007
2019	1,076	0.3304967	1.6803467	14.66925	1.1022432	0.4073037	0.0387332
2020	1,060	0.334621	1.7278093	10.860624	1.0838743	0.3994267	0.0380657
2021	2,192	0.7342116	3.8408932	13.532346	2.230414	0.8159046	0.0784349

Alternative 2b

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	30,157	0.0048709	0.023807	0.2747636	0.0149399	0.0058469	0.000546286
2017	3,227	0.0004763	0.0023693	0.0267933	0.0015548	0.0005853	5.84057E-05
2018	243,023	0.036828	0.1844771	1.8370303	0.1171046	0.0440915	0.004393061
2019	140,188	0.0215296	0.109463	0.9556008	0.0676055	0.0254835	0.002523201
2020	144,838	0.0228612	0.1180436	0.7419958	0.0697127	0.0262044	0.002600639
2021	158,514	0.0265471	0.1388764	0.4892935	0.0758989	0.0283142	0.002835998

Alternative 2b

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	720	0.2325846	1.1367724	13.119837	0.7564953	0.2899652	0.0260849
2017	448	0.1322456	0.6578449	7.4392645	0.4585358	0.1692242	0.0162166
2018	2,116	0.6413222	3.2124821	31.990027	2.1659909	0.7994921	0.0765007
2019	1,121	0.3443186	1.7506214	15.282741	1.1483408	0.4243378	0.0403531
2020	1,073	0.3387249	1.7489994	10.993821	1.0971671	0.4043253	0.0385325
2021	2,192	0.7342116	3.8408932	13.532346	2.230414	0.8159046	0.0784349

Alternative 3a

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	30,157	0.0048709	0.023807	0.2747636	0.0149399	0.0058469	0.000546286
2017	8,966	0.0013233	0.0065827	0.0744406	0.0043198	0.0016262	0.00016227
2019	794	0.0001219	0.0006199	0.005412	0.0003829	0.0001443	1.42902E-05
2021	794	0.000133	0.0006956	0.0024507	0.0003802	0.0001418	1.42048E-05
2023	794	0.0001317	0.0006896	0.0011923	0.0003764	0.0001384	1.4113E-05
2025	794	0.0001355	0.0007005	0.0012242	0.0003772	0.0001391	1.41487E-05
2027	794	0.0001367	0.0007068	0.0012414	0.0003778	0.0001397	1.41482E-05
2029	794	0.0001372	0.0007095	0.0012492	0.0003782	0.00014	1.41475E-05
2031	794	0.0001386	0.0007094	0.0012564	0.0003778	0.0001397	1.41631E-05
2033	794	0.0001387	0.00071	0.0012586	0.0003779	0.0001398	1.41628E-05
2035	794	0.0001388	0.0007102	0.0012599	0.000378	0.0001398	1.41625E-05
2037	794	0.0001388	0.0007102	0.0012599	0.000378	0.0001398	1.41625E-05
2039 - 2063	794	0.0001388	0.0007102	0.0012599	0.000378	0.0001398	1.41625E-05
2066	88,826	0.0155245	0.0794513	0.1409602	0.0422894	0.0156439	0.00158447

Alternative 3a

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	720	0.2325846	1.1367724	13.119837	0.7564953	0.2899652	0.0260849
2017	656	0.1936453	0.9632729	10.893209	0.6714274	0.2477926	0.0237457
2019	176	0.0540589	0.2748523	2.3994312	0.1802926	0.0666222	0.0063355
2021	176	0.0589513	0.3083929	1.0865387	0.1790843	0.0655106	0.0062977
2023	176	0.0584	0.3057469	0.5285997	0.177437	0.063995	0.006257
2025	176	0.0600863	0.3105532	0.5427634	0.1777527	0.0642855	0.0062728
2027	176	0.0606169	0.3133455	0.5503846	0.1780577	0.0645661	0.0062726
2029	176	0.0608449	0.3145787	0.5538527	0.178212	0.064708	0.0062723
2031	176	0.0614638	0.3145064	0.5570034	0.1780607	0.0645689	0.0062792
2033	176	0.0615073	0.3147605	0.5580177	0.1781042	0.0646089	0.0062791
2035	176	0.0615206	0.3148501	0.5585978	0.1781259	0.0646288	0.0062789
2037	176	0.0615206	0.3148501	0.5585978	0.1781259	0.0646288	0.0062789
2039 - 2063	176	0.0615206	0.3148501	0.5585978	0.1781259	0.0646288	0.0062789
2066	2,176	0.7606186	3.8926926	6.9062995	2.2022837	0.7990472	0.0776306

Alternative 3b

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	30,157	0.0048709	0.023807	0.2747636	0.0149399	0.0058469	0.000546286
2017	8,966	0.0013233	0.0065827	0.0744406	0.0043198	0.0016262	0.00016227
2019	2,289	0.0003515	0.0017873	0.0156028	0.0011038	0.0004161	4.11982E-05
2021	2,234	0.0003741	0.0019572	0.0068957	0.0010697	0.000399	3.99681E-05
2023	794	0.0001317	0.0006896	0.0011923	0.0003764	0.0001384	1.4113E-05
2025	794	0.0001355	0.0007005	0.0012242	0.0003772	0.0001391	1.41487E-05
2027	794	0.0001367	0.0007068	0.0012414	0.0003778	0.0001397	1.41482E-05
2029	794	0.0001372	0.0007095	0.0012492	0.0003782	0.00014	1.41475E-05
2031	794	0.0001386	0.0007094	0.0012564	0.0003778	0.0001397	1.41631E-05
2033	794	0.0001387	0.00071	0.0012586	0.0003779	0.0001398	1.41628E-05
2035	794	0.0001388	0.0007102	0.0012599	0.000378	0.0001398	1.41625E-05
2037	794	0.0001388	0.0007102	0.0012599	0.000378	0.0001398	1.41625E-05
2039 - 2063	794	0.0001388	0.0007102	0.0012599	0.000378	0.0001398	1.41625E-05
2066	88,826	0.0155245	0.0794513	0.1409602	0.0422894	0.0156439	0.00158447

Alternative 3b

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	720	0.2325846	1.1367724	13.119837	0.7564953	0.2899652	0.0260849
2017	656	0.1936453	0.9632729	10.893209	0.6714274	0.2477926	0.0237457
2019	176	0.0540589	0.2748523	2.3994312	0.1802926	0.0666222	0.0063355
2021	176	0.0589513	0.3083929	1.0865387	0.1790843	0.0655106	0.0062977
2023	176	0.0584	0.3057469	0.5285997	0.177437	0.063995	0.006257
2025	176	0.0600863	0.3105532	0.5427634	0.1777527	0.0642855	0.0062728
2027	176	0.0606169	0.3133455	0.5503846	0.1780577	0.0645661	0.0062726
2029	176	0.0608449	0.3145787	0.5538527	0.178212	0.064708	0.0062723
2031	176	0.0614638	0.3145064	0.5570034	0.1780607	0.0645689	0.0062792
2033	176	0.0615073	0.3147605	0.5580177	0.1781042	0.0646089	0.0062791
2035	176	0.0615206	0.3148501	0.5585978	0.1781259	0.0646288	0.0062789
2037	176	0.0615206	0.3148501	0.5585978	0.1781259	0.0646288	0.0062789
2039 - 2063	176	0.0615206	0.3148501	0.5585978	0.1781259	0.0646288	0.0062789
2066	2,176	0.7606186	3.8926926	6.9062995	2.2022837	0.7990472	0.0776306

Alternative 4a

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	30,157	0.0048709	0.023807	0.2747636	0.0149399	0.0058469	0.000546286
2017	10,888	0.001607	0.0079941	0.0904018	0.0052461	0.0019749	0.000197064
2018	221,808	0.033613	0.1683729	1.6766644	0.1068818	0.0402425	0.004009563
2019	118,688	0.0182277	0.0926752	0.8090446	0.0572371	0.0215752	0.002136229
2020	127,768	0.0201669	0.1041315	0.6545473	0.0614967	0.0231161	0.002294139
2021	158,588	0.0265596	0.1389415	0.4895227	0.0759345	0.0283275	0.002837326

Alternative 4a

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	720	0.2325846	1.1367724	13.119837	0.7564953	0.2899652	0.0260849
2017	768	0.2267067	1.1277341	12.753025	0.7860614	0.2900987	0.0277998
2018	2,116	0.6413222	3.2124821	31.990027	2.1659909	0.7994921	0.0765007
2019	1,076	0.3304967	1.6803467	14.66925	1.1022432	0.4073037	0.0387332
2020	1,060	0.334621	1.7278093	10.860624	1.0838743	0.3994267	0.0380657
2021	2,192	0.7342116	3.8408932	13.532346	2.230414	0.8159046	0.0784349

Alternative 4b

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	30,157	0.0048709	0.023807	0.2747636	0.0149399	0.0058469	0.000546286
2017	10,888	0.001607	0.0079941	0.0904018	0.0052461	0.0019749	0.000197064
2018	223,303	0.0338396	0.1695078	1.6879653	0.1076022	0.0405137	0.004036588
2019	118,688	0.0182277	0.0926752	0.8090446	0.0572371	0.0215752	0.002136229
2020	127,768	0.0201669	0.1041315	0.6545473	0.0614967	0.0231161	0.002294139
2021	158,588	0.0265596	0.1389415	0.4895227	0.0759345	0.0283275	0.002837326

Alternative 4b

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	720	0.2325846	1.1367724	13.119837	0.7564953	0.2899652	0.0260849
2017	768	0.2267067	1.1277341	12.753025	0.7860614	0.2900987	0.0277998
2018	2,116	0.6413222	3.2124821	31.990027	2.1659909	0.7994921	0.0765007
2019	1,121	0.3443186	1.7506214	15.282741	1.1483408	0.4243378	0.0403531
2020	1,060	0.334621	1.7278093	10.860624	1.0838743	0.3994267	0.0380657
2021	2,720	0.9110654	4.7660719	16.791962	2.767667	1.0124364	0.097328

453.592	g/lb
2000	lb/ton
1000000	g/metric ton

Malibu Creek Ecosystem Restoration Feasibility Study
Haul Truck Emissions

Year	Emission Factors (grams per mile)		
	CO2(Pavley	CH4	N2O
2016	1662.1876	0.0051	0.0048
2017	1634.9352	0.0051	0.0048
2018	1607.1529	0.0051	0.0048
2019	1574.5434	0.0051	0.0048
2020	1536.6175	0.0051	0.0048
2021	1531.1129	0.0051	0.0048
2023	1521.2207	0.0051	0.0048
2025	1525.0705	0.0051	0.0048
2027	1525.0143	0.0051	0.0048
2029	1524.9402	0.0051	0.0048
2031	1526.6226	0.0051	0.0048
2033	1526.5818	0.0051	0.0048
2035	1526.5547	0.0051	0.0048
2037	1526.5547	0.0051	0.0048
2039	1526.5547	0.0051	0.0048
2041	1526.5547	0.0051	0.0048
2043	1526.5547	0.0051	0.0048
2045	1526.5547	0.0051	0.0048
2048	1526.5547	0.0051	0.0048
2051	1526.5547	0.0051	0.0048
2054	1526.5547	0.0051	0.0048
2057	1526.5547	0.0051	0.0048
2060	1526.5547	0.0051	0.0048
2063	1526.5547	0.0051	0.0048
2066	1526.5547	0.0051	0.0048

Global Warming Potential

CO2	CH4	N2O
1	21	310

IPCC, 1996.

Alternative 2a

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	30,157	50.127183	0.0001538	0.0001448	50.127183	0.0032299	0.0448741	50.175287
2017	3,227	5.2759935	1.646E-05	1.549E-05	5.2759935	0.0003456	0.0048018	5.281141
2018	245,152	393.99674	0.0012503	0.0011767	393.99674	0.0262558	0.3647862	394.38779
2019	138,748	218.46475	0.0007076	0.000666	218.46475	0.0148599	0.206457	218.68607
2020	144,168	221.53108	0.0007353	0.000692	221.53108	0.0154404	0.214522	221.76104
2021	158,514	242.70241	0.0008084	0.0007609	242.70241	0.0169768	0.2358684	242.95526

Alternative 2b

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	30,157	50.127183	0.0001538	0.0001448	50.127183	0.0032299	0.0448741	50.175287
2017	3,227	5.2759935	1.646E-05	1.549E-05	5.2759935	0.0003456	0.0048018	5.281141
2018	243,023	390.57512	0.0012394	0.0011665	390.57512	0.0260278	0.3616182	390.96276
2019	140,188	220.7321	0.000715	0.0006729	220.7321	0.0150141	0.2085997	220.95571
2020	144,838	222.56061	0.0007387	0.0006952	222.56061	0.0155121	0.2155189	222.79164
2021	158,514	242.70241	0.0008084	0.0007609	242.70241	0.0169768	0.2358684	242.95526

Alternative 3a

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	30,157	50.127183	0.0001538	0.0001448	50.127183	0.0032299	0.0448741	50.175287
2017	8,966	14.65846	4.573E-05	4.304E-05	14.65846	0.0009602	0.0133411	14.672762
2019	794	1.2501169	4.049E-06	3.811E-06	1.2501169	8.503E-05	0.0011814	1.2513834
2021	794	1.215635	4.049E-06	3.811E-06	1.215635	8.503E-05	0.0011814	1.2169015
2023	794	1.2077811	4.049E-06	3.811E-06	1.2077811	8.503E-05	0.0011814	1.2090475
2025	794	1.2108376	4.049E-06	3.811E-06	1.2108376	8.503E-05	0.0011814	1.2121041
2027	794	1.210793	4.049E-06	3.811E-06	1.210793	8.503E-05	0.0011814	1.2120595
2029	794	1.2107342	4.049E-06	3.811E-06	1.2107342	8.503E-05	0.0011814	1.2120007
2031	794	1.21207	4.049E-06	3.811E-06	1.21207	8.503E-05	0.0011814	1.2133364
2033	794	1.2120376	4.049E-06	3.811E-06	1.2120376	8.503E-05	0.0011814	1.213304
2035	794	1.212016	4.049E-06	3.811E-06	1.212016	8.503E-05	0.0011814	1.2132824
2037	794	1.212016	4.049E-06	3.811E-06	1.212016	8.503E-05	0.0011814	1.2132824
2039 - 2063	794	1.212016	4.049E-06	3.811E-06	1.212016	8.503E-05	0.0011814	1.2132824
2066	88,826	135.59768	0.000453	0.0004264	135.59768	0.0095133	0.132173	135.73936

Alternative 3b

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	30,157	50.127183	0.0001538	0.0001448	50.127183	0.0032299	0.0448741	50.175287
2017	8,966	14.65846	4.573E-05	4.304E-05	14.65846	0.0009602	0.0133411	14.672762
2019	2,289	3.6040594	1.167E-05	1.099E-05	3.6040594	0.0002451	0.003406	3.6077105
2021	2,234	3.4204376	1.139E-05	1.072E-05	3.4204376	0.0002393	0.0033241	3.424001
2023	794	1.2077811	4.049E-06	3.811E-06	1.2077811	8.503E-05	0.0011814	1.2090475
2025	794	1.2108376	4.049E-06	3.811E-06	1.2108376	8.503E-05	0.0011814	1.2121041
2027	794	1.210793	4.049E-06	3.811E-06	1.210793	8.503E-05	0.0011814	1.2120595
2029	794	1.2107342	4.049E-06	3.811E-06	1.2107342	8.503E-05	0.0011814	1.2120007
2031	794	1.21207	4.049E-06	3.811E-06	1.21207	8.503E-05	0.0011814	1.2133364
2033	794	1.2120376	4.049E-06	3.811E-06	1.2120376	8.503E-05	0.0011814	1.213304
2035	794	1.212016	4.049E-06	3.811E-06	1.212016	8.503E-05	0.0011814	1.2132824
2037	794	1.212016	4.049E-06	3.811E-06	1.212016	8.503E-05	0.0011814	1.2132824
2039 - 2063	794	1.212016	4.049E-06	3.811E-06	1.212016	8.503E-05	0.0011814	1.2132824
2066	88,826	135.59768	0.000453	0.0004264	135.59768	0.0095133	0.132173	135.73936

Alternative 4a

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	30,157	50.127183	0.0001538	0.0001448	50.127183	0.0032299	0.0448741	50.175287
2017	10,888	17.801462	5.553E-05	5.226E-05	17.801462	0.0011661	0.0162016	17.81883
2018	221,808	356.47937	0.0011312	0.0010647	356.47937	0.0237556	0.3300503	356.83317
2019	118,688	186.87941	0.0006053	0.0005697	186.87941	0.0127115	0.1766077	187.06873
2020	127,768	196.33055	0.0006516	0.0006133	196.33055	0.013684	0.1901188	196.53435
2021	158,588	242.81613	0.0008088	0.0007612	242.81613	0.0169848	0.2359789	243.06909

Alternative 4b

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	30,157	50.127183	0.0001538	0.0001448	50.127183	0.0032299	0.0448741	50.175287
2017	10,888	17.801462	5.553E-05	5.226E-05	17.801462	0.0011661	0.0162016	17.81883
2018	223,303	358.88206	0.0011388	0.0010719	358.88206	0.0239158	0.3322749	359.23825
2019	118,688	186.87941	0.0006053	0.0005697	186.87941	0.0127115	0.1766077	187.06873
2020	127,768	196.33055	0.0006516	0.0006133	196.33055	0.013684	0.1901188	196.53435
2021	158,588	242.81613	0.0008088	0.0007612	242.81613	0.0169848	0.2359789	243.06909

453.592 g/lb
2000 lb/ton
1000000 g/metric ton

Construction Equipment - Alternative 2a

Daily

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Max	Round Trip Distance (mi)
2016								27	27	27	27	686
2017	45	48	38	38	38	38	38	38	38	28	48	1,219
2018	37	14	23	42	39	45	45	45	45	15	45	1,143
2019	39	14	22	40	37	37	37	37	37	15	40	1,016
2020	42	14	24	37	34	34	34	34	34	15	42	1,067
2021	39	14	18	42	39	44	44	39	39	25	44	1,118

Annual

	Total	Round Trip Distance (mi)
2016	988	25,095
2017	5,959	151,359
2018	5,257	133,528
2019	4,676	118,770
2020	4,397	111,684
2021	5,275	133,985

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 2b

Daily

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Max	Round Trip Distance (mi)
2016								27	27	27	27	686
2017	45	48	38	38	38	38	38	38	38	28	48	1,219
2018	37	14	72	86	57	45	45	45	45	15	86	2,184
2019	39	14	58	76	61	37	37	37	37	15	76	1,930
2020	42	14	50	63	60	53	34	34	34	15	63	1,600
2021	39	14	18	42	39	44	44	39	39	25	44	1,118

Annual

	Total	Round Trip Distance (mi)
2016	988	25,095
2017	5,959	151,359
2018	6,847	173,914
2019	5,996	152,298
2020	5,867	149,022
2021	5,275	133,985

Commute distance 12.7 mi/one-way trip

Construction Equipment - Alternative 3a

Daily

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Max	Round Trip Distance (mi)
2016								24	24	24	24	610
2017	65	68	41	41	41	31	31	41	41	15	68	1,727
2019	37	14	15	20	20	20	20	20	20	15	37	940
2021	37	14	15	31	28	28	28	28	28	15	37	940
2023	37	14	15	31	28	28	28	28	28	15	37	940
2025	37	14	15	31	28	28	28	28	28	15	37	940
2027	37	14	15	31	28	28	28	28	28	15	37	940
2029	37	14	15	31	28	28	28	28	28	15	37	940
2031	37	14	15	31	28	28	28	28	28	15	37	940
2033	37	14	15	31	28	28	28	28	28	15	37	940
2035	37	14	15	31	28	28	28	28	28	15	37	940
2037	37	14	15	31	28	28	28	28	28	15	37	940
2039	37	14	15	31	28	28	28	28	28	15	37	940
2041	37	14	15	31	28	28	28	28	28	15	37	940
2043	37	14	15	31	28	28	28	28	28	15	37	940
2045	37	14	15	31	28	28	28	28	28	15	37	940
2048	37	14	15	31	28	28	28	28	28	15	37	940
2051	37	14	15	31	28	28	28	28	28	15	37	940
2054	37	14	15	31	28	28	28	28	28	15	37	940
2057	37	14	15	31	28	28	28	28	28	15	37	940
2060	37	14	15	31	28	28	28	28	28	15	37	940
2063	37	14	15	31	28	28	28	28	28	15	37	940
2066	34	14	15	31	28	28	28	28	37	38	38	965

Annual

	Total	Round Trip Distance (mi)
2016	832	21,133
2017	6,996	177,698
2019	2,500	63,500
2021	3,563	90,500
2023	3,563	90,500
2025	3,563	90,500
2027	3,563	90,500
2029	3,563	90,500
2031	3,563	90,500
2033	3,563	90,500
2035	3,563	90,500
2037	3,563	90,500
2039	3,563	90,500
2041	3,563	90,500
2043	3,563	90,500
2045	3,563	90,500
2048	3,563	90,500
2051	3,563	90,500
2054	3,563	90,500
2057	3,563	90,500
2060	3,563	90,500
2063	3,563	90,500
2066	4,055	103,000

Construction Equipment - Alternative 3b

Daily

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Max	Round Trip Distance (mi)
2016								24	24	24	24	610
2017	65	68	41	41	41	31	31	41	41	15	68	1,727
2019	37	14	64	64	38	20	20	20	20	15	64	1,626
2021	37	14	51	67	52	28	28	28	28	15	67	1,702
2023	37	14	41	57	54	47	28	28	28	15	57	1,448
2025	37	14	15	31	28	28	28	28	28	15	37	940
2027	37	14	15	31	28	28	28	28	28	15	37	940
2029	37	14	15	31	28	28	28	28	28	15	37	940
2031	37	14	15	31	28	28	28	28	28	15	37	940
2033	37	14	15	31	28	28	28	28	28	15	37	940
2035	37	14	15	31	28	28	28	28	28	15	37	940
2037	37	14	15	31	28	28	28	28	28	15	37	940
2039	37	14	15	31	28	28	28	28	28	15	37	940
2041	37	14	15	31	28	28	28	28	28	15	37	940
2043	37	14	15	31	28	28	28	28	28	15	37	940
2045	37	14	15	31	28	28	28	28	28	15	37	940
2048	37	14	15	31	28	28	28	28	28	15	37	940
2051	37	14	15	31	28	28	28	28	28	15	37	940
2054	37	14	15	31	28	28	28	28	28	15	37	940
2057	37	14	15	31	28	28	28	28	28	15	37	940
2060	37	14	15	31	28	28	28	28	28	15	37	940
2063	37	14	15	31	28	28	28	28	28	15	37	940
2066	34	14	15	31	28	28	28	28	37	38	38	965

Annual

	Total	Round Trip Distance (mi)
2016	832	21,133
2017	6,996	177,698
2019	4,090	103,886
2021	4,883	124,028
2023	5,033	127,838
2025	3,563	90,500
2027	3,563	90,500
2029	3,563	90,500
2031	3,563	90,500
2033	3,563	90,500
2035	3,563	90,500
2037	3,563	90,500
2039	3,563	90,500
2041	3,563	90,500
2043	3,563	90,500
2045	3,563	90,500
2048	3,563	90,500
2051	3,563	90,500
2054	3,563	90,500
2057	3,563	90,500
2060	3,563	90,500
2063	3,563	90,500
2066	4,055	103,000

Commute distance 12.7 mi/one-way trip

Construction Equipment - Alternative 4a

Daily

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Max	Round Trip Distance (mi)
2016								25	25	25	25	635
2017	64	67	43	43	43	43	43	43	43	16	67	1,702
2018	37	14	23	41	38	44	44	44	44	25	44	1,118
2019	39	14	22	41	38	38	38	38	38	26	41	1,041
2020	42	14	24	37	34	34	34	34	34	26	42	1,067
2021	42	14	18	37	34	39	39	34	42	39	42	1,067

Annual

	Total	Round Trip Distance (mi)
2016	884	22,454
2017	7,514	190,856
2018	5,329	135,357
2019	5,013	127,330
2020	4,606	116,992
2021	4,862	123,495

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4b

Daily

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Max	Round Trip Distance (mi)
2016								25	25	25	25	635
2017	64	67	43	43	43	43	43	43	43	16	67	1,702
2018	37	14	72	85	56	44	44	44	44	25	85	2,159
2019	39	14	58	77	62	38	38	38	38	26	77	1,956
2020	42	14	53	63	60	53	34	34	34	26	63	1,600
2021	42	14	18	37	34	39	39	34	42	39	42	1,067

Annual

	Total	Round Trip Distance (mi)
2016	884	22,454
2017	7,514	190,856
2018	6,919	175,743
2019	6,333	160,858
2020	6,076	154,330
2021	4862	123,495

Commute distance 12.7 mi/one-way trip

Construction Worker Commute Emissions

Year	Emission Factors (grams per mile)					
	VOC	CO	NOX	PM10	PM2.5	SO2
2016	0.0361384	1.3587798	0.1332806	0.0469375	0.0197598	0.003962382
2017	0.0300977	1.2217045	0.119994	0.0468675	0.0197023	0.003961069
2018	0.0249244	1.1038705	0.1087408	0.0468292	0.0196733	0.00396012
2019	0.0212551	1.0096295	0.0997374	0.0468094	0.0196591	0.003952137
2020	0.019425	0.9447248	0.0929257	0.0468171	0.0196668	0.003951756
2021	0.018265	0.8964997	0.087822	0.0468432	0.0196913	0.003961701
2023	0.0161592	0.8134008	0.0795162	0.046884	0.0197296	0.003962419
2025	0.0147751	0.7573173	0.0736389	0.0469558	0.0197966	0.003984718
2027	0.0137404	0.7171272	0.0694261	0.0470136	0.0198502	0.003985937
2029	0.0128779	0.6851973	0.0659387	0.0470535	0.0198873	0.003986952
2031	0.0122162	0.6635757	0.0630347	0.0470817	0.0199135	0.00399421
2033	0.0116462	0.6456555	0.0606571	0.0470862	0.0199177	0.003997891
2035	0.0111395	0.6295081	0.0589165	0.0470793	0.0199112	0.004001202
2037	0.0111395	0.6295081	0.0589165	0.0470793	0.0199112	0.004001202
2039	0.0111395	0.6295081	0.0589165	0.0470793	0.0199112	0.004001202
2066	0.0111395	0.6295081	0.0589165	0.0470793	0.0199112	0.004001202

	EF, g/VMT	
	PM10	PM2.5
Daily	0.300	0.075
Annual	0.273	0.068

Alternative 2a

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	25,095	0.0009997	0.0375876	0.0036869	0.008859	0.0024368	0.00010961
2017	151,359	0.0050216	0.2038346	0.0200203	0.0534204	0.0146874	0.000660882
2018	133,528	0.0036686	0.162478	0.0160055	0.0471216	0.0129529	0.000582887
2019	118,770	0.0027828	0.1321828	0.0130578	0.0419111	0.0115195	0.000517422
2020	111,684	0.0023914	0.1163055	0.0114401	0.0394114	0.0108331	0.000486502
2021	133,985	0.0026976	0.132407	0.0129707	0.047285	0.0129999	0.000585117

Alternative 2a

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	686	0.0546388	2.0543818	0.2015111	0.5252714	0.1434517	0.0059908
2017	1,219	0.0808989	3.2837928	0.3225292	0.9336276	0.2548707	0.0106469
2018	1,143	0.0628065	2.7816276	0.2740143	0.8751794	0.2388682	0.009979
2019	1,016	0.0476093	2.2614674	0.2234017	0.7778928	0.2122955	0.0088524
2020	1,067	0.0456856	2.221892	0.2185512	0.8168055	0.2229284	0.0092941
2021	1,118	0.045003	2.2088752	0.2163835	0.8557653	0.2336043	0.0097612

Alternative 2b

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	25,095	0.0009997	0.0375876	0.0036869	0.008859	0.0024368	0.00010961
2017	151,359	0.0050216	0.2038346	0.0200203	0.0534204	0.0146874	0.000660882
2018	173,914	0.0047782	0.21162	0.0208464	0.0613737	0.0168705	0.000759184
2019	152,298	0.0035683	0.169497	0.016744	0.0537423	0.0147714	0.000663486
2020	149,022	0.0031909	0.1551886	0.0152648	0.0525873	0.0144548	0.000649149
2021	133,985	0.0026976	0.132407	0.0129707	0.047285	0.0129999	0.000585117

Alternative 2b

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	686	0.0546388	2.0543818	0.2015111	0.5252714	0.1434517	0.0059908
2017	1,219	0.0808989	3.2837928	0.3225292	0.9336276	0.2548707	0.0106469
2018	2,184	0.1200303	5.3159994	0.5236719	1.672565	0.4565036	0.0190711
2019	1,930	0.0904578	4.2967881	0.4244633	1.4779964	0.4033614	0.0168195
2020	1,600	0.0685284	3.332838	0.3278269	1.2252083	0.3343925	0.0139412
2021	1,118	0.045003	2.2088752	0.2163835	0.8557653	0.2336043	0.0097612

Alternative 3a

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	21,133	0.0008418	0.0316527	0.0031048	0.0074602	0.002052	9.23035E-05
2017	177,698	0.0058955	0.2393064	0.0235043	0.0627167	0.0172434	0.000775891
2019	63,500	0.0014878	0.0706709	0.0069813	0.0224076	0.0061588	0.000276637
2021	90,500	0.0018221	0.0894343	0.0087611	0.0319386	0.0087808	0.000395217
2023	90,500	0.001612	0.0811444	0.0079325	0.0319427	0.0087846	0.000395289
2025	90,500	0.001474	0.0755496	0.0073462	0.0319499	0.0087913	0.000397513
2027	90,500	0.0013707	0.0715402	0.0069259	0.0319556	0.0087966	0.000397635
2029	90,500	0.0012847	0.0683549	0.006578	0.0319596	0.0088003	0.000397736
2031	90,500	0.0012187	0.066198	0.0062883	0.0319624	0.008803	0.00039846
2033	90,500	0.0011618	0.0644103	0.0060511	0.0319629	0.0088034	0.000398827
2035	90,500	0.0011113	0.0627994	0.0058775	0.0319622	0.0088027	0.000399158
2037	90,500	0.0011113	0.0627994	0.0058775	0.0319622	0.0088027	0.000399158
2039 - 2063	90,500	0.0011113	0.0627994	0.0058775	0.0319622	0.0088027	0.000399158
2066	103,000	0.0012648	0.0714731	0.0066893	0.0363767	0.0100185	0.000454288

Alternative 3a

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	610	0.0485678	1.8261172	0.179121	0.4669079	0.1275127	0.0053252
2017	1,727	0.1146068	4.6520397	0.4569163	1.3226392	0.3610668	0.0150831
2019	940	0.0440386	2.0918574	0.2066466	0.7195509	0.1963733	0.0081885
2021	940	0.0378434	1.8574632	0.1819589	0.7196208	0.19644	0.0082083
2023	940	0.0334804	1.6852899	0.1647501	0.7197054	0.1965195	0.0082098
2025	940	0.0306126	1.5690902	0.152573	0.7198541	0.1966582	0.008256
2027	940	0.0284688	1.4858201	0.1438445	0.7199739	0.1967693	0.0082585
2029	940	0.0266818	1.4196644	0.1366188	0.7200567	0.1968462	0.0082606
2031	940	0.0253109	1.3748665	0.1306019	0.7201151	0.1969004	0.0082756
2033	940	0.0241298	1.3377376	0.1256758	0.7201244	0.1969091	0.0082833
2035	940	0.02308	1.3042817	0.1220694	0.72011	0.1968957	0.0082901
2037	940	0.02308	1.3042817	0.1220694	0.72011	0.1968957	0.0082901
2039 - 2063	940	0.02308	1.3042817	0.1220694	0.72011	0.1968957	0.0082901
2066	965	0.0237038	1.3395325	0.1253686	0.7395724	0.2022172	0.0085142

Alternative 3b

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	21,133	0.0008418	0.0316527	0.0031048	0.0074602	0.002052	9.23035E-05
2017	177,698	0.0058955	0.2393064	0.0235043	0.0627167	0.0172434	0.000775891
2019	103,886	0.002434	0.1156175	0.0114214	0.0366588	0.0100759	0.000452578
2021	124,028	0.0024972	0.1225675	0.0120068	0.0437711	0.0120338	0.000541635
2023	127,838	0.0022771	0.1146225	0.0112052	0.0451214	0.0124089	0.000558375
2025	90,500	0.001474	0.0755496	0.0073462	0.0319499	0.0087913	0.000397513
2027	90,500	0.0013707	0.0715402	0.0069259	0.0319556	0.0087966	0.000397635
2029	90,500	0.0012847	0.0683549	0.006578	0.0319596	0.0088003	0.000397736
2031	90,500	0.0012187	0.066198	0.0062883	0.0319624	0.008803	0.00039846
2033	90,500	0.0011618	0.0644103	0.0060511	0.0319629	0.0088034	0.000398827
2035	90,500	0.0011113	0.0627994	0.0058775	0.0319622	0.0088027	0.000399158
2037	90,500	0.0011113	0.0627994	0.0058775	0.0319622	0.0088027	0.000399158
2039 - 2063	90,500	0.0011113	0.0627994	0.0058775	0.0319622	0.0088027	0.000399158
2066	103,000	0.0012648	0.0714731	0.0066893	0.0363767	0.0100185	0.000454288

Alternative 3b

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	610	0.0485678	1.8261172	0.179121	0.4669079	0.1275127	0.0053252
2017	1,727	0.1146068	4.6520397	0.4569163	1.3226392	0.3610668	0.0150831
2019	1,626	0.076175	3.6183479	0.3574428	1.2446285	0.3396727	0.0141638
2021	1,702	0.0685273	3.3635145	0.3294931	1.3030972	0.3557157	0.0148636
2023	1,448	0.0515779	2.5962575	0.2538041	1.1087353	0.3027462	0.0126475
2025	940	0.0306126	1.5690902	0.152573	0.7198541	0.1966582	0.008256
2027	940	0.0284688	1.4858201	0.1438445	0.7199739	0.1967693	0.0082585
2029	940	0.0266818	1.4196644	0.1366188	0.7200567	0.1968462	0.0082606
2031	940	0.0253109	1.3748665	0.1306019	0.7201151	0.1969004	0.0082756
2033	940	0.0241298	1.3377376	0.1256758	0.7201244	0.1969091	0.0082833
2035	940	0.02308	1.3042817	0.1220694	0.72011	0.1968957	0.0082901
2037	940	0.02308	1.3042817	0.1220694	0.72011	0.1968957	0.0082901
2039 - 2063	940	0.02308	1.3042817	0.1220694	0.72011	0.1968957	0.0082901
2066	965	0.0237038	1.3395325	0.1253686	0.7395724	0.2022172	0.0085142

Alternative 4a

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	22,454	0.0008945	0.033631	0.0032988	0.0079265	0.0021803	9.80724E-05
2017	190,856	0.006332	0.2570252	0.0252446	0.0673604	0.0185201	0.000833339
2018	135,357	0.0037188	0.1647033	0.0162247	0.0477669	0.0131303	0.000590871
2019	127,330	0.0029833	0.1417092	0.0139989	0.0449317	0.0123497	0.000554713
2020	116,992	0.0025051	0.1218337	0.0119839	0.0412847	0.011348	0.000509627
2021	123,495	0.0024864	0.1220404	0.0119552	0.0435828	0.0119821	0.000539306

Alternative 4a

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	635	0.0505915	1.9022054	0.1865844	0.4863624	0.1328257	0.0055471
2017	1,702	0.1129214	4.5836274	0.450197	1.3031886	0.355757	0.0148613
2018	1,118	0.0614108	2.7198136	0.2679251	0.8557309	0.23356	0.0097573
2019	1,041	0.0487996	2.3180041	0.2289868	0.7973401	0.2176028	0.0090737
2020	1,067	0.0456856	2.221892	0.2185512	0.8168055	0.2229284	0.0092941
2021	1,067	0.0429574	2.1084718	0.2065479	0.8168669	0.222986	0.0093175

Alternative 4b

Year	Distance (mi)	Annual emissions (tons per year)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	22,454	0.0008945	0.033631	0.0032988	0.0079265	0.0021803	9.80724E-05
2017	190,856	0.006332	0.2570252	0.0252446	0.0673604	0.0185201	0.000833339
2018	175,743	0.0048284	0.2138453	0.0210656	0.062019	0.017048	0.000767167
2019	160,858	0.0037689	0.1790234	0.017685	0.0567629	0.0156016	0.000700777
2020	154,330	0.0033046	0.1607169	0.0158085	0.0544607	0.0149698	0.000672274
2021	123,495	0.0024864	0.1220404	0.0119552	0.0435828	0.0119821	0.000539306

Alternative 4b

Year	Distance (mi)	Daily emissions (pounds per day)					
		VOC	CO	NOX	PM10	PM2.5	SO2
2016	635	0.0505915	1.9022054	0.1865844	0.4863624	0.1328257	0.0055471
2017	1,702	0.1129214	4.5836274	0.450197	1.3031886	0.355757	0.0148613
2018	2,159	0.1186346	5.2541854	0.5175826	1.6531166	0.4511954	0.0188493
2019	1,956	0.091648	4.3533248	0.4300484	1.4974437	0.4086688	0.0170408
2020	1,600	0.0685284	3.332838	0.3278269	1.2252083	0.3343925	0.0139412
2021	1,067	0.0429574	2.1084718	0.2065479	0.8168669	0.222986	0.0093175

453.592 g/lb
2000 lb/ton
1000000 g/metric ton

Construction Worker Commute Emissions

Year	Emission Factors (grams per mile)		
	CO2(Pavley	CH4	N2O
2016	331.45119	0.1853353	0.0775654
2017	318.36704	0.1853437	0.0775826
2018	306.18908	0.1853582	0.0776062
2019	294.25476	0.1853717	0.0776269
2020	282.08259	0.185387	0.0776484
2021	277.69523	0.1854308	0.0777164
2023	268.86767	0.1855025	0.0778262
2025	263.28502	0.1855627	0.077922
2027	258.09942	0.1856263	0.078028
2029	254.41983	0.1856897	0.0781317
2031	252.37011	0.1857916	0.0782943
2033	251.00192	0.185914	0.0784923
2035	250.18857	0.1860264	0.078677
2037	250.18857	0.1860264	0.078677
2039	250.18857	0.1860264	0.078677
2041	250.18857	0.1860264	0.078677
2043	250.18857	0.1860264	0.078677
2045	250.18857	0.1860264	0.078677
2048	250.18857	0.1860264	0.078677
2051	250.18857	0.1860264	0.078677
2054	250.18857	0.1860264	0.078677
2057	250.18857	0.1860264	0.078677
2060	250.18857	0.1860264	0.078677
2063	250.18857	0.1860264	0.078677
2066	250.18857	0.1860264	0.078677

Global Warming Potential

CO2	CH4	N2O
1	21	310

IPCC, 1996.

Alternative 2a

Year	Distance	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
	(mi)	CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	25,095	8.3178338	0.004651	0.0019465	8.3178338	0.0976716	0.6034211	9.0189265
2017	151,359	48.18759	0.0280534	0.0117428	48.18759	0.5891207	3.6402682	52.416979
2018	133,528	40.884754	0.0247505	0.0103626	40.884754	0.5197599	3.2124029	44.616917
2019	118,770	34.948755	0.0220167	0.0092198	34.948755	0.4623501	2.8581312	38.269237
2020	111,684	31.504055	0.0207047	0.0086721	31.504055	0.4347992	2.6883396	34.627194
2021	133,985	37.206996	0.0248449	0.0104128	37.206996	0.5217438	3.2279797	40.956719

Alternative 2b

Year	Distance	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
	(mi)	CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	25,095	8.3178338	0.004651	0.0019465	8.3178338	0.0976716	0.6034211	9.0189265
2017	151,359	48.18759	0.0280534	0.0117428	48.18759	0.5891207	3.6402682	52.416979
2018	173,914	53.250506	0.0322363	0.0134968	53.250506	0.6769633	4.1840066	58.111476
2019	152,298	44.814529	0.0282318	0.0118225	44.814529	0.5928681	3.6649603	49.072357
2020	149,022	42.036455	0.0276267	0.0115713	42.036455	0.5801608	3.5871021	46.203717
2021	133,985	37.206996	0.0248449	0.0104128	37.206996	0.5217438	3.2279797	40.956719

Alternative 3a

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	21,133	7.0044916	0.0039167	0.0016392	7.0044916	0.0822497	0.5081441	7.5948855
2017	177,698	56.573314	0.0329353	0.0137863	56.573314	0.691641	4.2737568	61.538712
2019	63,500	18.685177	0.0117711	0.0049293	18.685177	0.2471932	1.5280855	20.460456
2021	90,500	25.131474	0.0167815	0.0070334	25.131474	0.352412	2.1803397	27.664226
2023	90,500	24.332578	0.016788	0.0070433	24.332578	0.3525482	2.183418	26.868544
2025	90,500	23.827347	0.0167935	0.007052	23.827347	0.3526628	2.1861076	26.366117
2027	90,500	23.358049	0.0167992	0.0070615	23.358049	0.3527835	2.1890797	25.899912
2029	90,500	23.025046	0.016805	0.0070709	23.025046	0.3529041	2.1919885	25.569939
2031	90,500	22.839545	0.0168142	0.0070857	22.839545	0.3530978	2.1965522	25.389195
2033	90,500	22.715724	0.0168253	0.0071036	22.715724	0.3533303	2.2021066	25.271161
2035	90,500	22.642116	0.0168354	0.0071203	22.642116	0.353544	2.2072873	25.202947
2037	90,500	22.642116	0.0168354	0.0071203	22.642116	0.353544	2.2072873	25.202947
2039 - 2063	90,500	22.642116	0.0168354	0.0071203	22.642116	0.353544	2.2072873	25.202947
2066	103,000	25.769379	0.0191607	0.0081037	25.769379	0.4023745	2.5121514	28.683904

Alternative 3b

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	21,133	7.0044916	0.0039167	0.0016392	7.0044916	0.0822497	0.5081441	7.5948855
2017	177,698	56.573314	0.0329353	0.0137863	56.573314	0.691641	4.2737568	61.538712
2019	103,886	30.56895	0.0192575	0.0080643	30.56895	0.404408	2.4999479	33.473306
2021	124,028	34.44204	0.0229986	0.009639	34.44204	0.4829715	2.9880995	37.913111
2023	127,838	34.371559	0.0237143	0.0099492	34.371559	0.4980004	3.0842388	37.953798
2025	90,500	23.827347	0.0167935	0.007052	23.827347	0.3526628	2.1861076	26.366117
2027	90,500	23.358049	0.0167992	0.0070615	23.358049	0.3527835	2.1890797	25.899912
2029	90,500	23.025046	0.016805	0.0070709	23.025046	0.3529041	2.1919885	25.569939
2031	90,500	22.839545	0.0168142	0.0070857	22.839545	0.3530978	2.1965522	25.389195
2033	90,500	22.715724	0.0168253	0.0071036	22.715724	0.3533303	2.2021066	25.271161
2035	90,500	22.642116	0.0168354	0.0071203	22.642116	0.353544	2.2072873	25.202947
2037	90,500	22.642116	0.0168354	0.0071203	22.642116	0.353544	2.2072873	25.202947
2039 - 2063	90,500	22.642116	0.0168354	0.0071203	22.642116	0.353544	2.2072873	25.202947
2066	103,000	25.769379	0.0191607	0.0081037	25.769379	0.4023745	2.5121514	28.683904

Alternative 4a

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	22,454	7.4422724	0.0041614	0.0017416	7.4422724	0.0873904	0.5399031	8.0695658
2017	190,856	60.762133	0.0353739	0.0148071	60.762133	0.7428516	4.5901956	66.09518
2018	135,357	41.444712	0.0250895	0.0105045	41.444712	0.5268786	3.2564001	45.227991
2019	127,330	37.467517	0.0236034	0.0098842	37.467517	0.4956717	3.0641171	41.027306
2020	116,992	33.001519	0.0216889	0.0090843	33.001519	0.4554662	2.8161228	36.273108
2021	123,495	34.293917	0.0228997	0.0095976	34.293917	0.4808945	2.9752488	37.750061

Alternative 4b

Year	Distance (mi)	Annual Emissions (metric tons)			(metric tons CO2 equivalent)			
		CO2	CH4	N2O	CO2	CH4	N2O	Total
2016	22,454	7.4422724	0.0041614	0.0017416	7.4422724	0.0873904	0.5399031	8.0695658
2017	190,856	60.762133	0.0353739	0.0148071	60.762133	0.7428516	4.5901956	66.09518
2018	175,743	53.810464	0.0325753	0.0136387	53.810464	0.684082	4.2280038	58.72255
2019	160,858	47.333291	0.0298186	0.0124869	47.333291	0.6261897	3.8709462	51.830427
2020	154,330	43.533918	0.0286108	0.0119835	43.533918	0.6008278	3.7148854	47.849631
2021	123,495	34.293917	0.0228997	0.0095976	34.293917	0.4808945	2.9752488	37.750061

453.592 g/lb
2000 lb/ton
1000000 g/metric ton

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 1

Construction Start Year	2016
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year		Days per Year		Emission Factors - 2016 (g/hp-hr or g/hr)									Emission Factors - 2017 (g/hp-hr or g/hr)								
					2016	2017	2016	2017	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		**3/4 ton pickup truck**		96.00	22.2	73.8	52	211	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Dust Control		**Water truck**	5000 gal	2,320.00	535.4	1,784.6	52	211	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
Environmental protection	***WQ Testing***	**3/4 ton pickup truck**		80.00	18.5	61.5	52	211	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
measures	***Biologist***	**3/4 ton pickup truck**		1,213.00	279.9	933.1	52	211	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Clear & Grub - Sheriff's	***Cutting***	**1 ton pickup truck**		0.46	0.5	0	52	0	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Overlook (Staging Area)		**Tractor/crawler/dozer**	250 hp	0.77	0.8	0	52	0	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		0.77	0.8	0	52	0	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	0.39	0.4	0	52	0	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	0.39	0.4	0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	0.39	0.4	0	52	0	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	0.39	0.4	0	52	0	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
	Gravel	**Grader**	135 hp	11.11	11.1	0	52	0	0.068	0.996	1.863	0.004	0.066	0.061	320.918	0.019	0.000	0.073	1.005	1.912	0.004	0.069	0.063	320.926	0.021	0.000
		Vibratory roller	85 hp	16.00	16.0	0	52	0	0.042	1.062	1.354	0.003	0.070	0.065	222.773	0.010	0.000	0.044	1.069	1.378	0.003	0.071	0.066	222.772	0.010	0.000
		Tractor/crawler/dozer	310 hp	3.26	3.3	0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
		Tractor/crawler/dozer	440 hp	0.81	0.8	0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
		Asphalt distributor	3000 gal	0.81	0.8	0	52	0	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
	Guard Railing	**Flatbed truck**		8.75	8.8	0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Auger Drill	10 hp	8.75	8.8	0	52	0	3.623	2.678	132.418	0.006	1.877	1.873	223.929	0.205	0.204	3.633	2.686	132.805	0.006	1.883	1.879	224.584	0.205	0.204
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.00	4.0	0	52	0	0.057	1.075	1.282	0.002	0.075	0.069	195.357	0.012	0.000	0.061	1.085	1.315	0.002	0.077	0.071	195.356	0.013	0.000
		Flatbed truck		4.00	4.0	0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
Clear & Grub - Sediment	***Clear Brush***	**1 ton pickup truck**		23.16	0	23.2	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Removal Area & Access Rd		**Excavator**	94 hp	23.16	0	23.2	0	42	0.057	1.099	1.937	0.003	0.077	0.070	278.042	0.020	0.000	0.060	1.098	1.968	0.003	0.078	0.071	278.041	0.021	0.000
		Front end loader	210 hp	23.16	0	23.2	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
		Dump truck	10cy	23.16	0	23.2	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	23.16	0	23.2	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	23.16	0	23.2	0	42	0.058	0.528	0.384	0.002	0.004	0.003	224.564	0.005	0.000	0.061	0.528	0.385	0.002	0.004	0.003	223.246	0.006	0.000
		Front end loader	210 hp	10.65	0	10.7	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	Cutting	**1 ton pickup truck**		13.20	0	13.2	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	22.00	0	22.0	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		22.00	0	22.0	0	42	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	11.09	0	11.1	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	11.09	0	11.1	0	42	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	11.09	0	11.1	0	42	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	11.09	0	11.1	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	178	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Front end loader	49 hp	4.00	0	4.0	0	178	0.177	2.105	1.842	0.003	0.083	0.076	231.302	0.016	0.000	0.194	2.138	1.939	0.003	0.086	0.079	231.302	0.018	0.000
		Roller	47 hp	4.00	0	4.0	0	178	0.149	2.081	1.697	0.003	0.078	0.071	235.481	0.013	0.000	0.164	2.111	1.785	0.003	0.081	0.074	235.494	0.015	0.000
		Water truck	3000 gal	4.00	0	4.0	0	178	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	300 hp	4.00	0	4.0	0	178	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Front end loader	180 hp	4.00	0	4.0	0	178	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6.00	0	6.0	0	178	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16.00	0	16.0	0	178	2.544	1.647	93.480	0.004	1.249	1.246	148.934	0.144	0.124	2.544	1.646	93.479	0.004	1.248	1.246	148.931	0.144	0.124
	36" Diversion Pipe	**Crane 80'**	130 hp	273.00	0	273.0	0	178	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		Loader/backhoe	75 hp	0.09	0	0.1	0	178	0.057	1.075	1.282	0.002	0.075	0.069	195.357	0.012	0.000	0.061	1.085	1.315	0.002	0.077	0.071	195.356	0.013	0.000
		Crane 94'	155 hp	155.00	0	155.0	0	33	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		1 ton pickup truck		155.00	0	155.0	0	33	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	33	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
	Dewatering	**Concrete saw**	13 hp	8.00	0	8.0	0	159	3.252	2.404	118.854	0.006	1.685	1.682	200.991	0.184	0.193	3.252	2.404	118.884	0.006	1.685	1.682	201.042	0.184	0.193
		Crane 80'	130 hp	16.00	0	16.0	0	159	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		Flatbed truck		8.00	0	8.0	0	159	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Generator	80 hp	5,472.00	0	5,472.0	0	228	0.094	1.457	1.665	0.003	0.096	0.088	294.378	0.008	0.000	0.099	1.463	1.679	0.003	0.097	0.089	294.371	0.009	0.000
		Generator	7.5 hp	1.59	0	1.6	0	159	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	2.020	1.438	103.611	0.005	0.098	0.098	175.214	0.114	0.147
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.77	120.8	0.0	52	0	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Push	**Tractor/crawler/dozer**	600 hp	738.46	0	738.5	0	178	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Build road	**Tractor/crawler/dozer**	600 hp	761.54	0	761.5	0	178	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Cut	**Tractor/crawler/dozer**	600 hp	20.46	0	20.5	0	178	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Fine Grading	**Grader**	135 hp	8.89	0	8.9	0	178	0.068	0.996	1.863	0.004	0.066	0.061	320.918	0.019	0.000	0.073	1.005	1.912	0.004	0.069	0.063	320.926	0.021	0.000
	Graveling	**Asphalt distributor**	3000 gal	10.00	0	10.0	0	178	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Vibratory roller	85 hp	30.46	0	30.5	0	178	0.042	1.062	1.354	0.003	0.070	0.065	222.773	0.010	0.000	0.044	1.069	1.378	0.003	0.071	0.066	222.772	0.010	0.000
		Tractor/crawler/dozer	310 hp	12.74	0	12.7	0	178	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Armoring	**1 ton pickup truck**		8.00	0	8.0	0	178	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	430 hp	8.00	0	8.0	0	178	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		1 ton pickup truck		8.00	0	8.0	0	178	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Maintenance	**Grader**	215 hp	340.00	0	340.0	0	211	0.048	0.548	0.617	0.004	0.004	0.004	311.994	0.013	0.000	0.052	0.553	0.633	0.004	0.004	0.004	312.019	0.015	0.000
																									Total

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Annual Emissions - 2016 (tons per year) GWP 1 21 310 VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr	Annual Emissions - 2017 (tons per year) 1 21 310 VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96.00	22.2	73.8	52	211	1.23E-04	9.52E-05	1.47E-03	1.50E-06	1.25E-05	5.81E-06	4.97E-01	4.94E-05	2.58E-05	5.06E-01	4.59E-01	3.69E-04	2.94E-04	4.43E-03	4.99E-06	4.13E-05	1.89E-05	1.66E+00	1.65E-04	8.60E-05	1.69E+00	1.53E+00
Dust Control		**Water truck**	5000 gal	2,320.00	535.4	1,784.6	52	211	4.57E-03	7.40E-02	8.21E-03	6.36E-05	1.63E-03	1.08E-03	1.27E+01	3.01E-05	2.83E-05	1.27E+01	1.15E+01	1.37E-02	2.25E-01	2.51E-02	2.12E-04	4.72E-03	2.93E-03	4.23E+01	1.00E-04	9.44E-05	4.24E+01	3.84E+01
Environmental protection measures	***WQ Testing***	**3/4 ton pickup truck**		80.00	18.5	61.5	52	211	1.03E-04	7.94E-05	1.23E-03	1.25E-06	1.04E-05	4.84E-06	4.14E-01	4.12E-05	2.15E-05	4.22E-01	3.83E-01	3.08E-04	2.45E-04	3.69E-03	4.16E-06	3.44E-05	1.58E-05	1.38E+00	1.37E-04	7.16E-05	1.41E+00	1.28E+00
	Biologist	**3/4 ton pickup truck**		1,213.00	279.9	933.1	52	211	1.55E-03	1.20E-03	1.86E-02	1.89E-05	1.58E-04	7.34E-05	6.28E+00	6.25E-04	3.26E-04	6.40E+00	5.80E+00	4.66E-03	3.71E-03	5.60E-02	6.30E-05	5.22E-04	2.39E-04	2.09E+01	2.08E-03	1.09E-03	2.13E+01	1.93E+01
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.46	0.5	0	52	0	1.81E-06	1.79E-06	2.43E-05	3.11E-08	2.55E-07	1.16E-07	1.03E-02	1.02E-06	5.34E-07	1.05E-02	9.52E-03	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.77	0.8	0	52	0	8.98E-06	1.22E-04	1.28E-04	7.15E-07	8.76E-07	8.06E-07	6.35E-02	2.94E-06	-	6.36E-02	5.77E-02	-	-	-	-	-	-	-	-	-	-	-
		Chain saw		0.77	0.8	0	52	0	1.27E-05	8.13E-07	9.34E-05	1.04E-08	1.47E-07	1.47E-07	2.53E-04	7.87E-07	2.77E-07	3.55E-04	3.22E-04	-	-	-	-	-	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.39	0.4	0	52	0	1.22E-05	1.17E-04	1.25E-04	6.71E-07	9.02E-07	8.30E-07	6.68E-02	2.77E-06	-	6.68E-02	6.06E-02	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.39	0.4	0	52	0	5.76E-06	7.82E-05	5.95E-05	3.04E-07	5.62E-07	5.17E-07	3.10E-02	1.43E-06	-	3.10E-02	2.81E-02	-	-	-	-	-	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.39	0.4	0	52	0	1.05E-05	9.61E-05	7.10E-05	4.60E-07	6.77E-07	6.23E-07	4.09E-02	9.45E-07	-	4.09E-02	3.71E-02	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	540 hp	0.39	0.4	0	52	0	1.22E-05	1.17E-04	1.25E-04	6.71E-07	9.02E-07	8.30E-07	6.68E-02	2.77E-06	-	6.68E-02	6.06E-02	-	-	-	-	-	-	-	-	-	-	-
	Gravel	**Grader**	135 hp	11.11	11.1	0	52	0	1.12E-04	1.65E-03	3.08E-03	5.97E-06	1.09E-04	1.01E-04	5.31E-01	3.14E-05	-	5.31E-01	4.82E-01	-	-	-	-	-	-	-	-	-	-	-
		Vibratory roller	85 hp	16.00	16.0	0	52	0	6.25E-05	1.59E-03	2.03E-03	3.92E-06	1.05E-04	9.68E-05	3.34E-01	1.43E-05	-	3.34E-01	3.03E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.26	3.3	0	52	0	4.87E-05	6.61E-04	5.03E-04	2.57E-06	4.75E-06	4.37E-06	2.62E-01	1.21E-05	-	2.62E-01	2.38E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.81	0.8	0	52	0	1.73E-05	2.34E-04	1.78E-04	9.11E-07	1.68E-06	1.55E-06	9.29E-02	4.30E-06	-	9.29E-02	8.43E-02	-	-	-	-	-	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.81	0.8	0	52	0	6.92E-06	1.12E-04	1.24E-05	9.62E-08	2.47E-06	1.63E-06	1.93E-02	4.56E-08	4.29E-08	1.93E-02	1.75E-02	-	-	-	-	-	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.8	0	52	0	8.91E-05	8.72E-05	1.26E-03	5.89E-07	4.81E-06	2.16E-06	1.96E-01	4.44E-05	2.06E-05	2.04E-01	1.85E-01	-	-	-	-	-	-	-	-	-	-	-
		Auger Drill	10 hp	8.75	8.8	0	52	0	3.49E-04	2.58E-04	1.28E-02	6.16E-07	1.81E-04	1.81E-04	2.16E-02	1.98E-05	1.96E-05	2.81E-02	2.55E-02	-	-	-	-	-	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.00	4.0	0	52	0	1.89E-05	3.55E-04	4.24E-04	7.58E-07	2.49E-05	2.29E-05	6.46E-02	3.83E-06	-	6.47E-02	5.87E-02	-	-	-	-	-	-	-	-	-	-	-
		Flatbed truck		4.00	4.0	0	52	0	4.07E-05	3.99E-05	5.76E-04	2.69E-07	2.20E-06	9.87E-07	8.98E-02	2.03E-05	9.41E-06	9.31E-02	8.45E-02	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area & Access Rd	***Clear Brush***	**1 ton pickup truck**		23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-	7.60E-05	8.09E-05	1.02E-03	1.57E-06	1.27E-05	5.70E-06	5.20E-01	5.17E-05	2.70E-05	5.29E-01	4.80E-01
		Excavator	94 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-	1.44E-04	2.63E-03	4.72E-03	7.83E-06	1.86E-04	1.71E-04	6.67E-01	5.10E-05	-	6.68E-01	6.06E-01
		Front end loader	210 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-	3.17E-04	2.82E-03	2.91E-03	1.63E-05	2.21E-05	2.03E-05	1.45E+00	6.59E-05	-	1.45E+00	1.31E+00
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-	1.78E-04	2.92E-03	3.25E-04	2.75E-06	6.13E-05	3.80E-05	5.49E-01	1.30E-06	1.23E-06	5.50E-01	4.99E-01
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-	1.78E-04	2.92E-03	3.25E-04	2.75E-06	6.13E-05	3.80E-05	5.49E-01	1.30E-06	1.23E-06	5.50E-01	4.99E-01
		Brush chipper	275 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	-	-	-	-	-	4.30E-04	3.70E-03	2.70E-03	1.54E-05	2.64E-05	2.43E-05	1.57E+00	3.88E-05	-	1.57E+00	1.42E+00
		Front end loader	210 hp	10.65	0	10.7	0	42	-	-	-	-	-	-	-	-	-	-	-	1.46E-04	1.30E-03	1.34E-03	7.49E-06	1.02E-05	9.35E-06	6.66E-01	3.03E-05	-	6.66E-01	6.05E-01
	Cutting	**1 ton pickup truck**		13.20	0	13.2	0	42	-	-	-	-	-	-	-	-	-	-	-	4.33E-05	4.61E-05	5.82E-04	8.95E-07	7.24E-06	3.25E-06	2.96E-01	2.94E-05	1.54E-05	3.02E-01	2.74E-01
		Tractor/crawler/dozer	250 hp	22.00	0	22.0	0	42	-	-	-	-	-	-	-	-	-	-	-	2.77E-04	3.53E-03	3.80E-03	2.05E-05	2.57E-05	2.36E-05	1.83E+00	9.36E-05	-	1.83E+00	1.66E+00
		Chain saw		22.00	0	22.0	0	42	-	-	-	-	-	-	-	-	-	-	-	3.85E-04	2.34E-05	2.69E-03	2.99E-07	4.23E-06	4.22E-06	7.26E-03	2.39E-05	7.97E-06	1.02E-02	9.29E-03
	Brush Piling	**Front end loader**	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.84E-04	3.41E-03	3.88E-03	2.04E-05	2.67E-05	2.46E-05	2.03E+00	9.23E-05	-	2.03E+00	1.84E+00
		Tractor/crawler/dozer	310 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.78E-04	2.27E-03	1.75E-03	8.74E-06	1.65E-05	1.51E-05	8.90E-01	4.56E-05	-	8.91E-01	8.08E-01
	Chipping	**Brush chipper**	250 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.52E-04	3.03E-03	2.26E-03	1.44E-05	2.16E-05	1.99E-05	1.28E+00	3.17E-05	-	1.28E+00	1.16E+00
		Front end loader	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.84E-04	3.41E-03	3.88E-03	2.04E-05	2.67E-05	2.46E-05	2.03E+00	9.23E-05	-	2.03E+00	1.84E+00
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	178	-	-	-	-	-	-	-	-	-	-	-	1.82E-05	2.31E-04	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	6.12E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-	4.19E-05	4.62E-04	4.19E-04	6.46E-07	1.86E-05	1.72E-05	5.00E-02	3.78E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-	3.41E-05	4.38E-04	3.70E-04	6.31E-07	1.68E-05	1.54E-05	4.88E-02	3.07E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-	3.08E-05	5.04E-04	5.62E-05	4.74E-07	1.06E-05	6.56E-06	9.49E-02	2.25E-07	2.12E-07	9.50E-02	8.61E-02
		Excavator	300 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-	5.82E-05	6.95E-04	5.61E-04	2.75E-06	5.11E-06	4.70E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	-	-	-	-	-	4.70E-05	4.17E-04	4.31E-04	2.41E-06	3.27E-06	3.01E-06	2.14E-01	9.76E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6.00	0	6.0	0	178	-	-	-	-	-	-	-	-	-	-	-	5.45E-05	6.94E-04	7.47E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.84E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16.00	0	16.0	0	178	-	-	-	-	-	-	-	-	-	-	-	7.63E-04	4.94E-04	2.80E-02	1.13E-06	3.74E-04	3.74E-04	4.47E-02	4.31E-05	3.73E-05	5.71E-02	5.18E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	273.00	0	273.0	0	178	-	-	-	-	-	-	-	-	-	-	-	1.51E-03	2.74E-02	4.87E-02	9.16E-05	1.68E-03	1.54E-03	8.14E+00	5.37E-04	-	8.15E+00	7.39E+00
		Loader/backhoe	75 hp	0.09	0	0.1	0	178	-	-	-	-	-	-	-	-	-	-	-	4.68E-07	8.28E-06	1.00E-05	1.75E-08	5.89E-07	5.42E-07	1.49E-03	9.65E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155.00	0	155.0	0	33	-	-	-	-	-	-	-	-	-	-	-	1.02E-03	1.85E-02	3.30E-02	6.20E-05	1.14E-03	1.04E-03	5.51E+00	3.64E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155.00	0	155.0	0	33	-	-	-	-	-	-	-	-	-	-	-	5.09E-04	5.41E-04	6.83E-03	1.05E-05	8.50E-05	3.82E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2.00	0	2.0	0	33	-	-	-	-	-	-	-	-	-	-	-	1.82E-05	2.31E-04	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	6.12E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8.00	0	8.0	0	159	-	-	-	-	-	-	-	-	-	-	-	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16.00	0	16.0	0	159	-	-	-	-	-	-	-	-	-	-	-	8.87E-05	1.60E-03	2.86E-03	5.37E-06	9.83E-05	9.04E-05	4.77E-01	3.15E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8.00	0	8.0	0	159	-	-	-	-	-	-	-	-	-	-	-	6.87E-05	6.95E-05	9.63E-04	5.38E-07	4.33E-06	1.91E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5,472.00	0	5,472.0	0	228	-	-	-	-	-	-	-	-	-	-	-	4.78E-02	7.06E-01	8.10E-01	1.67E-03	4.69E-02	4.32E-02	1.42E+02	4.32E-03	-	1.42E+02	1.29E+02
		Generator	7.5 hp	1.59	0	1.6	0	159	-	-	-	-	-	-	-	-	-	-	-	2.65E-05	1.89E-05	1.36E-03	6.56E-08	1.28E-06	1.28E-06	2.30E-03	1.50E-06	1.93E-06	2.93E-03	2.66E-03
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.77	120.8	0.0	52	0	3.44E-03	4.68E-02	4.32E-02	2.26E-04	3.36E-04	3.09E-04	2.25E+01	1.04E-03	-	2.25E+01	2.04E+01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	-	-	-	-	-	2.26E-02	2.88E-01	2.60E-01	1.33E-03	2.09E-03	1.92E-03	1.32E+02	6.77E-03	-	1.32E+02	1.20E+02
	Push	**Tractor/crawler/dozer**	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	-	-	-	-	-	2.26E-02	2.88E-01	2.60E-01	1.33E-03	2.09E-03	1.92E-03	1.32E+02	6.77E-03	-	1.32E+02	1.20E+02
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	-	-	-	-	-	2.26E-02	2.88E-01	2.60E-01	1.33E-03	2.09E-03	1.92E-03	1.32E+02	6.77E-03	-	1.32E+02	1.20E+02
	Build road	**Tractor/crawler/dozer**	600 hp	761.54	0	761.5	0	178	-	-	-	-	-	-	-	-	-	-	-	2.33E-02	2.97E-01	2.68E-01	1.37E-03	2.16E-03	1.99E-03	1.36E+02	6.98E-03	-	1.36E+02	1.24E+02
	Cut	**Tractor/crawler/dozer**	600 hp	20.46	0	20.5	0	178	-	-	-	-	-	-	-	-	-	-	-	6.26E-04	7.98E-03	7.20E-03	3.68E-05	5.80E-05	5.33E-05	3.66E+00	1.88E-04	-	3.67E+00	3.33E+00
	Fine Grading	**Grader**	135 hp	8.89	0	8.9	0	178	-	-	-	-	-	-	-	-	-	-	-	9.67E-05	1.33E-03	2.53E-03	4.78E-06	9.09E-05	8.37E-05	4.25E-01	2.76E-05	-	4.25E-01	3.86E-01
	Graveling	**Asphalt distributor**	3000 gal	10.00	0	10.0	0	178	-	-	-	-	-	-	-	-	-	-	-	7.69E-05	1.26E-03	1.40E-04	1.19E-06	2.65E-05	1.64E-05	2.37E-01	5.62E-07	5.29E-07	2.37E-01	2.15E-01
		Vibratory roller	85 hp	30.46	0	30.5	0	178	-	-	-	-	-	-	-	-	-	-	-	1.26E-04	3.05E-03	3.93E-03	7.46E-06	2.03E-04	1.87E-04	6.36E-01	2.96E-05	-	6.36E-01	5.77E-01
		Tractor/crawler/dozer	310 hp	12.74	0	12.7	0	178	-	-	-	-	-	-	-	-	-	-	-	2.04E-04	2.60E-03	2.01E-03	1.00E-05	1.89E-05	1.74E-05	1.02E+00	5.24E-05	-	1.02E+00	9.29E-01
	Armoring	**1 ton pickup truck**		8.00	0	8.0	0	178	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
		Excavator	430 hp	8.00	0	8.0	0	178	-	-	-	-	-	-	-	-	-	-	-	1.67E-04	1.99E-03	1.61E-03	7.89E-06	1.47E-05	1.35E-05	8.03E-01	4.44E-05	-	8.04E-01	7.30E-01
		1 ton pickup truck		8.00	0	8.0	0	178	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
	Maintenance	**Grader**	215 hp	340.00	0	340.0	0	211	-	-	-	-	-	-	-	-	-	-	-	4.21E-03	4.46E-02	5.10E-02	2.83E-04	3.36E-04	3.09E-04	2.51E+01	1.18E-03	-	2.52E+01	2.28E+01
Data from Alt2_EnvrAirQualityReport.pdf									**1.06E-02**	**1.28E-01**	**9.41E-02**	**3.30E-04**	**2.59E-03**	**1.89E-03**	**4.43E+01**	**1.95E-03**	**4.52E-04**	**4.45E+01**	**4.03E+01**	**1.72E-01**	**2.24E+00**	**2.19E+00**	**7.98E-03**	**6.56E-02**	**5.86E-02**	**8.07E+02**	**3.78E-02**	**1.67E-03**	**8.08E+02**	**7.33E+02**

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96.00	22.2	73.8	52	211	9.46E-03	7.33E-03	1.13E-01	1.15E-04	9.64E-04	4.47E-04	7.00E-03	5.56E-03	8.39E-02	9.46E-05	7.83E-04	3.59E-04
Dust Control		Water truck	5000 gal	2,320.00	535.4	1,784.6	52	211	3.52E-01	5.69E+00	6.31E-01	4.89E-03	1.26E-01	8.29E-02	2.60E-01	4.27E+00	4.75E-01	4.01E-03	8.96E-02	5.55E-02
Environmental protection measures	***WQ Testing***	3/4 ton pickup truck		80.00	18.5	61.5	52	211	7.89E-03	6.11E-03	9.42E-02	9.60E-05	8.03E-04	3.73E-04	5.83E-03	4.64E-03	7.00E-02	7.88E-05	6.52E-04	2.99E-04
	Biologist	3/4 ton pickup truck		1,213.00	279.9	933.1	52	211	1.20E-01	9.26E-02	1.43E+00	1.46E-03	1.22E-02	5.65E-03	8.84E-02	7.03E-02	1.06E+00	1.20E-03	9.89E-03	4.54E-03
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	1 ton pickup truck		0.46	0.5	0	52	0	1.39E-04	1.38E-04	1.87E-03	2.40E-06	1.96E-05	8.94E-06	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.77	0.8	0	52	0	6.90E-04	9.38E-03	9.88E-03	5.50E-05	6.74E-05	6.20E-05	-	-	-	-	-	-
		Chain saw		0.77	0.8	0	52	0	9.73E-04	6.25E-05	7.19E-03	8.00E-07	1.13E-05	1.13E-05	-	-	-	-	-	-
	Brush Piling	Front end loader	540 hp	0.39	0.4	0	52	0	9.38E-04	9.01E-03	9.64E-03	5.17E-05	6.94E-05	6.38E-05	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.39	0.4	0	52	0	4.43E-04	6.01E-03	4.58E-03	2.34E-05	4.32E-05	3.98E-05	-	-	-	-	-	-
	Chipping	Brush chipper	250 hp	0.39	0.4	0	52	0	8.06E-04	7.39E-03	5.46E-03	3.54E-05	5.21E-05	4.79E-05	-	-	-	-	-	-
		Front end loader	540 hp	0.39	0.4	0	52	0	9.38E-04	9.01E-03	9.64E-03	5.17E-05	6.94E-05	6.38E-05	-	-	-	-	-	-
	Gravel	Grader	135 hp	11.11	11.1	0	52	0	8.59E-03	1.27E-01	2.37E-01	4.59E-04	8.41E-03	7.74E-03	-	-	-	-	-	-
		Vibratory roller	85 hp	16.00	16.0	0	52	0	4.81E-03	1.22E-01	1.56E-01	3.01E-04	8.09E-03	7.44E-03	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.26	3.3	0	52	0	3.74E-03	5.08E-02	3.87E-02	1.98E-04	3.65E-04	3.36E-04	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.81	0.8	0	52	0	1.33E-03	1.80E-02	1.37E-02	7.01E-05	1.30E-04	1.19E-04	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.81	0.8	0	52	0	5.32E-04	8.61E-03	9.56E-04	7.40E-06	1.90E-04	1.25E-04	-	-	-	-	-	-
	Guard Railing	Flatbed truck		8.75	8.8	0	52	0	6.85E-03	6.71E-03	9.70E-02	4.53E-05	3.70E-04	1.66E-04	-	-	-	-	-	-
		Auger Drill	10 hp	8.75	8.8	0	52	0	2.69E-02	1.99E-02	9.82E-01	4.74E-05	1.39E-02	1.39E-02	-	-	-	-	-	-
	Demo Existing Gate	Loader/backhoe	75 hp	4.00	4.0	0	52	0	1.45E-03	2.73E-02	3.26E-02	5.83E-05	1.92E-03	1.77E-03	-	-	-	-	-	-
		Flatbed truck		4.00	4.0	0	52	0	3.13E-03	3.07E-03	4.43E-02	2.07E-05	1.69E-04	7.59E-05	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area & Access Rd	***Clear Brush***	1 ton pickup truck		23.16	0	23.2	0	42	-	-	-	-	-	-	7.24E-03	7.70E-03	9.72E-02	1.50E-04	1.21E-03	5.43E-04
		Excavator	94 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	1.37E-02	2.51E-01	4.50E-01	7.45E-04	1.77E-02	1.63E-02
		Front end loader	210 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	3.02E-02	2.68E-01	2.77E-01	1.55E-03	2.10E-03	1.94E-03
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	1.70E-02	2.78E-01	3.10E-02	2.62E-04	5.84E-03	3.62E-03
		Dump truck	10cy	23.16	0	23.2	0	42	-	-	-	-	-	-	1.70E-02	2.78E-01	3.10E-02	2.62E-04	5.84E-03	3.62E-03
		Brush chipper	275 hp	23.16	0	23.2	0	42	-	-	-	-	-	-	4.09E-02	3.53E-01	2.57E-01	1.46E-03	2.51E-03	2.31E-03
		Front end loader	210 hp	10.65	0	10.7	0	42	-	-	-	-	-	-	1.39E-02	1.23E-01	1.28E-01	7.13E-04	9.68E-04	8.91E-04
	Cutting	1 ton pickup truck		13.20	0	13.2	0	42	-	-	-	-	-	-	4.13E-03	4.39E-03	5.54E-02	8.52E-05	6.89E-04	3.10E-04
		Tractor/crawler/dozer	250 hp	22.00	0	22.0	0	42	-	-	-	-	-	-	2.64E-02	3.36E-01	3.62E-01	1.96E-03	2.45E-03	2.25E-03
		Chain saw		22.00	0	22.0	0	42	-	-	-	-	-	-	3.67E-02	2.23E-03	2.56E-01	2.85E-05	4.03E-04	4.02E-04
	Brush Piling	Front end loader	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	3.66E-02	3.25E-01	3.69E-01	1.94E-03	2.55E-03	2.34E-03
		Tractor/crawler/dozer	310 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	1.69E-02	2.16E-01	1.67E-01	8.32E-04	1.57E-03	1.44E-03
	Chipping	Brush chipper	250 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	3.35E-02	2.89E-01	2.15E-01	1.38E-03	2.06E-03	1.89E-03
		Front end loader	540 hp	11.09	0	11.1	0	42	-	-	-	-	-	-	3.66E-02	3.25E-01	3.69E-01	1.94E-03	2.55E-03	2.34E-03
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2.00	0	2.0	0	178	-	-	-	-	-	-	4.08E-04	5.19E-03	5.59E-03	3.02E-05	3.78E-05	3.47E-05
		Front end loader	49 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	9.42E-04	1.04E-02	9.42E-03	1.45E-05	4.19E-04	3.86E-04
		Roller	47 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	7.66E-04	9.83E-03	8.31E-03	1.42E-05	3.76E-04	3.46E-04
		Water truck	3000 gal	4.00	0	4.0	0	178	-	-	-	-	-	-	6.91E-04	1.13E-02	1.26E-03	1.07E-05	2.38E-04	1.48E-04
		Excavator	300 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	1.31E-03	1.56E-02	1.26E-02	6.18E-05	1.15E-04	1.06E-04
		Front end loader	180 hp	4.00	0	4.0	0	178	-	-	-	-	-	-	1.06E-03	9.38E-03	9.69E-03	5.42E-05	7.35E-05	6.76E-05
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6.00	0	6.0	0	178	-	-	-	-	-	-	1.22E-03	1.56E-02	1.68E-02	9.06E-05	1.13E-04	1.04E-04
	36" Diversion Pipe - pipe a	Welder	17 hp	16.00	0	16.0	0	178	-	-	-	-	-	-	1.71E-02	1.11E-02	6.30E-01	2.54E-05	8.41E-03	8.39E-03
	36" Diversion Pipe	Crane 80'	130 hp	273.00	0	273.0	0	178	-	-	-	-	-	-	3.40E-02	6.15E-01	1.09E+00	2.06E-03	3.77E-02	3.47E-02
		Loader/backhoe	75 hp	0.09	0	0.1	0	178	-	-	-	-	-	-	1.05E-05	1.86E-04	2.25E-04	3.93E-07	1.32E-05	1.22E-05
		Crane 94'	155 hp	155.00	0	155.0	0	33	-	-	-	-	-	-	1.24E-01	2.25E+00	4.00E+00	7.51E-03	1.38E-01	1.27E-01
		1 ton pickup truck		155.00	0	155.0	0	33	-	-	-	-	-	-	6.17E-02	6.56E-02	8.28E-01	1.27E-03	1.03E-02	4.63E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2.00	0	2.0	0	33	-	-	-	-	-	-	2.20E-03	2.80E-02	3.02E-02	1.63E-04	2.04E-04	1.87E-04
	Dewatering	Concrete saw	13 hp	8.00	0	8.0	0	159	-	-	-	-	-	-	9.38E-03	6.93E-03	3.43E-01	1.65E-05	4.86E-03	4.85E-03
		Crane 80'	130 hp	16.00	0	16.0	0	159	-	-	-	-	-	-	2.23E-03	4.04E-02	7.18E-02	1.35E-04	2.47E-03	2.28E-03
		Flatbed truck		8.00	0	8.0	0	159	-	-	-	-	-	-	1.73E-03	1.75E-03	2.42E-02	1.35E-05	1.09E-04	4.81E-05
		Generator	80 hp	5,472.00	0	5,472.0	0	228	-	-	-	-	-	-	8.39E-01	1.24E+01	1.42E+01	2.92E-02	8.23E-01	7.57E-01
		Generator	7.5 hp	1.59	0	1.6	0	159	-	-	-	-	-	-	6.67E-04	4.75E-04	3.42E-02	1.65E-06	3.23E-05	3.23E-05
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	120.77	120.8	0.0	52	0	2.65E-01	3.60E+00	3.32E+00	1.74E-02	2.59E-02	2.38E-02	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	5.08E-01	6.47E+00	5.84E+00	2.99E-02	4.70E-02	4.33E-02
	Push	Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	5.08E-01	6.47E+00	5.84E+00	2.99E-02	4.70E-02	4.33E-02
		Tractor/crawler/dozer	600 hp	738.46	0	738.5	0	178	-	-	-	-	-	-	5.08E-01	6.47E+00	5.84E+00	2.99E-02	4.70E-02	4.33E-02
	Build road	Tractor/crawler/dozer	600 hp	761.54	0	761.5	0	178	-	-	-	-	-	-	5.24E-01	6.67E+00	6.02E+00	3.08E-02	4.85E-02	4.46E-02
	Cut	Tractor/crawler/dozer	600 hp	20.46	0	20.5	0	178	-	-	-	-	-	-	1.41E-02	1.79E-01	1.62E-01	8.27E-04	1.30E-03	1.20E-03
	Fine Grading	Grader	135 hp	8.89	0	8.9	0	178	-	-	-	-	-	-	2.17E-03	2.99E-02	5.68E-02	1.07E-04	2.04E-03	1.88E-03
	Graveling	Asphalt distributor	3000 gal	10.00	0	10.0	0	178	-	-	-	-	-	-	1.73E-03	2.83E-02	3.16E-03	2.66E-05	5.95E-04	3.69E-04
		Vibratory roller	85 hp	30.46	0	30.5	0	178	-	-	-	-	-	-	2.82E-03	6.85E-02	8.84E-02	1.68E-04	4.57E-03	4.20E-03
		Tractor/crawler/dozer	310 hp	12.74	0	12.7	0	178	-	-	-	-	-	-	4.59E-03	5.85E-02	4.52E-02	2.26E-04	4.25E-04	3.91E-04
	Armoring	1 ton pickup truck		8.00	0	8.0	0	178	-	-	-	-	-	-	5.90E-04	6.28E-04	7.92E-03	1.22E-05	9.86E-05	4.43E-05
		Excavator	430 hp	8.00	0	8.0	0	178	-	-	-	-	-	-	3.75E-03	4.48E-02	3.62E-02	1.77E-04	3.29E-04	3.03E-04
		1 ton pickup truck		8.00	0	8.0	0	178	-	-	-	-	-	-	5.90E-04	6.28E-04	7.92E-03	1.22E-05	9.86E-05	4.43E-05
	Maintenance	Grader	215 hp	340.00	0	340.0	0	211	-	-	-	-	-	-	7.97E-02	8.45E-01	9.68E-01	5.36E-03	6.37E-03	5.86E-03
Data from Alt2_EnvrAirQualityReport.pdf									**8.16E-01**	**9.82E+00**	**7.24E+00**	**2.54E-02**	**1.99E-01**	**1.45E-01**	**3.95E+00**	**5.02E+01**	**5.10E+01**	**1.87E-01**	**1.38E+00**	**1.23E+00**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2016
Birthday of Martin Luther King, Jr.	1/18/2016
Washington's Birthday	2/15/2016
Memorial Day	5/30/2016
Independence Day	7/4/2016
Labor Day	9/5/2016
Columbus Day	10/10/2016
Veterans Day	11/11/2016
Thanksgiving Day	11/24/2016
Christmas Day	12/26/2016
New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/11/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017

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http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2016
http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2017

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP: CO2 1, CH4 21, N2O 310

		Equipment	Equipment	Total	Days per	Emission Factors - 2018 (g/hp-hr or g/hr)									Annual Emissions - 2018 (tons per year)									
Activity		**Type**	**Size**	**Hours**	**Year**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**
Construction Survey		**3/4 ton pickup truck**		96	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	4.30E-04	3.53E-04	5.18E-03	6.48E-06	5.31E-05	2.41E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00
Dust Control		**Water truck**	5000 gal	2320	210	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	1.78E-02	2.69E-01	3.27E-02	2.75E-04	5.91E-03	3.60E-03	5.50E+01	1.30E-04	1.23E-04	5.50E+01
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	5.51E-03	4.52E-03	6.64E-02	8.30E-05	6.80E-04	3.09E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01
	Fish relocation	**3/4 ton pickup truck**		16	19	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	7.17E-05	5.88E-05	8.64E-04	1.08E-06	8.86E-06	4.02E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	1.17E-05	1.38E-05	1.57E-04	2.98E-07	2.38E-06	1.05E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01
		Tractor/crawler/dozer	250 hp	7.3333	19	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000	9.86E-05	1.19E-03	1.30E-03	6.85E-06	8.71E-06	8.01E-06	6.09E-01	3.37E-05	-	6.09E-01
		Chain saw		7.3335	19	1.993	0.115	13.187	0.001	0.021	0.021	35.644	0.124	0.039	1.35E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	8.41E-06	2.66E-06	3.42E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	0.063	0.523	0.567	0.003	0.004	0.004	290.956	0.014	0.000	1.39E-04	1.15E-03	1.25E-03	6.44E-06	9.17E-06	8.44E-06	6.40E-01	3.17E-05	-	6.41E-01
		Tractor/crawler/dozer	310 hp	3.696	19	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000	6.33E-05	7.60E-04	5.94E-04	2.91E-06	5.59E-06	5.14E-06	2.97E-01	1.64E-05	-	2.97E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	0.120	0.977	0.730	0.005	0.007	0.006	410.775	0.011	0.000	1.22E-04	9.95E-04	7.44E-04	4.71E-06	7.15E-06	6.58E-06	4.18E-01	1.10E-05	-	4.19E-01
		Front end loader	540 hp	3.696	19	0.063	0.523	0.567	0.003	0.004	0.004	290.956	0.014	0.000	1.39E-04	1.15E-03	1.25E-03	6.44E-06	9.17E-06	8.44E-06	6.40E-01	3.17E-05	-	6.41E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000	1.94E-05	2.33E-04	2.55E-04	1.34E-06	1.71E-06	1.57E-06	1.20E-01	6.61E-06	-	1.20E-01
		Front end loader	49 hp	4	19	0.210	2.169	2.030	0.003	0.090	0.082	231.301	0.019	0.000	4.53E-05	4.69E-04	4.38E-04	6.46E-07	1.94E-05	1.78E-05	5.00E-02	4.09E-06	-	5.01E-02
		Roller	47 hp	4	19	0.179	2.141	1.871	0.003	0.084	0.077	235.555	0.016	0.000	3.72E-05	4.44E-04	3.88E-04	6.31E-07	1.74E-05	1.60E-05	4.88E-02	3.35E-06	-	4.89E-02
		Water truck	3000 gal	4	19	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	3.07E-05	4.64E-04	5.64E-05	4.74E-07	1.02E-05	6.20E-06	9.47E-02	2.25E-07	2.12E-07	9.48E-02
		Excavator	300 hp	4	19	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	6.20E-05	7.00E-04	5.61E-04	2.75E-06	5.21E-06	4.79E-06	2.80E-01	1.55E-05	-	2.81E-01
		Front end loader	180 hp	4	19	0.064	0.528	0.556	0.003	0.004	0.004	270.067	0.013	0.000	5.05E-05	4.19E-04	4.42E-04	2.41E-06	3.34E-06	3.07E-06	2.14E-01	1.06E-05	-	2.15E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000	5.81E-05	6.98E-04	7.64E-04	4.03E-06	5.13E-06	4.72E-06	3.59E-01	1.98E-05	-	3.59E-01
		Loader/backhoe	75 hp	0.0923	19	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000	4.98E-07	8.34E-06	1.03E-05	1.75E-08	6.02E-07	5.54E-07	1.49E-03	1.04E-07	-	1.49E-03
		Crane 94'	155 hp	155	19	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000	1.09E-03	1.87E-02	3.39E-02	6.20E-05	1.17E-03	1.07E-03	5.51E+00	3.98E-04	-	5.52E+00
		1 ton pickup truck		155	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00
		Crane 94'	155 hp	155	20	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000	1.09E-03	1.87E-02	3.39E-02	6.20E-05	1.17E-03	1.07E-03	5.51E+00	3.98E-04	-	5.52E+00
		1 ton pickup truck		155	20	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000	1.94E-05	2.33E-04	2.55E-04	1.34E-06	1.71E-06	1.57E-06	1.20E-01	6.61E-06	-	1.20E-01
	Dewatering	**Concrete saw**	13 hp	8	22	3.250	2.402	118.784	0.006	1.684	1.681	200.873	0.184	0.193	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02
		Crane 80'	130 hp	16	22	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000	9.42E-05	1.61E-03	2.93E-03	5.37E-06	1.01E-04	9.29E-05	4.77E-01	3.45E-05	-	4.78E-01
		Flatbed truck		8	22	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135	5.78E-05	6.04E-05	8.03E-04	5.37E-07	4.27E-06	1.86E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01
		Generator	80 hp	5,856.00	244	0.104	1.470	1.693	0.003	0.099	0.091	294.397	0.009	0.000	5.39E-02	7.59E-01	8.75E-01	1.78E-03	5.09E-02	4.68E-02	1.52E+02	4.87E-03	-	1.52E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01
	Armoring	**1 ton pickup truck**		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02
		Excavator	430 hp	2	19	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	4.45E-05	5.02E-04	4.02E-04	1.97E-06	3.73E-06	3.43E-06	2.01E-01	1.11E-05	-	2.01E-01
		1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02
	Maintenance	**Grader**	215 hp	340	210	0.056	0.558	0.649	0.004	0.004	0.004	312.011	0.016	0.000	4.52E-03	4.49E-02	5.23E-02	2.83E-04	3.43E-04	3.16E-04	2.51E+01	1.28E-03	-	2.52E+01
Coarse Material (Gravel & Larger) (4/1-7/21)	***Material Excavation***	**1 ton pickup truck**		663.5	78	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	1.77E-03	2.08E-03	2.36E-02	4.49E-05	3.59E-04	1.59E-04	1.49E+01	1.48E-03	7.72E-04	1.52E+01
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01
		Water truck	3000 gal	663.5	78	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	5.09E-03	7.70E-02	9.36E-03	7.86E-05	1.69E-03	1.03E-03	1.57E+01	3.73E-05	3.51E-05	1.57E+01
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01
Sand to Surfrider Beach (32,400 cy) (9/3-18)	***Material Excavation***	**1 ton pickup truck**		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00
		Water truck	3000 gal	102	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	7.83E-04	1.18E-02	1.44E-03	1.21E-05	2.60E-04	1.58E-04	2.42E+00	5.73E-06	5.40E-06	2.42E+00
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00
	Beach Crew	**1 ton pickup truck**		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01
		Water truck	3000 gal	25	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	1.92E-04	2.90E-03	3.53E-04	2.96E-06	6.37E-05	3.88E-05	5.92E-01	1.41E-06	1.32E-06	5.93E-01
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	48	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01
		Water truck	3000 gal	382.5	48	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01
	Beach Crew	**1 ton pickup truck**		382.5	48	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01
		Water truck	3000 gal	382.5	48	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000	1.75E-02	2.10E-01	1.64E-01	8.05E-04	1.54E-03	1.42E-03	8.21E+01	4.54E-03	-	8.21E+01
		Tractor/crawler/dozer	440 hp	90	22	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000	2.19E-03	2.63E-02	2.05E-02	1.01E-04	1.93E-04	1.78E-04	1.03E+01	5.67E-04	-	1.03E+01
		3/4 ton pickup truck		360	22	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	1.61E-03	1.32E-03	1.94E-02	2.43E-05	1.99E-04	9.05E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00
	Drilling	**Rotary drill**	475 hp	88.1333	128	0.051	0.680	0.529	0.003	0.005	0.005	282.235	0.012	0.000	2.34E-03	3.14E-02	2.44E-02	1.28E-04	2.26E-04	2.08E-04	1.30E+01	5.36E-04	-	1.30E+01
		3/4 ton pickup truck		84.1333	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	3.77E-04	3.09E-04	4.54E-03	5.68E-06	4.66E-05	2.11E-05	1.89E+00	1.88E-04	9.79E-05	1.92E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	1.69E-03	1.38E-03	2.03E-02	2.54E-05	2.08E-04	9.45E-05	8.44E+00	8.39E-04	4.38E-04	8.59E+00
		Diamond cutting saw	50 hp	376	128	0.122	2.347	1.693	0.004	0.080	0.074	277.541	0.011	0.000	2.53E-03	4.86E-02	3.51E-02	7.44E-05	1.66E-03	1.53E-03	5.75E+00	2.29E-04	-	5.76E+00
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000	5.52E-03	7.33E-02	6.06E-02	3.01E-04	5.29E-04	4.87E-04	3.07E+01	1.60E-03	-	3.07E+01
		3/4 ton pickup truck		454.8767	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	2.04E-03	1.67E-03	2.46E-02	3.07E-05	2.52E-04	1.14E-04	1.02E+01	1.01E-03	5.29E-04	1.04E+01
	Load/Haul	**Front end loader**	350 hp	32	128	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000	7.86E-04	6.51E-03	5.17E-03	2.60E-05	5.19E-05	4.78E-05	2.65E+00	1.31E-04	-	2.65E+00
		Water truck	3000 gal	521	128	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048	4.00E-03	6.05E-02	7.35E-03	6.17E-05	1.33E-03	8.08E-04	1.23E+01	2.93E-05	2.76E-05	1.23E+01
	Landfill	**Crane 260'**	375 hp	227.4384	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000	2.76E-03	3.66E-02	3.03E-02	1.51E-04	2.64E-04	2.43E-04	1.53E+01	8.02E-04	-	1.54E+01
	Micro-blast	**Crane 260'**	375 hp	60	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000	7.28E-04	9.67E-03	8.00E-03	3.97E-05	6.98E-05	6.42E-05	4.05E+00	2.12E-04	-	4.05E+00
		Horizontal boring drill	10 hp	55	128	0.092	2.462	1.184	0.004	0.088	0.081	287.564	0.031	0.000	5.55E-05	1.49E-03	7.18E-04	2.21E-06	5.33E-05	4.91E-05	1.74E-01	1.90E-05	-	1.75E-01
		3/4 ton pickup truck		60	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	2.69E-04	2.20E-04	3.24E-03	4.05E-06	3.32E-05	1.51E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00
	Demolish spillway	**Crane 260'**	375 hp	100	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000	1.21E-03	1.61E-02	1.33E-02	6.62E-05	1.16E-04	1.07E-04	6.75E+00	3.53E-04	-	6.75E+00
		Air compressor	50 hp	200	128	0.569	0.693	49.653	0.004	0.024	0.023	307.213	0.032	0.057	6.27E-03	7.64E-03	5.47E-01	4.12E-05	2.59E-04	2.59E-04	3.39E+00	3.54E-04	6.25E-04	3.59E+00
		3/4 ton pickup truck		100	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056	4.48E-04	3.67E-04	5.40E-03	6.75E-06	5.53E-05	2.51E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00
														Total	**4.51E-01**	**4.90E+00**	**4.73E+00**	**1.74E-02**	**9.59E-02**	**8.35E-02**	**1.85E+03**	**9.53E-02**	**6.40E-03**	**1.85E+03**

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Metric Tons CO2e/yr	Peak Daily Emissions - 2018 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	210	1.99E+00	8.20E-03	6.72E-03	9.88E-02	1.23E-04	1.01E-03	4.60E-04
Dust Control		Water truck	5000 gal	2320	210	4.99E+01	3.39E-01	5.13E+00	6.23E-01	5.23E-03	1.13E-01	6.85E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	2.55E+01	1.05E-01	8.60E-02	1.26E+00	1.58E-03	1.30E-02	5.88E-03
	Fish relocation	3/4 ton pickup truck		16	19	3.32E-01	1.37E-03	1.12E-03	1.65E-02	2.06E-05	1.69E-04	7.66E-05
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	9.12E-02	2.23E-04	2.62E-04	2.98E-03	5.68E-06	4.53E-05	2.01E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	5.53E-01	1.88E-03	2.26E-02	2.47E-02	1.30E-04	1.66E-04	1.53E-04
		Chain saw		7.3335	19	3.10E-03	2.58E-03	1.48E-04	1.71E-02	1.90E-06	2.68E-05	2.68E-05
	Brush Piling	Front end loader	540 hp	3.696	19	5.81E-01	2.64E-03	2.19E-02	2.38E-02	1.23E-04	1.75E-04	1.61E-04
		Tractor/crawler/dozer	310 hp	3.696	19	2.70E-01	1.21E-03	1.45E-02	1.13E-02	5.55E-05	1.06E-04	9.79E-05
	Chipping	Brush chipper	250 hp	3.696	19	3.80E-01	2.33E-03	1.89E-02	1.42E-02	8.97E-05	1.36E-04	1.25E-04
		Front end loader	540 hp	3.696	19	5.81E-01	2.64E-03	2.19E-02	2.38E-02	1.23E-04	1.75E-04	1.61E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.09E-01	3.69E-04	4.43E-03	4.85E-03	2.56E-05	3.26E-05	3.00E-05
		Front end loader	49 hp	4	19	4.54E-02	8.63E-04	8.93E-03	8.35E-03	1.23E-05	3.69E-04	3.39E-04
		Roller	47 hp	4	19	4.43E-02	7.08E-04	8.45E-03	7.38E-03	1.20E-05	3.32E-04	3.05E-04
		Water truck	3000 gal	4	19	8.60E-02	5.85E-04	8.84E-03	1.07E-03	9.02E-06	1.94E-04	1.18E-04
		Excavator	300 hp	4	19	2.55E-01	1.18E-03	1.33E-02	1.07E-02	5.24E-05	9.92E-05	9.13E-05
		Front end loader	180 hp	4	19	1.95E-01	9.62E-04	7.98E-03	8.41E-03	4.59E-05	6.36E-05	5.85E-05
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	3.26E-01	1.11E-03	1.33E-02	1.46E-02	7.68E-05	9.77E-05	8.99E-05
		Loader/backhoe	75 hp	0.0923	19	1.35E-03	9.49E-06	1.59E-04	1.95E-04	3.33E-07	1.15E-05	1.05E-05
		Crane 94'	155 hp	155	19	5.01E+00	2.07E-02	3.55E-01	6.46E-01	1.18E-03	2.22E-02	2.04E-02
		1 ton pickup truck		155	19	3.21E+00	7.87E-03	9.23E-03	1.05E-01	2.00E-04	1.60E-03	7.07E-04
		Crane 94'	155 hp	155	20	5.01E+00	2.07E-02	3.55E-01	6.46E-01	1.18E-03	2.22E-02	2.04E-02
		1 ton pickup truck		155	20	3.21E+00	7.87E-03	9.23E-03	1.05E-01	2.00E-04	1.60E-03	7.07E-04
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.09E-01	3.69E-04	4.43E-03	4.85E-03	2.56E-05	3.26E-05	3.00E-05
	Dewatering	Concrete saw	13 hp	8	22	2.75E-02	7.10E-03	5.25E-03	2.59E-01	1.25E-05	3.68E-03	3.67E-03
		Crane 80'	130 hp	16	22	4.34E-01	1.79E-03	3.08E-02	5.59E-02	1.02E-04	1.92E-03	1.77E-03
		Flatbed truck		8	22	1.69E-01	1.10E-03	1.15E-03	1.53E-02	1.02E-05	8.13E-05	3.54E-05
		Generator	80 hp	5,856.00	244	1.38E+02	1.03E+00	1.45E+01	1.67E+01	3.40E-02	9.69E-01	8.91E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	2.88E+01	1.15E-01	1.38E+00	1.21E+00	6.07E-03	1.01E-02	9.32E-03
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	2.88E+01	1.15E-01	1.38E+00	1.21E+00	6.07E-03	1.01E-02	9.32E-03
		Tractor/crawler/dozer	600 hp	184.6154	19	2.88E+01	1.15E-01	1.38E+00	1.21E+00	6.07E-03	1.01E-02	9.32E-03
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	2.88E+01	1.15E-01	1.38E+00	1.21E+00	6.07E-03	1.01E-02	9.32E-03
	Armoring	1 ton pickup truck		2	19	4.15E-02	1.01E-04	1.19E-04	1.36E-03	2.58E-06	2.06E-05	9.13E-06
		Excavator	430 hp	2	19	1.82E-01	8.47E-04	9.56E-03	7.66E-03	3.75E-05	7.11E-05	6.54E-05
		1 ton pickup truck		2	19	4.15E-02	1.01E-04	1.19E-04	1.36E-03	2.58E-06	2.06E-05	9.13E-06
	Maintenance	Grader	215 hp	340	210	2.28E+01	8.61E-02	8.56E-01	9.96E-01	5.39E-03	6.54E-03	6.02E-03
Coarse Material (Gravel & Larger) (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	1.38E+01	3.37E-02	3.95E-02	4.50E-01	8.56E-04	6.83E-03	3.03E-03
		Front end loader	350 hp	663.5	78	4.99E+01	3.10E-01	2.57E+00	2.04E+00	1.03E-02	2.05E-02	1.89E-02
		Front end loader	350 hp	663.5	78	4.99E+01	3.10E-01	2.57E+00	2.04E+00	1.03E-02	2.05E-02	1.89E-02
		Front end loader	350 hp	663.5	78	4.99E+01	3.10E-01	2.57E+00	2.04E+00	1.03E-02	2.05E-02	1.89E-02
		Front end loader	350 hp	663.5	78	4.99E+01	3.10E-01	2.57E+00	2.04E+00	1.03E-02	2.05E-02	1.89E-02
		Water truck	3000 gal	663.5	78	1.43E+01	9.70E-02	1.47E+00	1.78E-01	1.50E-03	3.22E-02	1.96E-02
		Excavator	400 hp	663.5	78	5.63E+01	2.61E-01	2.95E+00	2.36E+00	1.16E-02	2.19E-02	2.02E-02
		Excavator	400 hp	663.5	78	5.63E+01	2.61E-01	2.95E+00	2.36E+00	1.16E-02	2.19E-02	2.02E-02
		Excavator	400 hp	663.5	78	5.63E+01	2.61E-01	2.95E+00	2.36E+00	1.16E-02	2.19E-02	2.02E-02
		Excavator	400 hp	663.5	78	5.63E+01	2.61E-01	2.95E+00	2.36E+00	1.16E-02	2.19E-02	2.02E-02
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	2.11E+00	5.18E-03	6.08E-03	6.91E-02	1.32E-04	1.05E-03	4.66E-04
		Front end loader	350 hp	102	11	7.68E+00	4.77E-02	3.95E-01	3.14E-01	1.58E-03	3.15E-03	2.90E-03
		Front end loader	350 hp	102	11	7.68E+00	4.77E-02	3.95E-01	3.14E-01	1.58E-03	3.15E-03	2.90E-03
		Front end loader	350 hp	102	11	7.68E+00	4.77E-02	3.95E-01	3.14E-01	1.58E-03	3.15E-03	2.90E-03
		Front end loader	350 hp	102	11	7.68E+00	4.77E-02	3.95E-01	3.14E-01	1.58E-03	3.15E-03	2.90E-03
		Water truck	3000 gal	102	11	2.19E+00	1.49E-02	2.25E-01	2.74E-02	2.30E-04	4.95E-03	3.01E-03
		Excavator	400 hp	102	11	8.65E+00	4.02E-02	4.54E-01	3.64E-01	1.78E-03	3.37E-03	3.10E-03
		Excavator	400 hp	102	11	8.65E+00	4.02E-02	4.54E-01	3.64E-01	1.78E-03	3.37E-03	3.10E-03
		Excavator	400 hp	102	11	8.65E+00	4.02E-02	4.54E-01	3.64E-01	1.78E-03	3.37E-03	3.10E-03
		Excavator	400 hp	102	11	8.65E+00	4.02E-02	4.54E-01	3.64E-01	1.78E-03	3.37E-03	3.10E-03
	Beach Crew	1 ton pickup truck		102	11	2.11E+00	5.18E-03	6.08E-03	6.91E-02	1.32E-04	1.05E-03	4.66E-04
		Tractor/crawler/dozer	600 hp	102	11	1.59E+01	6.34E-02	7.62E-01	6.68E-01	3.35E-03	5.60E-03	5.15E-03
		Tractor/crawler/dozer	600 hp	102	11	1.59E+01	6.34E-02	7.62E-01	6.68E-01	3.35E-03	5.60E-03	5.15E-03
		Tractor/crawler/dozer	600 hp	102	11	1.59E+01	6.34E-02	7.62E-01	6.68E-01	3.35E-03	5.60E-03	5.15E-03
		Tractor/crawler/dozer	600 hp	102	11	1.59E+01	6.34E-02	7.62E-01	6.68E-01	3.35E-03	5.60E-03	5.15E-03
		Water truck	3000 gal	25	11	5.38E-01	3.66E-03	5.53E-02	6.72E-03	5.64E-05	1.21E-03	7.38E-04
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	*Material Excavation*	1 ton pickup truck		382.5	48	7.93E+00	1.94E-02	2.28E-02	2.59E-01	4.93E-04	3.94E-03	1.75E-03
		Front end loader	350 hp	382.5	48	2.88E+01	1.79E-01	1.48E+00	1.18E+00	5.93E-03	1.18E-02	1.09E-02
		Front end loader	350 hp	382.5	48	2.88E+01	1.79E-01	1.48E+00	1.18E+00	5.93E-03	1.18E-02	1.09E-02
		Front end loader	350 hp	382.5	48	2.88E+01	1.79E-01	1.48E+00	1.18E+00	5.93E-03	1.18E-02	1.09E-02
		Front end loader	350 hp	382.5	48	2.88E+01	1.79E-01	1.48E+00	1.18E+00	5.93E-03	1.18E-02	1.09E-02
		Water truck	3000 gal	382.5	48	8.23E+00	5.59E-02	8.45E-01	1.03E-01	8.63E-04	1.86E-02	1.13E-02
		Excavator	400 hp	382.5	48	3.25E+01	1.51E-01	1.70E+00	1.36E+00	6.68E-03	1.26E-02	1.16E-02
		Excavator	400 hp	382.5	48	3.25E+01	1.51E-01	1.70E+00	1.36E+00	6.68E-03	1.26E-02	1.16E-02
		Excavator	400 hp	382.5	48	3.25E+01	1.51E-01	1.70E+00	1.36E+00	6.68E-03	1.26E-02	1.16E-02
		Excavator	400 hp	382.5	48	3.25E+01	1.51E-01	1.70E+00	1.36E+00	6.68E-03	1.26E-02	1.16E-02
	Beach Crew	1 ton pickup truck		382.5	48	7.93E+00	1.94E-02	2.28E-02	2.59E-01	4.93E-04	3.94E-03	1.75E-03
		Tractor/crawler/dozer	600 hp	382.5	48	5.96E+01	2.38E-01	2.86E+00	2.51E+00	1.26E-02	2.10E-02	1.93E-02
		Tractor/crawler/dozer	600 hp	382.5	48	5.96E+01	2.38E-01	2.86E+00	2.51E+00	1.26E-02	2.10E-02	1.93E-02
		Tractor/crawler/dozer	600 hp	382.5	48	5.96E+01	2.38E-01	2.86E+00	2.51E+00	1.26E-02	2.10E-02	1.93E-02
		Tractor/crawler/dozer	600 hp	382.5	48	5.96E+01	2.38E-01	2.86E+00	2.51E+00	1.26E-02	2.10E-02	1.93E-02
		Water truck	3000 gal	382.5	48	8.23E+00	5.59E-02	8.45E-01	1.03E-01	8.63E-04	1.86E-02	1.13E-02
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	22	7.45E+01	3.33E-01	4.01E+00	3.13E+00	1.53E-02	2.94E-02	2.71E-02
		Tractor/crawler/dozer	440 hp	90	22	9.32E+00	4.17E-02	5.01E-01	3.91E-01	1.92E-03	3.68E-03	3.38E-03
		3/4 ton pickup truck		360	22	7.46E+00	3.07E-02	2.52E-02	3.70E-01	4.63E-04	3.80E-03	1.72E-03
	Drilling	Rotary drill	475 hp	88.1333	128	1.18E+01	4.46E-02	5.97E-01	4.65E-01	2.43E-03	4.30E-03	3.96E-03
		3/4 ton pickup truck		84.1333	128	1.74E+00	7.18E-03	5.89E-03	8.65E-02	1.08E-04	8.87E-04	4.03E-04
	Cut with Diamond wire	3/4 ton pickup truck		376	128	7.79E+00	3.21E-02	2.63E-02	3.87E-01	4.83E-04	3.96E-03	1.80E-03
		Diamond cutting saw	50 hp	376	128	5.22E+00	4.83E-02	9.27E-01	6.68E-01	1.42E-03	3.16E-02	2.91E-02
	Lift/Load blocks	Crane 260'	375 hp	454.8767	128	2.79E+01	1.05E-01	1.40E+00	1.15E+00	5.74E-03	1.01E-02	9.27E-03
		3/4 ton pickup truck		454.8767	128	9.43E+00	3.88E-02	3.18E-02	4.68E-01	5.85E-04	4.80E-03	2.18E-03
	Load/Haul	Front end loader	350 hp	32	128	2.41E+00	1.50E-02	1.24E-01	9.85E-02	4.96E-04	9.89E-04	9.10E-04
		Water truck	3000 gal	521	128	1.12E+01	7.62E-02	1.15E+00	1.40E-01	1.17E-03	2.53E-02	1.54E-02
	Landfill	Crane 260'	375 hp	227.4384	128	1.39E+01	5.26E-02	6.98E-01	5.77E-01	2.87E-03	5.04E-03	4.63E-03
	Micro-blast	Crane 260'	375 hp	60	128	3.68E+00	1.39E-02	1.84E-01	1.52E-01	7.57E-04	1.33E-03	1.22E-03
		Horizontal boring drill	10 hp	55	128	1.59E-01	1.06E-03	2.84E-02	1.37E-02	4.21E-05	1.02E-03	9.35E-04
		3/4 ton pickup truck		60	128	1.24E+00	5.12E-03	4.20E-03	6.17E-02	7.72E-05	6.33E-04	2.87E-04
	Demolish spillway	Crane 260'	375 hp	100	128	6.13E+00	2.31E-02	3.07E-01	2.54E-01	1.26E-03	2.21E-03	2.04E-03
		Air compressor	50 hp	200	128	3.25E+00	1.20E-01	1.46E-01	1.04E+01	7.84E-04	4.94E-03	4.93E-03
		3/4 ton pickup truck		100	128	2.07E+00	8.54E-03	7.00E-03	1.03E-01	1.29E-04	1.05E-03	4.79E-04
Data from Alt2_EnvrAirQualityReport.pdf							**1.68E+03**	**8.58E+00**	**9.34E+01**	**9.02E+01**	**3.31E-01**	**1.83E+00**	**1.59E+00**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2018
Birthday of Martin Luther King, Jr.	1/15/2018
Washington's Birthday	2/19/2018
Memorial Day	5/28/2018
Independence Day	7/4/2018
Labor Day	9/3/2018
Columbus Day	10/8/2018
Veterans Day	11/12/2018
Thanksgiving Day	11/22/2018
Christmas Day	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Annual Emissions - 2019 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	3.71E-04	3.21E-04	4.51E-03	6.44E-06	5.25E-05	2.36E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	209	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	1.75E-02	2.47E-01	3.24E-02	2.73E-04	5.70E-03	3.40E-03	5.49E+01	1.30E-04	1.23E-04	5.49E+01	4.98E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	4.75E-03	4.11E-03	5.77E-02	8.24E-05	6.73E-04	3.02E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	6.19E-05	5.34E-05	7.52E-04	1.07E-06	8.76E-06	3.93E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	9.54E-06	1.22E-05	1.29E-04	2.96E-07	2.35E-06	1.03E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	1.05E-04	1.19E-03	1.30E-03	6.85E-06	8.85E-06	8.14E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039	1.42E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	8.85E-06	2.66E-06	3.43E-03	3.11E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000	1.49E-04	1.16E-03	1.35E-03	6.84E-06	9.42E-06	8.67E-06	6.80E-01	3.62E-05	-	6.81E-01	6.18E-01
		Tractor/crawler/dozer	310 hp	3.696	19	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000	6.66E-05	7.60E-04	5.94E-04	2.91E-06	5.64E-06	5.19E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	0.125	0.962	0.724	0.005	0.007	0.006	402.522	0.011	0.000	1.27E-04	9.80E-04	7.37E-04	4.61E-06	7.11E-06	6.54E-06	4.10E-01	1.15E-05	-	4.10E-01	3.72E-01
		Front end loader	540 hp	3.696	19	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000	1.49E-04	1.16E-03	1.35E-03	6.84E-06	9.42E-06	8.67E-06	6.80E-01	3.62E-05	-	6.81E-01	6.18E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	2.05E-05	2.34E-04	2.55E-04	1.34E-06	1.74E-06	1.60E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	0.224	2.197	2.112	0.003	0.093	0.085	231.302	0.020	0.000	4.84E-05	4.75E-04	4.56E-04	6.46E-07	2.00E-05	1.84E-05	5.00E-02	4.37E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000	4.02E-05	4.50E-04	4.05E-04	6.31E-07	1.80E-05	1.66E-05	4.88E-02	3.63E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	3.02E-05	4.25E-04	5.58E-05	4.72E-07	9.82E-06	5.86E-06	9.46E-02	2.25E-07	2.12E-07	9.47E-02	8.59E-02
		Excavator	300 hp	4	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	6.57E-05	7.06E-04	5.61E-04	2.75E-06	5.30E-06	4.88E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	0.068	0.534	0.569	0.003	0.004	0.004	270.062	0.014	0.000	5.42E-05	4.23E-04	4.52E-04	2.41E-06	3.43E-06	3.16E-06	2.14E-01	1.14E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	6.16E-05	7.03E-04	7.64E-04	4.03E-06	5.21E-06	4.80E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	2.544	1.646	93.480	0.004	1.249	1.246	148.933	0.144	0.124	1.91E-04	1.23E-04	7.01E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.08E-05	9.32E-06	1.43E-02	1.30E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000	1.70E-04	2.77E-03	5.10E-03	9.17E-06	1.77E-04	1.63E-04	8.15E-01	6.22E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000	5.28E-07	8.42E-06	1.05E-05	1.75E-08	6.15E-07	5.66E-07	1.49E-03	1.11E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000	1.15E-03	1.88E-02	3.45E-02	6.20E-05	1.20E-03	1.10E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000	1.15E-03	1.88E-02	3.45E-02	6.20E-05	1.20E-03	1.10E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	2.05E-05	2.34E-04	2.55E-04	1.34E-06	1.74E-06	1.60E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	21	3.249	2.402	118.759	0.006	1.684	1.680	200.831	0.184	0.193	3.72E-04	2.75E-04	1.36E-02	6.56E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	21	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000	9.96E-05	1.62E-03	2.99E-03	5.37E-06	1.03E-04	9.52E-05	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	21	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	4.87E-05	5.25E-05	6.75E-04	5.33E-07	4.22E-06	1.82E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	0.110	1.476	1.708	0.003	0.100	0.092	294.378	0.010	0.000	5.66E-02	7.62E-01	8.82E-01	1.78E-03	5.15E-02	4.74E-02	1.52E+02	5.11E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Armoring	**1 ton pickup truck**		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	4.71E-05	5.06E-04	4.02E-04	1.97E-06	3.80E-06	3.50E-06	2.01E-01	1.11E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	**Grader**	215 hp	340	209	0.060	0.562	0.664	0.004	0.004	0.004	311.990	0.017	0.000	4.82E-03	4.53E-02	5.35E-02	2.83E-04	3.50E-04	3.22E-04	2.51E+01	1.38E-03	-	2.52E+01	2.28E+01
Sand to Topanga Beach	***Material Excavation***	**1 ton pickup truck**		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
(7,200 cy) (4/1-9)		**Front end loader**	350 hp	59.5	7	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000	1.57E-03	1.23E-02	9.78E-03	4.84E-05	9.92E-05	9.13E-05	4.93E+00	2.62E-04	-	4.94E+00	4.48E+00
		Front end loader	350 hp	59.5	7	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000	1.57E-03	1.23E-02	9.78E-03	4.84E-05	9.92E-05	9.13E-05	4.93E+00	2.62E-04	-	4.94E+00	4.48E+00
		Water truck	3000 gal	59.5	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	4.49E-04	6.32E-03	8.31E-04	7.01E-06	1.46E-04	8.71E-05	1.41E+00	3.34E-06	3.15E-06	1.41E+00	1.28E+00
		Excavator	400 hp	59.5	7	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	1.30E-03	1.40E-02	1.11E-02	5.46E-05	1.05E-04	9.67E-05	5.56E+00	3.07E-04	-	5.56E+00	5.05E+00
	Beach Crew	**1 ton pickup truck**		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
		Tractor/crawler/dozer	600 hp	59.5	7	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	2.08E-03	2.37E-02	2.35E-02	1.18E-04	1.76E-04	1.62E-04	1.17E+01	6.49E-04	-	1.18E+01	1.07E+01
		Tractor/crawler/dozer	600 hp	59.5	7	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	2.08E-03	2.37E-02	2.35E-02	1.18E-04	1.76E-04	1.62E-04	1.17E+01	6.49E-04	-	1.18E+01	1.07E+01
		Water truck	3000 gal	14.875	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	1.12E-04	1.58E-03	2.08E-04	1.75E-06	3.65E-05	2.18E-05	3.52E-01	8.36E-07	7.87E-07	3.52E-01	3.19E-01
Sand to Zuma Beach	***Material Excavation***	**1 ton pickup truck**		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
(124,200 cy) (4/10-10/15)		**Front end loader**	350 hp	1028.5	131	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000	2.71E-02	2.12E-01	1.69E-01	8.37E-04	1.72E-03	1.58E-03	8.52E+01	4.54E-03	-	8.53E+01	7.74E+01
		Front end loader	350 hp	1028.5	131	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000	2.71E-02	2.12E-01	1.69E-01	8.37E-04	1.72E-03	1.58E-03	8.52E+01	4.54E-03	-	8.53E+01	7.74E+01
		Water truck	3000 gal	1028.5	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	7.77E-03	1.09E-01	1.44E-02	1.21E-04	2.53E-03	1.51E-03	2.43E+01	5.78E-05	5.44E-05	2.43E+01	2.21E+01
		Excavator	400 hp	1028.5	131	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	2.25E-02	2.42E-01	1.92E-01	9.43E-04	1.82E-03	1.67E-03	9.61E+01	5.31E-03	-	9.62E+01	8.73E+01
	Beach Crew	**1 ton pickup truck**		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
		Tractor/crawler/dozer	600 hp	1028.5	131	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	3.59E-02	4.09E-01	4.07E-01	2.04E-03	3.04E-03	2.79E-03	2.03E+02	1.12E-02	-	2.03E+02	1.84E+02
		Tractor/crawler/dozer	600 hp	1028.5	131	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000	3.59E-02	4.09E-01	4.07E-01	2.04E-03	3.04E-03	2.79E-03	2.03E+02	1.12E-02	-	2.03E+02	1.84E+02
		Water truck	3000 gal	257.125	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	1.94E-03	2.73E-02	3.59E-03	3.03E-05	6.31E-04	3.77E-04	6.08E+00	1.45E-05	1.36E-05	6.08E+00	5.52E+00
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000	1.84E-02	2.10E-01	1.64E-01	8.05E-04	1.56E-03	1.43E-03	8.21E+01	4.54E-03	-	8.21E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000	2.30E-03	2.63E-02	2.05E-02	1.01E-04	1.95E-04	1.79E-04	1.03E+01	5.67E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	1.39E-03	1.20E-03	1.69E-02	2.41E-05	1.97E-04	8.84E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	54.4	128	0.052	0.685	0.532	0.003	0.005	0.005	281.905	0.012	0.000	1.49E-03	1.95E-02	1.52E-02	7.88E-05	1.41E-04	1.30E-04	8.03E+00	3.43E-04	-	8.04E+00	7.29E+00
		3/4 ton pickup truck		50.4	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	1.95E-04	1.68E-04	2.37E-03	3.38E-06	2.76E-05	1.24E-05	1.13E+00	1.12E-04	5.87E-05	1.15E+00	1.04E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	5.72E-04	4.94E-04	6.95E-03	9.92E-06	8.10E-05	3.64E-05	3.32E+00	3.30E-04	1.72E-04	3.38E+00	3.07E+00
		Diamond cutting saw	50 hp	148	128	0.130	2.363	1.738	0.004	0.082	0.075	277.553	0.012	0.000	1.06E-03	1.93E-02	1.42E-02	2.93E-05	6.67E-04	6.14E-04	2.26E+00	9.58E-05	-	2.27E+00	2.06E+00
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	2.31E-03	2.91E-02	2.43E-02	1.19E-04	2.12E-04	1.95E-04	1.21E+01	6.70E-04	-	1.21E+01	1.10E+01
		3/4 ton pickup truck		179.6356	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	6.95E-04	6.00E-04	8.44E-03	1.20E-05	9.83E-05	4.41E-05	4.03E+00	4.01E-04	2.09E-04	4.10E+00	3.72E+00
	Load/Haul	**Front end loader**	350 hp	32	128	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000	8.44E-04	6.59E-03	5.26E-03	2.60E-05	5.34E-05	4.91E-05	2.65E+00	1.41E-04	-	2.66E+00	2.41E+00
	Landfill	**Crane 260'**	375 hp	89.8178	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	1.15E-03	1.46E-02	1.21E-02	5.95E-05	1.06E-04	9.76E-05	6.06E+00	3.35E-04	-	6.07E+00	5.50E+00
	Micro-blast	**Crane 260'**	375 hp	60	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	7.71E-04	9.73E-03	8.11E-03	3.97E-05	7.08E-05	6.52E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	0.095	2.473	1.183	0.004	0.089	0.082	287.212	0.031	0.000	5.74E-05	1.50E-03	7.17E-04	2.21E-06	5.40E-05	4.97E-05	1.74E-01	1.90E-05	-	1.75E-01	1.58E-01
		3/4 ton pickup truck		60	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	1.28E-03	1.62E-02	1.35E-02	6.62E-05	1.18E-04	1.09E-04	6.75E+00	3.73E-04	-	6.75E+00	6.13E+00
		Air compressor	50 hp	200	128	0.601	0.717	53.729	0.004	0.024	0.023	307.156	0.034	0.058	6.63E-03	7.90E-03	5.92E-01	4.12E-05	2.59E-04	2.59E-04	3.39E+00	3.74E-04	6.36E-04	3.59E+00	3.26E+00
		3/4 ton pickup truck		100	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	3.87E-04	3.34E-04	4.70E-03	6.70E-06	5.47E-05	2.46E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
														Total	**3.27E-01**	**3.49E+00**	**3.86E+00**	**1.29E-02**	**8.41E-02**	**7.33E-02**	**1.38E+03**	**7.32E-02**	**6.39E-03**	**1.39E+03**	**1.26E+03**

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 3

Construction Start Year	2019	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	209	7.11E-03	6.14E-03	8.63E-02	1.23E-04	1.01E-03	4.51E-04
Dust Control		**Water truck**	5000 gal	2320	209	3.35E-01	4.72E+00	6.20E-01	5.23E-03	1.09E-01	6.50E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	9.10E-02	7.86E-02	1.11E+00	1.58E-03	1.29E-02	5.78E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.18E-03	1.02E-03	1.44E-02	2.05E-05	1.68E-04	7.52E-05
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.83E-04	2.34E-04	2.47E-03	5.66E-06	4.50E-05	1.97E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	2.00E-03	2.28E-02	2.48E-02	1.31E-04	1.69E-04	1.56E-04
		Chain saw		7.3335	19	2.72E-03	1.49E-04	1.71E-02	1.91E-06	2.70E-05	2.69E-05
	Brush Piling	**Front end loader**	540 hp	3.696	19	2.85E-03	2.23E-02	2.58E-02	1.31E-04	1.80E-04	1.66E-04
		Tractor/crawler/dozer	310 hp	3.696	19	1.27E-03	1.45E-02	1.14E-02	5.57E-05	1.08E-04	9.93E-05
	Chipping	**Brush chipper**	250 hp	3.696	19	2.43E-03	1.88E-02	1.41E-02	8.83E-05	1.36E-04	1.25E-04
		Front end loader	540 hp	3.696	19	2.85E-03	2.23E-02	2.58E-02	1.31E-04	1.80E-04	1.66E-04
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	3.93E-04	4.48E-03	4.88E-03	2.57E-05	3.33E-05	3.06E-05
		Front end loader	49 hp	4	19	9.27E-04	9.09E-03	8.73E-03	1.24E-05	3.83E-04	3.53E-04
		Roller	47 hp	4	19	7.69E-04	8.60E-03	7.75E-03	1.21E-05	3.45E-04	3.18E-04
		Water truck	3000 gal	4	19	5.78E-04	8.14E-03	1.07E-03	9.02E-06	1.88E-04	1.12E-04
		Excavator	300 hp	4	19	1.26E-03	1.35E-02	1.07E-02	5.26E-05	1.01E-04	9.34E-05
		Front end loader	180 hp	4	19	1.04E-03	8.10E-03	8.64E-03	4.62E-05	6.56E-05	6.04E-05
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	1.18E-03	1.34E-02	1.46E-02	7.72E-05	9.98E-05	9.18E-05
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	3.65E-03	2.36E-03	1.34E-01	5.41E-06	1.79E-03	1.79E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	3.26E-03	5.31E-02	9.76E-02	1.75E-04	3.38E-03	3.11E-03
		Loader/backhoe	75 hp	0.0923	19	1.01E-05	1.61E-04	2.01E-04	3.35E-07	1.18E-05	1.08E-05
		Crane 94'	155 hp	155	19	2.20E-02	3.59E-01	6.60E-01	1.19E-03	2.29E-02	2.10E-02
		1 ton pickup truck		155	19	6.43E-03	8.25E-03	8.71E-02	1.99E-04	1.59E-03	6.95E-04
		Crane 94'	155 hp	155	19	2.20E-02	3.59E-01	6.60E-01	1.19E-03	2.29E-02	2.10E-02
		1 ton pickup truck		155	19	6.43E-03	8.25E-03	8.71E-02	1.99E-04	1.59E-03	6.95E-04
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	3.93E-04	4.48E-03	4.88E-03	2.57E-05	3.33E-05	3.06E-05
	Dewatering	**Concrete saw**	13 hp	8	21	7.13E-03	5.27E-03	2.61E-01	1.26E-05	3.69E-03	3.69E-03
		Crane 80'	130 hp	16	21	1.91E-03	3.11E-02	5.71E-02	1.03E-04	1.98E-03	1.82E-03
		Flatbed truck		8	21	9.32E-04	1.01E-03	1.29E-02	1.02E-05	8.08E-05	3.48E-05
		Generator	80 hp	5856	244	1.08E+00	1.46E+01	1.69E+01	3.41E-02	9.86E-01	9.07E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.23E-01	1.41E+00	1.40E+00	7.01E-03	1.04E-02	9.60E-03
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.23E-01	1.41E+00	1.40E+00	7.01E-03	1.04E-02	9.60E-03
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.23E-01	1.41E+00	1.40E+00	7.01E-03	1.04E-02	9.60E-03
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.23E-01	1.41E+00	1.40E+00	7.01E-03	1.04E-02	9.60E-03
	Armoring	**1 ton pickup truck**		2	19	8.30E-05	1.06E-04	1.12E-03	2.57E-06	2.05E-05	8.96E-06
		Excavator	430 hp	2	19	9.02E-04	9.68E-03	7.70E-03	3.77E-05	7.27E-05	6.69E-05
		1 ton pickup truck		2	19	8.30E-05	1.06E-04	1.12E-03	2.57E-06	2.05E-05	8.96E-06
	Maintenance	**Grader**	215 hp	340	209	9.22E-02	8.67E-01	1.02E+00	5.41E-03	6.71E-03	6.17E-03
Sand to Topanga Beach (7,200 cy) (4/1-9)	***Material Excavation***	**1 ton pickup truck**		59.5	7	2.47E-03	3.17E-03	3.34E-02	7.66E-05	6.09E-04	2.67E-04
		Front end loader	350 hp	59.5	7	3.00E-02	2.35E-01	1.87E-01	9.26E-04	1.90E-03	1.75E-03
		Front end loader	350 hp	59.5	7	3.00E-02	2.35E-01	1.87E-01	9.26E-04	1.90E-03	1.75E-03
		Water truck	3000 gal	59.5	7	8.60E-03	1.21E-01	1.59E-02	1.34E-04	2.80E-03	1.67E-03
		Excavator	400 hp	59.5	7	2.50E-02	2.68E-01	2.13E-01	1.04E-03	2.01E-03	1.85E-03
	Beach Crew	**1 ton pickup truck**		59.5	7	2.47E-03	3.17E-03	3.34E-02	7.66E-05	6.09E-04	2.67E-04
		Tractor/crawler/dozer	600 hp	59.5	7	3.97E-02	4.53E-01	4.50E-01	2.26E-03	3.36E-03	3.09E-03
		Tractor/crawler/dozer	600 hp	59.5	7	3.97E-02	4.53E-01	4.50E-01	2.26E-03	3.36E-03	3.09E-03
		Water truck	3000 gal	14.875	7	2.15E-03	3.03E-02	3.97E-03	3.36E-05	6.99E-04	4.17E-04
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	***Material Excavation***	**1 ton pickup truck**		1028.5	131	4.27E-02	5.47E-02	5.78E-01	1.32E-03	1.05E-02	4.61E-03
		Front end loader	350 hp	1028.5	131	5.19E-01	4.05E+00	3.24E+00	1.60E-02	3.28E-02	3.02E-02
		Front end loader	350 hp	1028.5	131	5.19E-01	4.05E+00	3.24E+00	1.60E-02	3.28E-02	3.02E-02
		Water truck	3000 gal	1028.5	131	1.49E-01	2.09E+00	2.75E-01	2.32E-03	4.83E-02	2.88E-02
		Excavator	400 hp	1028.5	131	4.31E-01	4.63E+00	3.68E+00	1.80E-02	3.48E-02	3.20E-02
	Beach Crew	**1 ton pickup truck**		1028.5	131	4.27E-02	5.47E-02	5.78E-01	1.32E-03	1.05E-02	4.61E-03
		Tractor/crawler/dozer	600 hp	1028.5	131	6.87E-01	7.83E+00	7.78E+00	3.91E-02	5.81E-02	5.35E-02
		Tractor/crawler/dozer	600 hp	1028.5	131	6.87E-01	7.83E+00	7.78E+00	3.91E-02	5.81E-02	5.35E-02
		Water truck	3000 gal	257.125	131	3.72E-02	5.23E-01	6.87E-02	5.80E-04	1.21E-02	7.21E-03
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	3.52E-01	4.02E+00	3.15E+00	1.54E-02	2.98E-02	2.75E-02
		Tractor/crawler/dozer	440 hp	90	22	4.41E-02	5.03E-01	3.93E-01	1.93E-03	3.73E-03	3.43E-03
		3/4 ton pickup truck		360	22	2.66E-02	2.30E-02	3.24E-01	4.62E-04	3.77E-03	1.69E-03
	Drilling	**Rotary drill**	475 hp	54.4	128	2.86E-02	3.73E-01	2.90E-01	1.51E-03	2.70E-03	2.49E-03
		3/4 ton pickup truck		50.4	128	3.73E-03	3.22E-03	4.53E-02	6.47E-05	5.28E-04	2.37E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	1.10E-02	9.46E-03	1.33E-01	1.90E-04	1.55E-03	6.96E-04
		Diamond cutting saw	50 hp	148	128	2.03E-02	3.69E-01	2.71E-01	5.60E-04	1.28E-02	1.17E-02
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	4.42E-02	5.57E-01	4.65E-01	2.28E-03	4.06E-03	3.73E-03
		3/4 ton pickup truck		179.6356	128	1.33E-02	1.15E-02	1.61E-01	2.30E-04	1.88E-03	8.44E-04
	Load/Haul	**Front end loader**	350 hp	32	128	1.62E-02	1.26E-01	1.01E-01	4.98E-04	1.02E-03	9.40E-04
	Landfill	**Crane 260'**	375 hp	89.8178	128	2.21E-02	2.79E-01	2.32E-01	1.14E-03	2.03E-03	1.87E-03
	Micro-blast	**Crane 260'**	375 hp	60	128	1.48E-02	1.86E-01	1.55E-01	7.60E-04	1.36E-03	1.25E-03
		Horizontal boring drill	10 hp	55	128	1.10E-03	2.87E-02	1.37E-02	4.23E-05	1.03E-03	9.51E-04
		3/4 ton pickup truck		60	128	4.44E-03	3.83E-03	5.39E-02	7.70E-05	6.28E-04	2.82E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	2.46E-02	3.10E-01	2.59E-01	1.27E-03	2.26E-03	2.08E-03
		Air compressor	50 hp	200	128	1.27E-01	1.51E-01	1.13E+01	7.88E-04	4.96E-03	4.95E-03
		3/4 ton pickup truck		100	128	7.40E-03	6.39E-03	8.99E-02	1.28E-04	1.05E-03	4.70E-04
Data from Alt2_EnvrAirQualityReport.pdf						**6.26E+00**	**6.68E+01**	**7.38E+01**	**2.47E-01**	**1.61E+00**	**1.40E+00**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2019

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year 2020
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2020 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		**3/4 ton pickup truck**		96	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Dust Control		**Water truck**	5000 gal	2320	209	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Fish relocation	**3/4 ton pickup truck**		16	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
		Chain saw		7.3335	19	2.199	0.115	13.188	0.001	0.021	0.021	35.645	0.137	0.039
	Brush Piling	**Front end loader**	540 hp	3.696	19	0.072	0.534	0.583	0.003	0.004	0.004	291.179	0.016	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000
	Chipping	**Brush chipper**	250 hp	3.696	19	0.130	0.950	0.718	0.004	0.007	0.006	395.187	0.012	0.000
		Front end loader	540 hp	3.696	19	0.072	0.534	0.583	0.003	0.004	0.004	291.179	0.016	0.000
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
		Front end loader	49 hp	4	19	0.237	2.223	2.188	0.003	0.096	0.088	231.302	0.021	0.000
		Roller	47 hp	4	19	0.208	2.198	2.035	0.003	0.090	0.083	235.495	0.019	0.000
		Water truck	3000 gal	4	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	300 hp	4	19	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
		Front end loader	180 hp	4	19	0.073	0.539	0.576	0.003	0.004	0.004	270.055	0.015	0.000
	36" Diversion Pipe - grading	**Tractor/crawler/dozer**	180 hp	6	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	36" Diversion Pipe - pipe anchors	**Welder**	17 hp	4	19	2.544	1.646	93.478	0.004	1.248	1.246	148.930	0.144	0.124
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000
		Loader/backhoe	75 hp	0.0923	19	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000
		Crane 94'	155 hp	155	19	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Crane 94'	155 hp	155	19	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Dewatering	**Concrete saw**	13 hp	8	22	3.254	2.405	118.948	0.006	1.686	1.683	201.151	0.184	0.193
		Crane 80'	130 hp	16	22	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000
		Flatbed truck		8	22	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
		Generator	80 hp	5856	244	0.115	1.482	1.722	0.003	0.101	0.093	294.370	0.010	0.000
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
	Armoring	**1 ton pickup truck**		0.9333	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Excavator	430 hp	0.9333	19	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
		1 ton pickup truck		0.9333	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Compaction	**Vibratory roller**	50 hp	7.38	19	0.208	2.198	2.035	0.003	0.090	0.083	235.495	0.019	0.000
		Tractor/crawler/dozer	250 hp	7.38	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
		Water truck	5000 gal	9.225	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Maintenance	**Grader**	215 hp	340	209	0.063	0.567	0.665	0.004	0.004	0.004	311.995	0.017	0.000
Sand to Zuma Beach (19,000 cy) (4/1-26)	***Material Excavation***	**1 ton pickup truck**		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Front end loader	350 hp	161.5	18	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000
		Front end loader	350 hp	161.5	18	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	400 hp	161.5	18	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
	Beach Crew	**1 ton pickup truck**		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Fines to landfill (147,700 cy) (4/27-10/15)	***Material Excavation***	**1 ton pickup truck**		1066	120	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
		Front end loader	350 hp	1066	120	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000
		Front end loader	350 hp	1066	120	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000
		Water truck	3000 gal	1066	120	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
		Excavator	400 hp	1066	120	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000
		Tractor/crawler/dozer	440 hp	90	20	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000
		3/4 ton pickup truck		360	20	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Drilling	**Rotary drill**	475 hp	61.7333	127	0.053	0.683	0.535	0.003	0.005	0.005	282.073	0.012	0.000
		3/4 ton pickup truck		57.7333	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	196	127	0.138	2.379	1.784	0.004	0.083	0.077	277.554	0.012	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
		3/4 ton pickup truck		239.2283	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Load/Haul	**Front end loader**	350 hp	32	127	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000
		Water truck	3000 gal	14	127	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Landfill	**Crane 260'**	375 hp	119.6141	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
	Micro-blast	**Crane 260'**	375 hp	60	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
		Horizontal boring drill	10 hp	55	127	0.097	2.482	1.175	0.004	0.090	0.083	285.402	0.031	0.000
		3/4 ton pickup truck		60	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Demolish spillway	**Crane 260'**	375 hp	100	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
		Air compressor	50 hp	200	127	0.634	0.740	57.796	0.004	0.024	0.023	307.061	0.036	0.059
		3/4 ton pickup truck		100	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056

Activity		Annual Emissions - 2020 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		3.29E-04	2.97E-04	4.01E-03	6.43E-06	5.21E-05	2.31E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		1.70E-02	1.99E-01	3.17E-02	2.73E-04	5.18E-03	2.93E-03	5.47E+01	1.30E-04	1.23E-04	5.48E+01	4.97E+01
Environmental protection measures	***Biologist***	4.22E-03	3.80E-03	5.14E-02	8.24E-05	6.67E-04	2.96E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	5.49E-05	4.95E-05	6.69E-04	1.07E-06	8.68E-06	3.86E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	8.02E-06	1.11E-05	1.10E-04	2.96E-07	2.33E-06	1.01E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		1.10E-04	1.20E-03	1.30E-03	6.85E-06	8.97E-06	8.25E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		1.49E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	9.28E-06	2.66E-06	3.44E-03	3.12E-03
	Brush Piling	1.59E-04	1.18E-03	1.28E-03	6.44E-06	9.66E-06	8.89E-06	6.41E-01	3.54E-05	-	6.41E-01	5.82E-01
		7.00E-05	7.62E-04	5.94E-04	2.91E-06	5.71E-06	5.25E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	1.32E-04	9.68E-04	7.32E-04	4.53E-06	7.09E-06	6.52E-06	4.03E-01	1.19E-05	-	4.03E-01	3.65E-01
		1.59E-04	1.18E-03	1.28E-03	6.44E-06	9.66E-06	8.89E-06	6.41E-01	3.54E-05	-	6.41E-01	5.82E-01
Dewatering	***Temporary Cofferdam***	2.16E-05	2.35E-04	2.55E-04	1.34E-06	1.76E-06	1.62E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		5.13E-05	4.80E-04	4.73E-04	6.46E-07	2.06E-05	1.90E-05	5.00E-02	4.63E-06	-	5.01E-02	4.54E-02
		4.31E-05	4.55E-04	4.22E-04	6.31E-07	1.87E-05	1.72E-05	4.88E-02	3.89E-06	-	4.89E-02	4.43E-02
		2.92E-05	3.43E-04	5.47E-05	4.70E-07	8.94E-06	5.04E-06	9.43E-02	2.25E-07	2.12E-07	9.44E-02	8.56E-02
		6.86E-05	7.04E-04	5.61E-04	2.75E-06	5.34E-06	4.91E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		5.78E-05	4.28E-04	4.57E-04	2.41E-06	3.52E-06	3.24E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - grading	6.48E-05	7.05E-04	7.64E-04	4.03E-06	5.29E-06	4.86E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe anchors	1.91E-04	1.23E-04	7.01E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.08E-05	9.32E-06	1.43E-02	1.30E-02
	36" Diversion Pipe	1.79E-04	2.79E-03	5.10E-03	9.17E-06	1.81E-04	1.67E-04	8.15E-01	6.23E-05	-	8.16E-01	7.41E-01
		5.53E-07	8.47E-06	1.05E-05	1.75E-08	6.25E-07	5.75E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		1.21E-03	1.89E-02	3.45E-02	6.20E-05	1.22E-03	1.13E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		1.21E-03	1.89E-02	3.45E-02	6.20E-05	1.22E-03	1.13E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	2.16E-05	2.35E-04	2.55E-04	1.34E-06	1.76E-06	1.62E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.22E-05	3.04E-02	2.76E-02
		1.05E-04	1.63E-03	2.99E-03	5.37E-06	1.06E-04	9.75E-05	4.77E-01	3.64E-05	-	4.78E-01	4.34E-01
		4.12E-05	4.58E-05	5.67E-04	5.32E-07	4.18E-06	1.78E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		5.94E-02	7.65E-01	8.89E-01	1.78E-03	5.22E-02	4.80E-02	1.52E+02	5.36E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Push	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Push	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Build road	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Armoring	1.70E-06	2.35E-06	2.32E-05	6.27E-08	4.94E-07	2.14E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02	1.93E-02
		2.29E-05	2.35E-04	1.88E-04	9.20E-07	1.79E-06	1.64E-06	9.37E-02	5.18E-06	-	9.38E-02	8.51E-02
		1.70E-06	2.35E-06	2.32E-05	6.27E-08	4.94E-07	2.14E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02	1.93E-02
	Compaction	1.11E-04	1.21E-03	1.31E-03	6.89E-06	9.03E-06	8.31E-06	6.12E-01	3.39E-05	-	6.13E-01	5.56E-01
		6.74E-05	7.90E-04	1.26E-04	1.08E-06	2.06E-05	1.16E-05	2.18E-01	5.19E-07	4.88E-07	2.18E-01	1.98E-01
	Maintenance	5.10E-03	4.57E-02	5.36E-02	2.83E-04	3.57E-04	3.29E-04	2.51E+01	1.39E-03	-	2.52E+01	2.28E+01
Sand to Zuma Beach (19,000 cy) (4/1-26)	***Material Excavation***	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
		4.55E-03	3.37E-02	2.68E-02	1.31E-04	2.77E-04	2.54E-04	1.34E+01	7.40E-04	-	1.34E+01	1.22E+01
		4.55E-03	3.37E-02	2.68E-02	1.31E-04	2.77E-04	2.54E-04	1.34E+01	7.40E-04	-	1.34E+01	1.22E+01
		1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
		3.69E-03	3.79E-02	3.02E-02	1.48E-04	2.87E-04	2.64E-04	1.51E+01	8.34E-04	-	1.51E+01	1.37E+01
	Beach Crew	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
		5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
Fines to landfill (147,700 cy) (4/27-10/15)	***Material Excavation***	1.94E-03	2.68E-03	2.65E-02	7.16E-05	5.65E-04	2.45E-04	2.39E+01	2.38E-03	1.24E-03	2.44E+01	2.21E+01
		3.00E-02	2.22E-01	1.77E-01	8.67E-04	1.83E-03	1.68E-03	8.84E+01	4.89E-03	-	8.85E+01	8.02E+01
		3.00E-02	2.22E-01	1.77E-01	8.67E-04	1.83E-03	1.68E-03	8.84E+01	4.89E-03	-	8.85E+01	8.02E+01
		7.79E-03	9.13E-02	1.46E-02	1.25E-04	2.38E-03	1.34E-03	2.51E+01	5.99E-05	5.64E-05	2.52E+01	2.28E+01
		2.44E-02	2.50E-01	1.99E-01	9.77E-04	1.90E-03	1.75E-03	9.96E+01	5.51E-03	-	9.97E+01	9.04E+01
Demolition	***Platform***	1.94E-02	2.11E-01	1.64E-01	8.05E-04	1.58E-03	1.45E-03	8.20E+01	4.54E-03	-	8.21E+01	7.45E+01
		2.42E-03	2.63E-02	2.05E-02	1.01E-04	1.97E-04	1.82E-04	1.03E+01	5.67E-04	-	1.03E+01	9.32E+00
		1.24E-03	1.11E-03	1.50E-02	2.41E-05	1.95E-04	8.68E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	1.72E-03	2.21E-02	1.73E-02	8.95E-05	1.60E-04	1.47E-04	9.12E+00	4.00E-04	-	9.13E+00	8.28E+00
		1.98E-04	1.79E-04	2.41E-03	3.87E-06	3.13E-05	1.39E-05	1.30E+00	1.29E-04	6.72E-05	1.32E+00	1.20E+00
	Cut with Diamond wire	6.73E-04	6.06E-04	8.19E-03	1.31E-05	1.06E-04	4.73E-05	4.40E+00	4.37E-04	2.28E-04	4.48E+00	4.06E+00
		1.49E-03	2.57E-02	1.93E-02	3.88E-05	9.02E-04	8.29E-04	3.00E+00	1.35E-04	-	3.00E+00	2.72E+00
	Lift/Load blocks	3.24E-03	3.90E-02	3.23E-02	1.58E-04	2.87E-04	2.64E-04	1.61E+01	8.93E-04	-	1.62E+01	1.47E+01
		8.21E-04	7.40E-04	1.00E-02	1.60E-05	1.30E-04	5.77E-05	5.37E+00	5.34E-04	2.78E-04	5.47E+00	4.96E+00
	Load/Haul	9.01E-04	6.67E-03	5.31E-03	2.60E-05	5.48E-05	5.04E-05	2.65E+00	1.47E-04	-	2.66E+00	2.41E+00
		1.02E-04	1.20E-03	1.92E-04	1.65E-06	3.13E-05	1.77E-05	3.30E-01	7.87E-07	7.41E-07	3.30E-01	3.00E-01
	Landfill	1.62E-03	1.95E-02	1.62E-02	7.92E-05	1.43E-04	1.32E-04	8.07E+00	4.46E-04	-	8.08E+00	7.33E+00
	Micro-blast	8.14E-04	9.79E-03	8.11E-03	3.97E-05	7.19E-05	6.62E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		5.88E-05	1.50E-03	7.12E-04	2.20E-06	5.45E-05	5.02E-05	1.73E-01	1.88E-05	-	1.73E-01	1.57E-01
		2.06E-04	1.86E-04	2.51E-03	4.02E-06	3.25E-05	1.45E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	1.36E-03	1.63E-02	1.35E-02	6.62E-05	1.20E-04	1.10E-04	6.75E+00	3.73E-04	-	6.75E+00	6.13E+00
		6.98E-03	8.16E-03	6.37E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	3.94E-04	6.47E-04	3.59E+00	3.26E+00
		3.43E-04	3.09E-04	4.18E-03	6.70E-06	5.42E-05	2.41E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
	Total	**2.96E-01**	**2.93E+00**	**3.34E+00**	**1.02E-02**	**8.06E-02**	**7.02E-02**	**1.10E+03**	**5.75E-02**	**5.62E-03**	**1.10E+03**	**9.99E+02**

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 4

Construction Start Year	2020
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2020 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	209	6.30E-03	5.69E-03	7.68E-02	1.23E-04	9.96E-04	4.43E-04
Dust Control		**Water truck**	5000 gal	2320	209	3.25E-01	3.80E+00	6.08E-01	5.22E-03	9.92E-02	5.60E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	8.07E-02	7.28E-02	9.83E-01	1.58E-03	1.28E-02	5.67E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.05E-03	9.48E-04	1.28E-02	2.05E-05	1.66E-04	7.38E-05
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.53E-04	2.12E-04	2.10E-03	5.66E-06	4.46E-05	1.93E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	2.11E-03	2.29E-02	2.48E-02	1.31E-04	1.72E-04	1.58E-04
		Chain saw		7.3335	19	2.86E-03	1.49E-04	1.71E-02	1.91E-06	2.70E-05	2.69E-05
	Brush Piling	**Front end loader**	540 hp	3.696	19	3.04E-03	2.25E-02	2.46E-02	1.23E-04	1.85E-04	1.70E-04
		Tractor/crawler/dozer	310 hp	3.696	19	1.34E-03	1.46E-02	1.14E-02	5.57E-05	1.09E-04	1.01E-04
	Chipping	**Brush chipper**	250 hp	3.696	19	2.53E-03	1.85E-02	1.40E-02	8.67E-05	1.36E-04	1.25E-04
		Front end loader	540 hp	3.696	19	3.04E-03	2.25E-02	2.46E-02	1.23E-04	1.85E-04	1.70E-04
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	4.14E-04	4.50E-03	4.88E-03	2.57E-05	3.37E-05	3.10E-05
		Front end loader	49 hp	4	19	9.82E-04	9.19E-03	9.05E-03	1.24E-05	3.95E-04	3.63E-04
		Roller	47 hp	4	19	8.26E-04	8.72E-03	8.07E-03	1.21E-05	3.57E-04	3.29E-04
		Water truck	3000 gal	4	19	5.60E-04	6.56E-03	1.05E-03	9.00E-06	1.71E-04	9.66E-05
		Excavator	300 hp	4	19	1.31E-03	1.35E-02	1.07E-02	5.26E-05	1.02E-04	9.40E-05
		Front end loader	180 hp	4	19	1.11E-03	8.19E-03	8.75E-03	4.62E-05	6.73E-05	6.19E-05
	36" Diversion Pipe - grading	**Tractor/crawler/dozer**	180 hp	6	19	1.24E-03	1.35E-02	1.46E-02	7.72E-05	1.01E-04	9.31E-05
	36" Diversion Pipe - pipe anchors	**Welder**	17 hp	4	19	3.65E-03	2.36E-03	1.34E-01	5.41E-06	1.79E-03	1.79E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	3.43E-03	5.34E-02	9.76E-02	1.76E-04	3.47E-03	3.19E-03
		Loader/backhoe	75 hp	0.0923	19	1.06E-05	1.62E-04	2.02E-04	3.35E-07	1.20E-05	1.10E-05
		Crane 94'	155 hp	155	19	2.32E-02	3.61E-01	6.60E-01	1.19E-03	2.34E-02	2.16E-02
		1 ton pickup truck		155	19	5.40E-03	7.46E-03	7.39E-02	1.99E-04	1.57E-03	6.81E-04
		Crane 94'	155 hp	155	19	2.32E-02	3.61E-01	6.60E-01	1.19E-03	2.34E-02	2.16E-02
		1 ton pickup truck		155	19	5.40E-03	7.46E-03	7.39E-02	1.99E-04	1.57E-03	6.81E-04
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	4.14E-04	4.50E-03	4.88E-03	2.57E-05	3.37E-05	3.10E-05
	Dewatering	**Concrete saw**	13 hp	8	22	7.14E-03	5.28E-03	2.61E-01	1.26E-05	3.70E-03	3.69E-03
		Crane 80'	130 hp	16	22	2.01E-03	3.12E-02	5.71E-02	1.03E-04	2.03E-03	1.87E-03
		Flatbed truck		8	22	7.88E-04	8.76E-04	1.09E-02	1.02E-05	8.01E-05	3.42E-05
		Generator	80 hp	5856	244	1.14E+00	1.46E+01	1.70E+01	3.41E-02	9.99E-01	9.19E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.30E-01	1.41E+00	1.34E+00	6.70E-03	1.06E-02	9.73E-03
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.30E-01	1.41E+00	1.34E+00	6.70E-03	1.06E-02	9.73E-03
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.30E-01	1.41E+00	1.34E+00	6.70E-03	1.06E-02	9.73E-03
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.30E-01	1.41E+00	1.34E+00	6.70E-03	1.06E-02	9.73E-03
	Armoring	**1 ton pickup truck**		0.9333	19	3.25E-05	4.49E-05	4.45E-04	1.20E-06	9.46E-06	4.10E-06
		Excavator	430 hp	0.9333	19	4.39E-04	4.50E-03	3.59E-03	1.76E-05	3.42E-05	3.14E-05
		1 ton pickup truck		0.9333	19	3.25E-05	4.49E-05	4.45E-04	1.20E-06	9.46E-06	4.10E-06
	Compaction	**Vibratory roller**	50 hp	7.38	19	1.62E-03	1.71E-02	1.58E-02	2.37E-05	7.02E-04	6.46E-04
		Tractor/crawler/dozer	250 hp	7.38	19	2.12E-03	2.31E-02	2.50E-02	1.32E-04	1.73E-04	1.59E-04
		Water truck	5000 gal	9.225	19	1.29E-03	1.51E-02	2.42E-03	2.08E-05	3.95E-04	2.23E-04
	Maintenance	**Grader**	215 hp	340	209	9.76E-02	8.74E-01	1.03E+00	5.41E-03	6.84E-03	6.29E-03
Sand to Zuma Beach (19,000 cy) (4/1-26)	***Material Excavation***	**1 ton pickup truck**		161.5	18	5.63E-03	7.77E-03	7.70E-02	2.08E-04	1.64E-03	7.09E-04
		Front end loader	350 hp	161.5	18	8.70E-02	6.44E-01	5.13E-01	2.51E-03	5.29E-03	4.87E-03
		Front end loader	350 hp	161.5	18	8.70E-02	6.44E-01	5.13E-01	2.51E-03	5.29E-03	4.87E-03
		Water truck	3000 gal	161.5	18	2.26E-02	2.65E-01	4.23E-02	3.63E-04	6.91E-03	3.90E-03
		Excavator	400 hp	161.5	18	7.07E-02	7.25E-01	5.78E-01	2.83E-03	5.50E-03	5.06E-03
	Beach Crew	**1 ton pickup truck**		161.5	18	5.63E-03	7.77E-03	7.70E-02	2.08E-04	1.64E-03	7.09E-04
		Tractor/crawler/dozer	600 hp	161.5	18	1.13E-01	1.23E+00	1.17E+00	5.87E-03	9.25E-03	8.51E-03
		Tractor/crawler/dozer	600 hp	161.5	18	1.13E-01	1.23E+00	1.17E+00	5.87E-03	9.25E-03	8.51E-03
		Tractor/crawler/dozer	600 hp	161.5	18	1.13E-01	1.23E+00	1.17E+00	5.87E-03	9.25E-03	8.51E-03
		Tractor/crawler/dozer	600 hp	161.5	18	1.13E-01	1.23E+00	1.17E+00	5.87E-03	9.25E-03	8.51E-03
		Water truck	3000 gal	161.5	18	2.26E-02	2.65E-01	4.23E-02	3.63E-04	6.91E-03	3.90E-03
Fines to landfill (147,700 cy) (4/27-10/15)	***Material Excavation***	**1 ton pickup truck**		1066	120	3.72E-02	5.13E-02	5.08E-01	1.37E-03	1.08E-02	4.68E-03
		Front end loader	350 hp	1066	120	5.74E-01	4.25E+00	3.39E+00	1.66E-02	3.49E-02	3.21E-02
		Front end loader	350 hp	1066	120	5.74E-01	4.25E+00	3.39E+00	1.66E-02	3.49E-02	3.21E-02
		Water truck	3000 gal	1066	120	1.49E-01	1.75E+00	2.79E-01	2.40E-03	4.56E-02	2.57E-02
		Excavator	400 hp	1066	120	4.67E-01	4.79E+00	3.82E+00	1.87E-02	3.63E-02	3.34E-02
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	3.71E-01	4.03E+00	3.15E+00	1.54E-02	3.02E-02	2.78E-02
		Tractor/crawler/dozer	440 hp	90	20	4.63E-02	5.04E-01	3.93E-01	1.93E-03	3.78E-03	3.48E-03
		3/4 ton pickup truck		360	20	2.36E-02	2.13E-02	2.88E-01	4.62E-04	3.74E-03	1.66E-03
	Drilling	**Rotary drill**	475 hp	61.7333	127	3.29E-02	4.23E-01	3.31E-01	1.71E-03	3.07E-03	2.82E-03
		3/4 ton pickup truck		57.7333	127	3.79E-03	3.42E-03	4.62E-02	7.40E-05	5.99E-04	2.66E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	1.29E-02	1.16E-02	1.57E-01	2.51E-04	2.03E-03	9.04E-04
		Diamond cutting saw	50 hp	196	127	2.86E-02	4.92E-01	3.69E-01	7.42E-04	1.73E-02	1.59E-02
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	6.21E-02	7.47E-01	6.19E-01	3.03E-03	5.49E-03	5.05E-03
		3/4 ton pickup truck		239.2283	127	1.57E-02	1.42E-02	1.91E-01	3.07E-04	2.48E-03	1.10E-03
	Load/Haul	**Front end loader**	350 hp	32	127	1.72E-02	1.28E-01	1.02E-01	4.98E-04	1.05E-03	9.65E-04
		Water truck	3000 gal	14	127	1.96E-03	2.30E-02	3.67E-03	3.15E-05	5.99E-04	3.38E-04
	Landfill	**Crane 260'**	375 hp	119.6141	127	3.10E-02	3.74E-01	3.09E-01	1.52E-03	2.74E-03	2.52E-03
	Micro-blast	**Crane 260'**	375 hp	60	127	1.56E-02	1.87E-01	1.55E-01	7.60E-04	1.38E-03	1.27E-03
		Horizontal boring drill	10 hp	55	127	1.12E-03	2.88E-02	1.36E-02	4.20E-05	1.04E-03	9.60E-04
		3/4 ton pickup truck		60	127	3.94E-03	3.55E-03	4.80E-02	7.69E-05	6.23E-04	2.77E-04
	Demolish spillway	**Crane 260'**	375 hp	100	127	2.59E-02	3.12E-01	2.59E-01	1.27E-03	2.29E-03	2.11E-03
		Air compressor	50 hp	200	127	1.34E-01	1.56E-01	1.22E+01	7.88E-04	4.96E-03	4.95E-03
		3/4 ton pickup truck		100	127	6.57E-03	5.92E-03	8.00E-02	1.28E-04	1.04E-03	4.61E-04
Data from Alt2_EnvrAirQualityReport.pdf						**5.66E+00**	**5.62E+01**	**6.39E+01**	**1.95E-01**	**1.54E+00**	**1.34E+00**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2020
Birthday of Martin Luther King, Jr.	1/20/2020
Washington's Birthday	2/17/2020
Memorial Day	5/25/2020
Independence Day	7/3/2020
Labor Day	9/7/2020
Columbus Day	10/12/2020
Veterans Day	11/11/2020
Thanksgiving Day	11/26/2020
Christmas Day	12/25/2020
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2020

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

GWP: CO2 1, CH4 21, N2O 310

Activity		Equipment	Equipment	Total	Days per	Emission Factors - 2021 (g/hp-hr or g/hr)									Annual Emissions - 2021 (tons per year)										Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	2.89E-04	2.75E-04	3.55E-03	6.45E-06	5.16E-05	2.27E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	210	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.79E-02	1.28E-01	3.40E-02	2.72E-04	4.72E-03	2.50E-03	5.45E+01	1.30E-04	1.23E-04	5.45E+01	4.94E+01
Environmental protection	**Biologist**	**3/4 ton pickup truck**		1229.3333	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	3.70E-03	3.52E-03	4.54E-02	8.26E-05	6.61E-04	2.91E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
measures	**Fish relocation**	**3/4 ton pickup truck**		16	19	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	4.82E-05	4.58E-05	5.91E-04	1.07E-06	8.60E-06	3.79E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	6.69E-06	1.00E-05	9.27E-05	2.97E-07	2.31E-06	9.92E-07	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	1.16E-04	1.21E-03	1.30E-03	6.85E-06	9.13E-06	8.40E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	2.303	0.115	13.188	0.001	0.021	0.021	35.645	0.143	0.039	1.56E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	9.72E-06	2.66E-06	3.45E-03	3.13E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000	1.66E-04	1.18E-03	1.38E-03	6.91E-06	9.83E-06	9.05E-06	6.88E-01	3.80E-05	-	6.88E-01	6.25E-01
		Tractor/crawler/dozer	310 hp	3.696	19	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	7.35E-05	7.67E-04	5.94E-04	2.91E-06	5.80E-06	5.33E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	0.134	0.936	0.711	0.004	0.007	0.006	386.935	0.012	0.000	1.36E-04	9.53E-04	7.24E-04	4.43E-06	7.04E-06	6.48E-06	3.94E-01	1.23E-05	-	3.94E-01	3.58E-01
		Front end loader	540 hp	3.696	19	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000	1.66E-04	1.18E-03	1.38E-03	6.91E-06	9.83E-06	9.05E-06	6.88E-01	3.80E-05	-	6.88E-01	6.25E-01
Landscaping	***Rock from Landfill***	**Loader/backhoe**	75 hp	24	20	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	1.50E-04	2.22E-03	2.74E-03	4.55E-06	1.65E-04	1.52E-04	3.88E-01	2.96E-05	-	3.88E-01	3.52E-01
		Front end loader	350 hp	20	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.86E-04	4.18E-03	3.32E-03	1.63E-05	3.47E-05	3.19E-05	1.66E+00	9.17E-05	-	1.66E+00	1.51E+00
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
Dewatering	***Temporary Cofferda***	**Tractor/crawler/dozer**	180 hp	2	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.27E-05	2.37E-04	2.55E-04	1.34E-06	1.79E-06	1.65E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	0.249	2.247	2.257	0.003	0.098	0.090	231.303	0.022	0.000	5.39E-05	4.85E-04	4.88E-04	6.46E-07	2.12E-05	1.95E-05	5.00E-02	4.86E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	4.60E-05	4.61E-04	4.38E-04	6.31E-07	1.93E-05	1.77E-05	4.88E-02	4.15E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	3.08E-05	2.20E-04	5.86E-05	4.69E-07	8.14E-06	4.31E-06	9.39E-02	2.25E-07	2.12E-07	9.40E-02	8.53E-02
		Excavator	300 hp	4	19	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	7.17E-05	7.07E-04	5.61E-04	2.75E-06	5.41E-06	4.98E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	0.076	0.543	0.576	0.003	0.005	0.004	270.060	0.015	0.000	6.04E-05	4.31E-04	4.57E-04	2.41E-06	3.58E-06	3.29E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe -	**Tractor/crawler/dozer**	180 hp	6	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	6.82E-05	7.11E-04	7.64E-04	4.03E-06	5.38E-06	4.95E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe -	**Welder**	17 hp	4	19	2.545	1.647	93.482	0.004	1.249	1.246	148.937	0.144	0.124	1.91E-04	1.23E-04	7.01E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.08E-05	9.32E-06	1.43E-02	1.30E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.88E-04	2.80E-03	5.10E-03	9.17E-06	1.85E-04	1.70E-04	8.15E-01	6.22E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	5.78E-07	8.53E-06	1.05E-05	1.75E-08	6.36E-07	5.85E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.27E-03	1.89E-02	3.45E-02	6.20E-05	1.25E-03	1.15E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.27E-03	1.89E-02	3.45E-02	6.20E-05	1.25E-03	1.15E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.27E-05	2.37E-04	2.55E-04	1.34E-06	1.79E-06	1.65E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.253	2.405	118.912	0.006	1.686	1.682	201.089	0.184	0.193	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.21E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16	23	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.10E-04	1.64E-03	2.99E-03	5.37E-06	1.08E-04	9.96E-05	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	3.47E-05	3.98E-05	4.78E-04	5.33E-07	4.15E-06	1.76E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	0.120	1.489	1.736	0.003	0.102	0.094	294.380	0.011	0.000	6.21E-02	7.69E-01	8.96E-01	1.78E-03	5.29E-02	4.86E-02	1.52E+02	5.60E-03	-	1.52E+02	1.38E+02
Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
	Compaction	**Vibratory roller**	50 hp	17.28	19	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	2.11E-04	2.12E-03	2.01E-03	2.90E-06	8.87E-05	8.16E-05	2.24E-01	1.91E-05	-	2.25E-01	2.04E-01
		Tractor/crawler/dozer	250 hp	17.28	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.73E-04	2.84E-03	3.06E-03	1.61E-05	2.15E-05	1.98E-05	1.43E+00	7.93E-05	-	1.44E+00	1.30E+00
		Water truck	5000 gal	21.6	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.67E-04	1.19E-03	3.16E-04	2.53E-06	4.40E-05	2.33E-05	5.07E-01	1.21E-06	1.14E-06	5.07E-01	4.60E-01
	Maintenance	**Grader**	215 hp	340	210	0.067	0.571	0.665	0.004	0.005	0.004	312.023	0.017	0.000	5.37E-03	4.60E-02	5.36E-02	2.83E-04	3.64E-04	3.35E-04	2.51E+01	1.39E-03	-	2.52E+01	2.28E+01
Fines to landfill (82,300 cy)	***Material Excavation***	**1 ton pickup truck**		597	70	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	9.08E-04	1.36E-03	1.26E-02	4.02E-05	3.14E-04	1.35E-04	1.34E+01	1.33E-03	6.95E-04	1.36E+01	1.24E+01
(4/1-7/10)		**Front end loader**	350 hp	597	70	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.75E-02	1.25E-01	9.91E-02	4.86E-04	1.04E-03	9.53E-04	4.95E+01	2.74E-03	-	4.95E+01	4.49E+01
		Front end loader	350 hp	597	70	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.75E-02	1.25E-01	9.91E-02	4.86E-04	1.04E-03	9.53E-04	4.95E+01	2.74E-03	-	4.95E+01	4.49E+01
		Water truck	3000 gal	597	70	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.60E-03	3.29E-02	8.74E-03	6.99E-05	1.22E-03	6.44E-04	1.40E+01	3.36E-05	3.16E-05	1.40E+01	1.27E+01
		Excavator	400 hp	597	70	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	1.43E-02	1.41E-01	1.12E-01	5.47E-04	1.08E-03	9.91E-04	5.58E+01	3.08E-03	-	5.58E+01	5.07E+01
Material from South Ramp (to	***Material Excavation***	**1 ton pickup truck**		195.5	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.97E-04	4.46E-04	4.12E-03	1.32E-05	1.03E-04	4.41E-05	4.39E+00	4.36E-04	2.28E-04	4.47E+00	4.05E+00
landfill) (60,500 cy) (7/11-8/6)		**Front end loader**	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Water truck	3000 gal	195.5	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.51E-03	1.08E-02	2.86E-03	2.29E-05	3.98E-04	2.11E-04	4.59E+00	1.10E-05	1.03E-05	4.59E+00	4.17E+00
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
Material from North Ramp (to	***Material Excavation***	**1 ton pickup truck**		585	72	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	8.89E-04	1.33E-03	1.23E-02	3.94E-05	3.07E-04	1.32E-04	1.31E+01	1.31E-03	6.81E-04	1.34E+01	1.21E+01
landfill) (45,100 cy) (8/7-11/19)		**Front end loader**	350 hp	585	72	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.71E-02	1.22E-01	9.71E-02	4.76E-04	1.01E-03	9.34E-04	4.85E+01	2.68E-03	-	4.85E+01	4.40E+01
		Front end loader	350 hp	585	72	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.71E-02	1.22E-01	9.71E-02	4.76E-04	1.01E-03	9.34E-04	4.85E+01	2.68E-03	-	4.85E+01	4.40E+01
		Water truck	3000 gal	585	72	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.51E-03	3.22E-02	8.56E-03	6.85E-05	1.19E-03	6.31E-04	1.37E+01	3.29E-05	3.10E-05	1.37E+01	1.25E+01
		Excavator	400 hp	585	72	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	1.40E-02	1.38E-01	1.09E-01	5.36E-04	1.06E-03	9.71E-04	5.46E+01	3.02E-03	-	5.47E+01	4.96E+01
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	2.03E-02	2.12E-01	1.64E-01	8.05E-04	1.60E-03	1.47E-03	8.20E+01	4.54E-03	-	8.21E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	2.54E-03	2.65E-02	2.05E-02	1.01E-04	2.00E-04	1.84E-04	1.03E+01	5.67E-04	-	1.03E+01	9.31E+00
		3/4 ton pickup truck		360	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.08E-03	1.03E-03	1.33E-02	2.42E-05	1.94E-04	8.53E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	204.4666	126	0.054	0.684	0.537	0.003	0.005	0.005	282.173	0.013	0.000	5.77E-03	7.32E-02	5.75E-02	2.97E-04	5.32E-04	4.90E-04	3.02E+01	1.35E-03	-	3.02E+01	2.74E+01
		3/4 ton pickup truck		208.4666	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	6.28E-04	5.97E-04	7.70E-03	1.40E-05	1.12E-04	4.94E-05	4.68E+00	4.65E-04	2.43E-04	4.76E+00	4.32E+00
	Cut with Diamond wi	**3/4 ton pickup truck**		348	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.05E-03	9.96E-04	1.29E-02	2.34E-05	1.87E-04	8.24E-05	7.81E+00	7.76E-04	4.05E-04	7.95E+00	7.21E+00
		Diamond cutting saw	50 hp	348	126	0.146	2.395	1.830	0.004	0.085	0.078	277.566	0.013	0.000	2.80E-03	4.59E-02	3.51E-02	6.88E-05	1.63E-03	1.50E-03	5.32E+00	2.53E-04	-	5.33E+00	4.83E+00
	Lift/Load blocks	**Crane 260'**	375 hp	418.8639	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	5.97E-03	6.88E-02	5.66E-02	2.78E-04	5.10E-04	4.69E-04	2.83E+01	1.56E-03	-	2.83E+01	2.57E+01
		3/4 ton pickup truck		418.8639	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.26E-03	1.20E-03	1.55E-02	2.81E-05	2.25E-04	9.92E-05	9.40E+00	9.35E-04	4.88E-04	9.57E+00	8.68E+00
	Load/Haul	**Front end loader**	350 hp	66	126	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.93E-03	1.38E-02	1.10E-02	5.37E-05	1.15E-04	1.05E-04	5.47E+00	3.03E-04	-	5.48E+00	4.97E+00
		Water truck	3000 gal	14	126	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.08E-04	7.71E-04	2.05E-04	1.64E-06	2.85E-05	1.51E-05	3.29E-01	7.87E-07	7.41E-07	3.29E-01	2.98E-01
	Landfill	**Crane 260'**	375 hp	209.4319	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	2.99E-03	3.44E-02	2.83E-02	1.39E-04	2.55E-04	2.34E-04	1.41E+01	7.82E-04	-	1.42E+01	1.28E+01
	Micro-blast	**Crane 260'**	375 hp	60	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	8.55E-04	9.85E-03	8.11E-03	3.98E-05	7.30E-05	6.72E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	126	0.098	2.489	1.168	0.004	0.091	0.083	283.780	0.031	0.000	5.97E-05	1.51E-03	7.08E-04	2.18E-06	5.49E-05	5.05E-05	1.72E-01	1.87E-05	-	1.72E-01	1.56E-01
		3/4 ton pickup truck		60	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	1.43E-03	1.64E-02	1.35E-02	6.63E-05	1.22E-04	1.12E-04	6.75E+00	3.73E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	126	0.666	0.763	61.867	0.004	0.024	0.023	306.998	0.038	0.060	7.34E-03	8.41E-03	6.82E-01	4.11E-05	2.59E-04	2.59E-04	3.38E+00	4.14E-04	6.58E-04	3.60E+00	3.26E+00
		3/4 ton pickup truck		100	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	3.01E-04	2.86E-04	3.70E-03	6.72E-06	5.38E-05	2.37E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
	Fracture	**Excavator**	400 hp	540	126	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	1.29E-02	1.27E-01	1.01E-01	4.95E-04	9.74E-04	8.96E-04	5.04E+01	2.79E-03	-	5.05E+01	4.58E+01
		Excavator	300 hp	540	126	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	9.69E-03	9.54E-02	7.58E-02	3.71E-04	7.30E-04	6.72E-04	3.78E+01	2.09E-03	-	3.79E+01	3.44E+01
		Excavator	300 hp	270	126	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.84E-03	4.77E-02	3.79E-02	1.86E-04	3.65E-04	3.36E-04	1.89E+01	1.05E-03	-	1.89E+01	1.72E+01
		Tractor/crawler/dozer	440 hp	270	126	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	7.63E-03	7.95E-02	6.16E-02	3.02E-04	6.01E-04	5.53E-04	3.08E+01	1.70E-03	-	3.08E+01	2.79E+01
		3/4 ton pickup truck		540	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.63E-03	1.55E-03	2.00E-02	3.63E-05	2.90E-04	1.28E-04	1.21E+01	1.20E-03	6.29E-04	1.23E+01	1.12E+01
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	0.095	1.057	2.009	0.004	0.080	0.073	320.916	0.025	0.000	4.29E-04	4.78E-03	9.09E-03	1.63E-05	3.60E-04	3.31E-04	1.45E+00	1.11E-04	-	1.45E+00	1.32E+00
		Tractor/crawler/dozer	250 hp	30.4	20	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	4.80E-04	5.00E-03	5.38E-03	2.84E-05	3.78E-05	3.48E-05	2.52E+00	1.40E-04	-	2.53E+00	2.29E+00
		Excavator	400 hp	30.4	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	7.27E-04	7.16E-03	5.69E-03	2.79E-05	5.48E-05	5.04E-05	2.84E+00	1.57E-04	-	2.84E+00	2.58E+00
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	0.081	0.581	0.494	0.002	0.005	0.004	246.845	0.014	0.000	1.19E-02	8.50E-02	7.24E-02	3.55E-04	7.06E-04	6.49E-04	3.61E+01	2.00E-03	-	3.62E+01	3.28E+01
		Line Striper	23 hp	92.576	20	0.196	0.474	9.240	0.003	0.020	0.020	254.963	0.011	0.026	4.59E-04	1.11E-03	2.17E-02	5.94E-06	4.77E-05	4.76E-05	5.98E-01	2.59E-05	6.00E-05	6.18E-01	5.60E-01
		Roller	70 hp	442.5143	20	0.052	1.076	1.470	0.003	0.074	0.068	222.785	0.013	0.000	1.77E-03	3.67E-02	5.02E-02	8.92E-05	2.52E-03	2.32E-03	7.61E+00	4.59E-04	-	7.62E+00	6.91E+00
		Vibratory roller	33 hp	442.5143	20	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	3.57E-03	3.58E-02	3.40E-02	4.90E-05	1.50E-03	1.38E-03	3.79E+00	3.22E-04	-	3.80E+00	3.45E+00
		Flatbed truck		92.576	20	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	4.02E-04	4.61E-04	5.53E-03	6.16E-06	4.81E-05	2.03E-05	2.08E+00	4.70E-04	2.18E-04	2.16E+00	1.96E+00
		3/4 ton pickup truck		92.576	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	2.79E-04	2.65E-04	3.42E-03	6.22E-06	4.98E-05	2.19E-05	2.08E+00	2.07E-04	1.08E-04	2.12E+00	1.92E+00
														Total	**3.90E-01**	**3.55E+00**	**4.00E+00**	**1.26E-02**	**9.17E-02**	**8.01E-02**	**1.36E+03**	**7.38E-02**	**7.20E-03**	**1.37E+03**	**1.24E+03**

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt2_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 2 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	210	5.50E-03	5.23E-03	6.76E-02	1.23E-04	9.83E-04	4.33E-04
Dust Control		**Water truck**	5000 gal	2320	210	3.41E-01	2.43E+00	6.47E-01	5.18E-03	9.00E-02	4.76E-02
Environmental protection measures	**Biologist**	**3/4 ton pickup truck**		1229.3333	210	7.05E-02	6.70E-02	8.65E-01	1.57E-03	1.26E-02	5.55E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	9.17E-04	8.72E-04	1.13E-02	2.05E-05	1.64E-04	7.22E-05
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.27E-04	1.91E-04	1.76E-03	5.65E-06	4.40E-05	1.89E-05
		Tractor/crawler/dozer	250 hp	7.3333	19	2.21E-03	2.30E-02	2.47E-02	1.30E-04	1.74E-04	1.60E-04
		Chain saw		7.3335	19	2.98E-03	1.48E-04	1.71E-02	1.90E-06	2.68E-05	2.68E-05
	Brush Piling	**Front end loader**	540 hp	3.696	19	3.16E-03	2.26E-02	2.62E-02	1.32E-04	1.87E-04	1.72E-04
		Tractor/crawler/dozer	310 hp	3.696	19	1.40E-03	1.46E-02	1.13E-02	5.55E-05	1.10E-04	1.02E-04
	Chipping	**Brush chipper**	250 hp	3.696	19	2.60E-03	1.82E-02	1.38E-02	8.45E-05	1.34E-04	1.23E-04
		Front end loader	540 hp	3.696	19	3.16E-03	2.26E-02	2.62E-02	1.32E-04	1.87E-04	1.72E-04
Landscaping	***Rock from Landfill***	**Loader/backhoe**	75 hp	24	20	2.86E-03	4.22E-02	5.23E-02	8.66E-05	3.15E-03	2.90E-03
		Front end loader	350 hp	20	20	1.12E-02	7.96E-02	6.32E-02	3.10E-04	6.61E-04	6.08E-04
		Dump truck	20cy/24 ton	20	20	2.94E-03	2.10E-02	5.58E-03	4.46E-05	7.75E-04	4.11E-04
		Dump truck	20cy/24 ton	20	20	2.94E-03	2.10E-02	5.58E-03	4.46E-05	7.75E-04	4.11E-04
Dewatering	***Temporary Cofferda***	**Tractor/crawler/dozer**	180 hp	2	19	4.33E-04	4.51E-03	4.85E-03	2.56E-05	3.41E-05	3.14E-05
		Front end loader	49 hp	4	19	1.03E-03	9.25E-03	9.29E-03	1.23E-05	4.04E-04	3.71E-04
		Roller	47 hp	4	19	8.76E-04	8.78E-03	8.35E-03	1.20E-05	3.67E-04	3.38E-04
		Water truck	3000 gal	4	19	5.87E-04	4.19E-03	1.12E-03	8.93E-06	1.55E-04	8.21E-05
		Excavator	300 hp	4	19	1.37E-03	1.35E-02	1.07E-02	5.24E-05	1.03E-04	9.48E-05
		Front end loader	180 hp	4	19	1.15E-03	8.21E-03	8.70E-03	4.59E-05	6.82E-05	6.27E-05
	36" Diversion Pipe -	**Tractor/crawler/dozer**	180 hp	6	19	1.30E-03	1.35E-02	1.46E-02	7.68E-05	1.02E-04	9.42E-05
	36" Diversion Pipe -	**Welder**	17 hp	4	19	3.63E-03	2.35E-03	1.33E-01	5.39E-06	1.78E-03	1.78E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	3.58E-03	5.33E-02	9.71E-02	1.75E-04	3.52E-03	3.24E-03
		Loader/backhoe	75 hp	0.0923	19	1.10E-05	1.62E-04	2.01E-04	3.33E-07	1.21E-05	1.11E-05
		Crane 94'	155 hp	155	19	2.42E-02	3.61E-01	6.57E-01	1.18E-03	2.38E-02	2.19E-02
		1 ton pickup truck		155	19	4.49E-03	6.73E-03	6.22E-02	1.99E-04	1.55E-03	6.66E-04
		Crane 94'	155 hp	155	20	2.42E-02	3.61E-01	6.57E-01	1.18E-03	2.38E-02	2.19E-02
		1 ton pickup truck		155	20	4.49E-03	6.73E-03	6.22E-02	1.99E-04	1.55E-03	6.66E-04
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	4.33E-04	4.51E-03	4.85E-03	2.56E-05	3.41E-05	3.14E-05
	Dewatering	**Concrete saw**	13 hp	8	23	7.10E-03	5.25E-03	2.60E-01	1.25E-05	3.68E-03	3.67E-03
		Crane 80'	130 hp	16	23	2.09E-03	3.12E-02	5.69E-02	1.02E-04	2.06E-03	1.90E-03
		Flatbed truck		8	23	6.61E-04	7.59E-04	9.11E-03	1.01E-05	7.91E-05	3.35E-05
		Generator	80 hp	5856	244	1.18E+00	1.46E+01	1.71E+01	3.40E-02	1.01E+00	9.26E-01
Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.35E-01	1.41E+00	1.27E+00	6.37E-03	1.07E-02	9.80E-03
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.35E-01	1.41E+00	1.27E+00	6.37E-03	1.07E-02	9.80E-03
		Tractor/crawler/dozer	600 hp	184.6154	19	1.35E-01	1.41E+00	1.27E+00	6.37E-03	1.07E-02	9.80E-03
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.35E-01	1.41E+00	1.27E+00	6.37E-03	1.07E-02	9.80E-03
	Compaction	**Vibratory roller**	50 hp	17.28	19	4.03E-03	4.04E-02	3.84E-02	5.52E-05	1.69E-03	1.55E-03
		Tractor/crawler/dozer	250 hp	17.28	19	5.20E-03	5.42E-02	5.82E-02	3.07E-04	4.10E-04	3.77E-04
		Water truck	5000 gal	21.6	19	3.17E-03	2.26E-02	6.02E-03	4.82E-05	8.37E-04	4.44E-04
	Maintenance	**Grader**	215 hp	340	210	1.02E-01	8.76E-01	1.02E+00	5.39E-03	6.93E-03	6.38E-03
Fines to landfill (82,300 cy) (4/1-7/10)	***Material Excavation***	**1 ton pickup truck**		597	70	1.73E-02	2.59E-02	2.39E-01	7.66E-04	5.97E-03	2.56E-03
		Front end loader	350 hp	597	70	3.33E-01	2.38E+00	1.89E+00	9.25E-03	1.97E-02	1.81E-02
		Front end loader	350 hp	597	70	3.33E-01	2.38E+00	1.89E+00	9.25E-03	1.97E-02	1.81E-02
		Water truck	3000 gal	597	70	8.77E-02	6.26E-01	1.66E-01	1.33E-03	2.31E-02	1.23E-02
		Excavator	400 hp	597	70	2.72E-01	2.68E+00	2.13E+00	1.04E-02	2.05E-02	1.89E-02
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	***Material Excavation***	**1 ton pickup truck**		195.5	20	5.66E-03	8.49E-03	7.84E-02	2.51E-04	1.96E-03	8.40E-04
		Front end loader	350 hp	195.5	20	1.09E-01	7.78E-01	6.18E-01	3.03E-03	6.46E-03	5.94E-03
		Front end loader	350 hp	195.5	20	1.09E-01	7.78E-01	6.18E-01	3.03E-03	6.46E-03	5.94E-03
		Front end loader	350 hp	195.5	20	1.09E-01	7.78E-01	6.18E-01	3.03E-03	6.46E-03	5.94E-03
		Front end loader	350 hp	195.5	20	1.09E-01	7.78E-01	6.18E-01	3.03E-03	6.46E-03	5.94E-03
		Water truck	3000 gal	195.5	20	2.87E-02	2.05E-01	5.45E-02	4.36E-04	7.58E-03	4.01E-03
		Excavator	400 hp	195.5	20	8.91E-02	8.77E-01	6.97E-01	3.41E-03	6.72E-03	6.18E-03
		Excavator	400 hp	195.5	20	8.91E-02	8.77E-01	6.97E-01	3.41E-03	6.72E-03	6.18E-03
		Excavator	400 hp	195.5	20	8.91E-02	8.77E-01	6.97E-01	3.41E-03	6.72E-03	6.18E-03
		Excavator	400 hp	195.5	20	8.91E-02	8.77E-01	6.97E-01	3.41E-03	6.72E-03	6.18E-03
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	***Material Excavation***	**1 ton pickup truck**		585	72	1.69E-02	2.54E-02	2.35E-01	7.51E-04	5.85E-03	2.51E-03
		Front end loader	350 hp	585	72	3.26E-01	2.33E+00	1.85E+00	9.06E-03	1.93E-02	1.78E-02
		Front end loader	350 hp	585	72	3.26E-01	2.33E+00	1.85E+00	9.06E-03	1.93E-02	1.78E-02
		Water truck	3000 gal	585	72	8.59E-02	6.13E-01	1.63E-01	1.31E-03	2.27E-02	1.20E-02
		Excavator	400 hp	585	72	2.66E-01	2.63E+00	2.09E+00	1.02E-02	2.01E-02	1.85E-02
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	3.87E-01	4.04E+00	3.13E+00	1.53E-02	3.05E-02	2.81E-02
		Tractor/crawler/dozer	440 hp	90	20	4.84E-02	5.05E-01	3.91E-01	1.92E-03	3.82E-03	3.51E-03
		3/4 ton pickup truck		360	20	2.06E-02	1.96E-02	2.53E-01	4.61E-04	3.69E-03	1.62E-03
	Drilling	**Rotary drill**	475 hp	204.4666	126	1.10E-01	1.39E+00	1.10E+00	5.65E-03	1.01E-02	9.33E-03
		3/4 ton pickup truck		208.4666	126	1.20E-02	1.14E-02	1.47E-01	2.67E-04	2.14E-03	9.41E-04
	Cut with Diamond wi	**3/4 ton pickup truck**		348	126	2.00E-02	1.90E-02	2.45E-01	4.45E-04	3.56E-03	1.57E-03
		Diamond cutting saw	50 hp	348	126	5.34E-02	8.75E-01	6.68E-01	1.31E-03	3.11E-02	2.86E-02
	Lift/Load blocks	**Crane 260'**	375 hp	418.8639	126	1.14E-01	1.31E+00	1.08E+00	5.29E-03	9.71E-03	8.93E-03
		3/4 ton pickup truck		418.8639	126	2.40E-02	2.28E-02	2.95E-01	5.36E-04	4.29E-03	1.89E-03
	Load/Haul	**Front end loader**	350 hp	66	126	3.68E-02	2.63E-01	2.09E-01	1.02E-03	2.18E-03	2.01E-03
		Water truck	3000 gal	14	126	2.06E-03	1.47E-02	3.90E-03	3.12E-05	5.43E-04	2.87E-04
	Landfill	**Crane 260'**	375 hp	209.4319	126	5.69E-02	6.55E-01	5.39E-01	2.64E-03	4.85E-03	4.46E-03
	Micro-blast	**Crane 260'**	375 hp	60	126	1.63E-02	1.88E-01	1.55E-01	7.57E-04	1.39E-03	1.28E-03
		Horizontal boring drill	10 hp	55	126	1.14E-03	2.87E-02	1.35E-02	4.16E-05	1.05E-03	9.62E-04
		3/4 ton pickup truck		60	126	3.44E-03	3.27E-03	4.22E-02	7.68E-05	6.15E-04	2.71E-04
	Demolish spillway	**Crane 260'**	375 hp	100	126	2.72E-02	3.13E-01	2.58E-01	1.26E-03	2.32E-03	2.13E-03
		Air compressor	50 hp	200	126	1.40E-01	1.60E-01	1.30E+01	7.84E-04	4.94E-03	4.93E-03
		3/4 ton pickup truck		100	126	5.73E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Fracture	**Excavator**	400 hp	540	126	2.46E-01	2.42E+00	1.92E+00	9.43E-03	1.86E-02	1.71E-02
		Excavator	300 hp	540	126	1.84E-01	1.82E+00	1.44E+00	7.07E-03	1.39E-02	1.28E-02
		Excavator	300 hp	270	126	9.22E-02	9.09E-01	7.22E-01	3.54E-03	6.96E-03	6.40E-03
		Tractor/crawler/dozer	440 hp	270	126	1.45E-01	1.51E+00	1.17E+00	5.75E-03	1.14E-02	1.05E-02
		3/4 ton pickup truck		540	126	3.10E-02	2.94E-02	3.80E-01	6.91E-04	5.53E-03	2.44E-03
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	8.17E-03	9.11E-02	1.73E-01	3.11E-04	6.86E-03	6.31E-03
		Tractor/crawler/dozer	250 hp	30.4	20	9.14E-03	9.53E-02	1.02E-01	5.41E-04	7.21E-04	6.63E-04
		Excavator	400 hp	30.4	20	1.38E-02	1.36E-01	1.08E-01	5.31E-04	1.04E-03	9.61E-04
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	2.27E-01	1.62E+00	1.38E+00	6.75E-03	1.34E-02	1.24E-02
		Line Striper	23 hp	92.576	20	8.75E-03	2.12E-02	4.13E-01	1.13E-04	9.08E-04	9.06E-04
		Roller	70 hp	442.5143	20	3.38E-02	7.00E-01	9.56E-01	1.70E-03	4.81E-02	4.42E-02
		Vibratory roller	33 hp	442.5143	20	6.81E-02	6.82E-01	6.49E-01	9.34E-04	2.85E-02	2.63E-02
		Flatbed truck		92.576	20	7.65E-03	8.78E-03	1.05E-01	1.17E-04	9.15E-04	3.87E-04
		3/4 ton pickup truck		92.576	20	5.31E-03	5.05E-03	6.52E-02	1.18E-04	9.48E-04	4.18E-04
Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed						**7.42E+00**	**6.77E+01**	**7.62E+01**	**2.40E-01**	**1.75E+00**	**1.52E+00**

Data from Alt2_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

- Data from OFFROAD2011 (g/hp-hr)
- Data from OFFROAD2007 (g/hp-hr)
- Data from EMFAC2011 (g/hr)
- Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
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Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Emission Factors - 2016 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Emission Factors - 2017 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		**3/4 ton pickup truck**		48	11.1	36.9	52	211	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	211	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
Environmental protection measures		**3/4 ton Pickup truck**		1213	0.0	1,213.0	0	211	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Clear & Grub - Sheriff's	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	211	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Overlook (Staging Area)		**Tractor/crawler/dozer**	250 hp	0.7652	0.8	0.0	52	0	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		0.7652	0.8	0.0	52	0	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
	Gravel	**Vibratory roller**	85 hp	16	16.0	0.0	52	0	0.042	1.062	1.354	0.003	0.070	0.065	222.773	0.010	0.000	0.044	1.069	1.378	0.003	0.071	0.066	222.772	0.010	0.000
		Tractor/crawler/dozer	310 hp	3.7481	3.7	0.0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.623	2.678	132.418	0.006	1.877	1.873	223.929	0.205	0.204	3.633	2.686	132.805	0.006	1.883	1.879	224.584	0.205	0.204
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	0.057	1.075	1.282	0.002	0.075	0.069	195.357	0.012	0.000	0.061	1.085	1.315	0.002	0.077	0.071	195.356	0.013	0.000
		Flatbed truck		4	4.0	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
Clear & Grub - Sediment	***Clear Brush***	**1 ton pickup truck**		0.3026	0.0	0.3	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Removal		**Excavator**	94 hp	0.3026	0.0	0.3	0	42	0.057	1.099	1.937	0.003	0.077	0.070	278.042	0.020	0.000	0.060	1.098	1.968	0.003	0.078	0.071	278.041	0.021	0.000
		Front end loader	210 hp	0.3026	0.0	0.3	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
		Dump truck	10cy	0.3026	0.0	0.3	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	0.3026	0.0	0.3	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	0.3026	0.0	0.3	0	42	0.058	0.528	0.384	0.002	0.004	0.003	224.564	0.005	0.000	0.061	0.528	0.385	0.002	0.004	0.003	223.246	0.006	0.000
		Front end loader	210 hp	0.1392	0.0	0.1	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		0.2875	0.0	0.3	0	42	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	0.1449	0.0	0.1	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	0.1449	0.0	0.1	0	42	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	0.1449	0.0	0.1	0	42	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	0.1449	0.0	0.1	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
Clear & Grub - Access Rd	***Clear Brush***	**1 ton pickup truck**		5.1316	0.0	5.1	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	94 hp	5.1316	0.0	5.1	0	42	0.057	1.099	1.937	0.003	0.077	0.070	278.042	0.020	0.000	0.060	1.098	1.968	0.003	0.078	0.071	278.041	0.021	0.000
		Front end loader	210 hp	5.1316	0.0	5.1	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
		Dump truck	10cy	5.1316	0.0	5.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	5.1316	0.0	5.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	5.1316	0.0	5.1	0	42	0.058	0.528	0.384	0.002	0.004	0.003	224.564	0.005	0.000	0.061	0.528	0.385	0.002	0.004	0.003	223.246	0.006	0.000
		Front end loader	210 hp	2.3595	0.0	2.4	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	Cutting	**1 ton pickup truck**		2.925	0.0	2.9	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	4.8751	0.0	4.9	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Tractor/crawler/dozer	250 hp	4.875	0.0	4.9	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		4.8751	0.0	4.9	0	42	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	2.457	0.0	2.5	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	2.457	0.0	2.5	0	42	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	2.457	0.0	2.5	0	42	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	2.457	0.0	2.5	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	106	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Front end loader	49 hp	4	0.0	4.0	0	106	0.177	2.105	1.842	0.003	0.083	0.076	231.302	0.016	0.000	0.194	2.138	1.939	0.003	0.086	0.079	231.302	0.018	0.000
		Roller	47 hp	4	0.0	4.0	0	106	0.149	2.081	1.697	0.003	0.078	0.071	235.481	0.013	0.000	0.164	2.111	1.785	0.003	0.081	0.074	235.494	0.015	0.000
		Water truck	3000 gal	4	0.0	4.0	0	106	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	300 hp	4	0.0	4.0	0	106	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Front end loader	180 hp	4	0.0	4.0	0	106	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	106	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	106	2.544	1.647	93.480	0.004	1.249	1.246	148.934	0.144	0.124	2.544	1.646	93.479	0.004	1.248	1.246	148.931	0.144	0.124
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	106	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	106	0.057	1.075	1.282	0.002	0.075	0.069	195.357	0.012	0.000	0.061	1.085	1.315	0.002	0.077	0.071	195.356	0.013	0.000
		Crane 94'	155 hp	155	0.0	155.0	0	21	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		1 ton pickup truck		155	0.0	155.0	0	21	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	21	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	3.252	2.404	118.854	0.006	1.685	1.682	200.991	0.184	0.193	3.252	2.404	118.884	0.006	1.685	1.682	201.042	0.184	0.193
		Crane 80'	130 hp	16	0.0	16.0	0	171	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		Flatbed truck		8	0.0	8.0	0	171	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Generator	80 hp	6528	0.0	6,528.0	0	272	0.094	1.457	1.665	0.003	0.096	0.088	294.378	0.008	0.000	0.099	1.463	1.679	0.003	0.097	0.089	294.371	0.009	0.000
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	2.020	1.438	103.611	0.005	0.098	0.098	175.214	0.114	0.147
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Excavate	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Build road	**Tractor/crawler/dozer**	600 hp	338.4616	0.0	338.5	0	190	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Cut	**Tractor/crawler/dozer**	600 hp	11.2308	0.0	11.2	0	190	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	190	0.068	0.996	1.863	0.004	0.066	0.061	320.918	0.019	0.000	0.073	1.005	1.912	0.004	0.069	0.063	320.926	0.021	0.000
	Graveling	**Asphalt distributor**	3000 gal	8	0.0	8.0	0	190	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Vibratory roller	85 hp	29.2583	0.0	29.3	0	190	0.042	1.062	1.354	0.003	0.070	0.065	222.773	0.010	0.000	0.044	1.069	1.378	0.003	0.071	0.066	222.772	0.010	0.000
		Tractor/crawler/dozer	310 hp	12.489	0.0	12.5	0	190	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Armoring	**1 ton pickup truck**		4.2667	0.0	4.3	0	190	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	430 hp	4.2667	0.0	4.3	0	190	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		1 ton pickup truck		4.2667	0.0	4.3	0	190	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	192	0.048	0.548	0.617	0.004	0.004	0.004	311.994	0.013	0.000	0.052	0.553	0.633	0.004	0.004	0.004	312.019	0.015	0.000
Excavation/Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	0.0	6.8	0	41	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	430 hp	4.445	0.0	4.4	0	41	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	0.0	3.2	0	41	0.153	1.317	0.574	0.003	0.037	0.034	298.794	0.014	0.000	0.163	1.286	0.564	0.003	0.037	0.034	287.081	0.015	0.000
	Drilling	**Rotary drill**	475 hp	7.3333	0.0	7.3	0	41	0.047	0.675	0.517	0.003	0.005	0.004	282.190	0.010	0.000	0.049	0.678	0.524	0.003	0.005	0.004	282.223	0.011	0.000
		3/4 ton Pickup truck		7.3333	0.0	7.3	0	41	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	0.0	48.0	0	41	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	0.0	48.0	0	41	0.106	2.316	1.602	0.004	0.077	0.071	277.560	0.010	0.000	0.114	2.332	1.647	0.004	0.078	0.072	277.561	0.010	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	0.0	60.0	0	41	0.026	0.385	0.309	0.002	0.003	0.003	163.266	0.007	0.000	0.028	0.388	0.316	0.002	0.003	0.003	163.242	0.008	0.000
		3/4 ton Pickup truck		60.0214	0.0	60.0	0	41	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
	Landfill	**Crane 260'**	375 hp	30.0107	0.0	30.0	0	41	0.026	0.385	0.309	0.002	0.003	0.003	163.266	0.007	0.000	0.028	0.388	0.316	0.002	0.003	0.003	163.242	0.008	0.000
	FloodWall	**Crane 50'**	263 hp	1240	0.0	1,240.0	0	190	0.026	0.385	0.309	0.002	0.003	0.003	163.266	0.007	0.000	0.028	0.388	0.316	0.002	0.003	0.003	163.242	0.008	0.000
		Pile hammer driver	325 hp	1240	0.0	1,240.0	0	190	0.047	0.675	0.517	0.003	0.005	0.004	282.190	0.010	0.000	0.049	0.678	0.524	0.003	0.005	0.004	282.223	0.011	0.000
		Generator	7.5 hp	636.7029	0.0	636.7	0	190	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	2.020	1.438	103.611	0.005	0.098	0.098	175.214	0.114	0.147
		Concrete pump		394.214	0.0	394.2	0	190	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
																										Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

														GWP		1	21	310									1	21	310		
		Equipment	Equipment	Total	Hours per Year		Days per Year		Annual Emissions - 2016 (tons per year)										Metric Tons	Annual Emissions - 2017 (tons per year)										Metric Tons
Activity		Type	Size	Hours	2016	2017	2016	2017	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	11.1	36.9	52	211	6.15E-05	4.76E-05	7.35E-04	7.49E-07	6.26E-06	2.91E-06	2.49E-01	2.47E-05	1.29E-05	2.53E-01	2.30E-01	1.85E-04	1.47E-04	2.21E-03	2.49E-06	2.07E-05	9.47E-06	8.29E-01	8.24E-05	4.30E-05	8.44E-01	7.65E-01
Dust Control		Water truck	5000 gal	2320	535.4	1,784.6	52	211	4.57E-03	7.40E-02	8.21E-03	6.36E-05	1.63E-03	1.08E-03	1.27E+01	3.01E-05	2.83E-05	1.27E+01	1.15E+01	1.37E-02	2.25E-01	2.51E-02	2.12E-04	4.72E-03	2.93E-03	4.23E+01	1.00E-04	9.44E-05	4.24E+01	3.84E+01
Environmental protection measures		3/4 ton Pickup truck		1213	0.0	1,213.0	0	211	-	-	-	-	-	-	-	-	-	-	-	6.06E-03	4.82E-03	7.27E-02	8.19E-05	6.78E-04	3.11E-04	2.72E+01	2.71E-03	1.41E-03	2.77E+01	2.51E+01
Clear & Grub - Sheriff's Overlook (Staging Area)	*Cutting*	1 ton pickup truck		0.4591	0.5	0.0	52	211	1.81E-06	1.79E-06	2.43E-05	3.11E-08	2.55E-07	1.16E-07	1.03E-02	1.02E-06	5.34E-07	1.05E-02	9.52E-03	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	8.98E-06	1.22E-04	1.28E-04	7.15E-07	8.76E-07	8.06E-07	6.35E-02	2.94E-06	-	6.36E-02	5.77E-02	-	-	-	-	-	-	-	-	-	-	-
		Chain saw		0.7652	0.8	0.0	52	0	1.27E-05	8.13E-07	9.34E-05	1.04E-08	1.47E-07	1.47E-07	2.53E-04	7.87E-07	2.77E-07	3.55E-04	3.22E-04	-	-	-	-	-	-	-	-	-	-	-
	Brush Piling	Front end loader	540 hp	0.3857	0.4	0.0	52	0	1.22E-05	1.17E-04	1.25E-04	6.71E-07	9.02E-07	8.30E-07	6.68E-02	2.77E-06	-	6.68E-02	6.06E-02	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	5.76E-06	7.82E-05	5.95E-05	3.04E-07	5.62E-07	5.17E-07	3.10E-02	1.43E-06	-	3.10E-02	2.81E-02	-	-	-	-	-	-	-	-	-	-	-
	Chipping	Brush chipper	250 hp	0.3857	0.4	0.0	52	0	1.05E-05	9.61E-05	7.10E-05	4.60E-07	6.77E-07	6.23E-07	4.09E-02	9.45E-07	-	4.09E-02	3.71E-02	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	1.22E-05	1.17E-04	1.25E-04	6.71E-07	9.02E-07	8.30E-07	6.68E-02	2.77E-06	-	6.68E-02	6.06E-02	-	-	-	-	-	-	-	-	-	-	-
	Gravel	Vibratory roller	85 hp	16	16.0	0.0	52	0	6.25E-05	1.59E-03	2.03E-03	3.92E-06	1.05E-04	9.68E-05	3.34E-01	1.43E-05	-	3.34E-01	3.03E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.7481	3.7	0.0	52	0	5.59E-05	7.60E-04	5.78E-04	2.95E-06	5.46E-06	5.02E-06	3.01E-01	1.39E-05	-	3.01E-01	2.73E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	1.73E-05	2.34E-04	1.78E-04	9.11E-07	1.68E-06	1.55E-06	9.29E-02	4.30E-06	-	9.29E-02	8.43E-02	-	-	-	-	-	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	6.92E-06	1.12E-04	1.24E-05	9.62E-08	2.47E-06	1.63E-06	1.93E-02	4.56E-08	4.29E-08	1.93E-02	1.75E-02	-	-	-	-	-	-	-	-	-	-	-
	Guard Railing	Flatbed truck		8.75	8.8	0.0	52	0	8.91E-05	8.72E-05	1.26E-03	5.89E-07	4.81E-06	2.16E-06	1.96E-01	4.44E-05	2.06E-05	2.04E-01	1.85E-01	-	-	-	-	-	-	-	-	-	-	-
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.49E-04	2.58E-04	1.28E-02	6.16E-07	1.81E-04	1.81E-04	2.16E-02	1.98E-05	1.96E-05	2.81E-02	2.55E-02	-	-	-	-	-	-	-	-	-	-	-
	Demo Existing Gate	Loader/backhoe	75 hp	4.2	4.2	0.0	52	0	1.98E-05	3.73E-04	4.45E-04	7.96E-07	2.62E-05	2.41E-05	6.78E-02	4.02E-06	-	6.79E-02	6.16E-02	-	-	-	-	-	-	-	-	-	-	-
		Flatbed truck		4	4.0	0.0	52	0	4.07E-05	3.99E-05	5.76E-04	2.69E-07	2.20E-06	9.87E-07	8.98E-02	2.03E-05	9.41E-06	9.31E-02	8.45E-02	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub - Sediment Removal	*Clear Brush*	1 ton pickup truck		0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	9.93E-07	1.06E-06	1.33E-05	2.05E-08	1.66E-07	7.45E-08	6.79E-03	6.75E-07	3.52E-07	6.91E-03	6.27E-03
		Excavator	94 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	1.89E-06	3.44E-05	6.17E-05	1.02E-07	2.43E-06	2.24E-06	8.72E-03	6.66E-07	-	8.73E-03	7.92E-03
		Front end loader	210 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	4.15E-06	3.68E-05	3.81E-05	2.13E-07	2.89E-07	2.66E-07	1.89E-02	8.61E-07	-	1.89E-02	1.72E-02
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	2.33E-06	3.82E-05	4.25E-06	3.59E-08	8.01E-07	4.97E-07	7.18E-03	1.70E-08	1.60E-08	7.18E-03	6.52E-03
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	2.33E-06	3.82E-05	4.25E-06	3.59E-08	8.01E-07	4.97E-07	7.18E-03	1.70E-08	1.60E-08	7.18E-03	6.52E-03
		Brush chipper	275 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	5.62E-06	4.84E-05	3.53E-05	2.01E-07	3.44E-07	3.17E-07	2.05E-02	5.07E-07	-	2.05E-02	1.86E-02
		Front end loader	210 hp	0.1392	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.91E-06	1.69E-05	1.75E-05	9.79E-08	1.33E-07	1.22E-07	8.70E-03	3.96E-07	-	8.71E-03	7.90E-03
	Cutting	1 ton pickup truck		8.625	0.0	8.6	0	42	-	-	-	-	-	-	-	-	-	-	-	2.83E-05	3.01E-05	3.80E-04	5.85E-07	4.73E-06	2.12E-06	1.94E-01	1.92E-05	1.00E-05	1.97E-01	1.79E-01
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	3.62E-06	4.62E-05	4.97E-05	2.68E-07	3.36E-07	3.09E-07	2.39E-02	1.22E-06	-	2.39E-02	2.17E-02
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	3.62E-06	4.62E-05	4.97E-05	2.68E-07	3.36E-07	3.09E-07	2.39E-02	1.22E-06	-	2.39E-02	2.17E-02
		Chain saw		0.2875	0.0	0.3	0	42	-	-	-	-	-	-	-	-	-	-	-	5.03E-06	3.05E-07	3.51E-05	3.91E-09	5.52E-08	5.51E-08	9.49E-05	3.13E-07	1.04E-07	1.34E-04	1.21E-04
	Brush Piling	Front end loader	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	5.02E-06	4.46E-05	5.07E-05	2.66E-07	3.49E-07	3.21E-07	2.65E-02	1.21E-06	-	2.65E-02	2.40E-02
		Tractor/crawler/dozer	310 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	2.32E-06	2.96E-05	2.29E-05	1.14E-07	2.15E-07	1.98E-07	1.16E-02	5.96E-07	-	1.16E-02	1.06E-02
	Chipping	Brush chipper	250 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	4.60E-06	3.96E-05	2.95E-05	1.89E-07	2.82E-07	2.60E-07	1.68E-02	4.15E-07	-	1.68E-02	1.52E-02
		Front end loader	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	-	-	-	-	-	5.02E-06	4.46E-05	5.07E-05	2.66E-07	3.49E-07	3.21E-07	2.65E-02	1.21E-06	-	2.65E-02	2.40E-02
Clear & Grub - Access Rd	*Clear Brush*	1 ton pickup truck		5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.68E-05	1.79E-05	2.26E-04	3.48E-07	2.81E-06	1.26E-06	1.15E-01	1.14E-05	5.97E-06	1.17E-01	1.06E-01
		Excavator	94 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.20E-05	5.84E-04	1.05E-03	1.73E-06	4.13E-05	3.80E-05	1.48E-01	1.13E-05	-	1.48E-01	1.34E-01
		Front end loader	210 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	7.03E-05	6.25E-04	6.46E-04	3.61E-06	4.90E-06	4.51E-06	3.21E-01	1.46E-05	-	3.21E-01	2.91E-01
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.95E-05	6.47E-04	7.21E-05	6.08E-07	1.36E-05	8.42E-06	1.22E-01	2.88E-07	2.72E-07	1.22E-01	1.11E-01
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	3.95E-05	6.47E-04	7.21E-05	6.08E-07	1.36E-05	8.42E-06	1.22E-01	2.88E-07	2.72E-07	1.22E-01	1.11E-01
		Brush chipper	275 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	-	-	-	-	-	9.52E-05	8.21E-04	5.98E-04	3.41E-06	5.84E-06	5.37E-06	3.47E-01	8.59E-06	-	3.47E-01	3.15E-01
		Front end loader	210 hp	2.3595	0.0	2.4	0	42	-	-	-	-	-	-	-	-	-	-	-	3.23E-05	2.87E-04	2.97E-04	1.66E-06	2.25E-06	2.07E-06	1.47E-01	6.72E-06	-	1.48E-01	1.34E-01
	Cutting	1 ton pickup truck		2.925	0.0	2.9	0	42	-	-	-	-	-	-	-	-	-	-	-	9.60E-06	1.02E-05	1.29E-04	1.98E-07	1.60E-06	7.21E-07	6.56E-02	6.53E-06	3.40E-06	6.68E-02	6.06E-02
		Tractor/crawler/dozer	250 hp	4.8751	0.0	4.9	0	42	-	-	-	-	-	-	-	-	-	-	-	6.15E-05	7.83E-04	8.42E-04	4.55E-06	5.69E-06	5.23E-06	4.05E-01	2.07E-05	-	4.05E-01	3.67E-01
		Tractor/crawler/dozer	250 hp	4.875	0.0	4.9	0	42	-	-	-	-	-	-	-	-	-	-	-	6.15E-05	7.83E-04	8.42E-04	4.55E-06	5.69E-06	5.23E-06	4.05E-01	2.07E-05	-	4.05E-01	3.67E-01
		Chain saw		4.8751	0.0	4.9	0	42	-	-	-	-	-	-	-	-	-	-	-	8.53E-05	5.18E-06	5.95E-04	6.63E-08	9.37E-07	9.35E-07	1.61E-03	5.30E-06	1.77E-06	2.27E-03	2.06E-03
	Brush Piling	Front end loader	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	8.51E-05	7.56E-04	8.59E-04	4.52E-06	5.93E-06	5.45E-06	4.49E-01	2.05E-05	-	4.50E-01	4.08E-01
		Tractor/crawler/dozer	310 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	3.94E-05	5.02E-04	3.88E-04	1.94E-06	3.65E-06	3.36E-06	1.97E-01	1.01E-05	-	1.97E-01	1.79E-01
	Chipping	Brush chipper	250 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	7.80E-05	6.72E-04	5.00E-04	3.20E-06	4.78E-06	4.40E-06	2.84E-01	7.04E-06	-	2.84E-01	2.58E-01
		Front end loader	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	-	-	-	-	-	8.51E-05	7.56E-04	8.59E-04	4.52E-06	5.93E-06	5.45E-06	4.49E-01	2.05E-05	-	4.50E-01	4.08E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	0.0	2.0	0	106	-	-	-	-	-	-	-	-	-	-	-	1.82E-05	2.31E-04	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	6.12E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	4.19E-05	4.62E-04	4.19E-04	6.46E-07	1.86E-05	1.72E-05	5.00E-02	3.78E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	3.41E-05	4.38E-04	3.70E-04	6.31E-07	1.68E-05	1.54E-05	4.88E-02	3.07E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	3.08E-05	5.04E-04	5.62E-05	4.74E-07	1.06E-05	6.56E-06	9.49E-02	2.25E-07	2.12E-07	9.50E-02	8.61E-02
		Excavator	300 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	5.82E-05	6.95E-04	5.61E-04	2.75E-06	5.11E-06	4.70E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	-	-	-	-	-	4.70E-05	4.17E-04	4.31E-04	2.41E-06	3.27E-06	3.01E-06	2.14E-01	9.76E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	0.0	6.0	0	106	-	-	-	-	-	-	-	-	-	-	-	5.45E-05	6.94E-04	7.47E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.84E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	16	0.0	16.0	0	106	-	-	-	-	-	-	-	-	-	-	-	7.63E-04	4.94E-04	2.80E-02	1.13E-06	3.74E-04	3.74E-04	4.47E-02	4.31E-05	3.73E-05	5.71E-02	5.18E-02
	36" Diversion Pipe	Crane 80'	130 hp	273	0.0	273.0	0	106	-	-	-	-	-	-	-	-	-	-	-	1.51E-03	2.74E-02	4.87E-02	9.16E-05	1.68E-03	1.54E-03	8.14E+00	5.37E-04	-	8.15E+00	7.39E+00
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	106	-	-	-	-	-	-	-	-	-	-	-	4.68E-07	8.28E-06	1.00E-05	1.75E-08	5.89E-07	5.42E-07	1.49E-03	9.65E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	0.0	155.0	0	21	-	-	-	-	-	-	-	-	-	-	-	1.02E-03	1.85E-02	3.30E-02	6.20E-05	1.14E-03	1.04E-03	5.51E+00	3.64E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	0.0	155.0	0	21	-	-	-	-	-	-	-	-	-	-	-	5.09E-04	5.41E-04	6.83E-03	1.05E-05	8.50E-05	3.82E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	0.0	2.0	0	21	-	-	-	-	-	-	-	-	-	-	-	1.82E-05	2.31E-04	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	6.12E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16	0.0	16.0	0	171	-	-	-	-	-	-	-	-	-	-	-	8.87E-05	1.60E-03	2.86E-03	5.37E-06	9.83E-05	9.04E-05	4.77E-01	3.15E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	6.87E-05	6.95E-05	9.63E-04	5.38E-07	4.33E-06	1.91E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	6528	0.0	6.528.0	0	272	-	-	-	-	-	-	-	-	-	-	-	5.71E-02	8.42E-01	9.67E-01	1.99E-03	5.60E-02	5.15E-02	1.69E+02	5.15E-03	-	1.70E+02	1.54E+02
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	-	-	-	-	-	-	-	-	-	-	-	2.65E-05	1.89E-05	1.36E-03	6.56E-08	1.28E-06	1.28E-06	2.30E-03	1.50E-06	1.93E-06	2.93E-03	2.66E-03
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	120.7692	120.8	0.0	52	0	3.44E-03	4.68E-02	4.32E-02	2.26E-04	3.36E-04	3.09E-04	2.25E+01	1.04E-03	-	2.25E+01	2.04E+01	-	-	-	-	-	-	-	-	-	-	-
	Excavate	Tractor/crawler/dozer	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	-	-	-	-	-	9.65E-03	1.23E-01	1.11E-01	5.67E-04	8.94E-04	8.22E-04	5.64E+01	2.89E-03	-	5.65E+01	5.13E+01
	Push	Tractor/crawler/dozer	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	-	-	-	-	-	9.65E-03	1.23E-01	1.11E-01	5.67E-04	8.94E-04	8.22E-04	5.64E+01	2.89E-03	-	5.65E+01	5.13E+01
	Push	Tractor/crawler/dozer	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	-	-	-	-	-	9.65E-03	1.23E-01	1.11E-01	5.67E-04	8.94E-04	8.22E-04	5.64E+01	2.89E-03	-	5.65E+01	5.13E+01
	Build road	Tractor/crawler/dozer	600 hp	338.4616	0.0	338.5	0	190	-	-	-	-	-	-	-	-	-	-	-	1.04E-02	1.32E-01	1.19E-01	6.09E-04	9.59E-04	8.82E-04	6.06E+01	3.10E-03	-	6.06E+01	5.50E+01
	Cut	Tractor/crawler/dozer	600 hp	11.2308	0.0	11.2	0	190	-	-	-	-	-	-	-	-	-	-	-	3.44E-04	4.38E-03	3.95E-03	2.02E-05	3.18E-05	2.93E-05	2.01E+00	1.03E-04	-	2.01E+00	1.83E+00
	Fine Grading	Grader	135 hp	8.889	0.0	8.9	0	190	-	-	-	-	-	-	-	-	-	-	-	9.67E-05	1.33E-03	2.53E-03	4.78E-06	9.09E-05	8.37E-05	4.25E-01	2.76E-05	-	4.25E-01	3.86E-01
	Graveling	Asphalt distributor	3000 gal	8	0.0	8.0	0	190	-	-	-	-	-	-	-	-	-	-	-	6.15E-05	1.01E-03	1.12E-04	9.49E-07	2.12E-05	1.31E-05	1.90E-01	4.50E-07	4.23E-07	1.90E-01	1.72E-01
		Vibratory roller	85 hp	29.2583	0.0	29.3	0	190	-	-	-	-	-	-	-	-	-	-	-	1.21E-04	2.93E-03	3.78E-03	7.16E-06	1.95E-04	1.80E-04	6.11E-01	2.84E-05	-	6.11E-01	5.55E-01
		Tractor/crawler/dozer	310 hp	12.489	0.0	12.5	0	190	-	-	-	-	-	-	-	-	-	-	-	2.00E-04	2.55E-03	1.97E-03	9.84E-06	1.85E-05	1.71E-05	1.00E+00	5.14E-05	-	1.00E+00	9.11E-01
	Armoring	1 ton pickup truck		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	-	-	-	-	-	1.40E-05	1.49E-05	1.88E-04	2.89E-07	2.34E-06	1.05E-06	9.58E-02	9.52E-06	4.97E-06	9.75E-02	8.85E-02
		Excavator	430 hp	4.2667	0.0	4.3	0	190	-	-	-	-	-	-	-	-	-	-	-	8.89E-05	1.06E-03	8.58E-04	4.21E-06	7.82E-06	7.19E-06	4.28E-01	2.37E-05	-	4.29E-01	3.89E-01
		1 ton pickup truck		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	-	-	-	-	-	1.40E-05	1.49E-05	1.88E-04	2.89E-07	2.34E-06	1.05E-06	9.58E-02	9.52E-06	4.97E-06	9.75E-02	8.85E-02
	Maintenance	Grader	215 hp	340	0.0	340.0	0	192	-	-	-	-	-	-	-	-	-	-	-	4.21E-03	4.46E-02	5.10E-02	2.83E-04	3.36E-04	3.09E-04	2.51E+01	1.18E-03	-	2.52E+01	2.28E+01
Excavation/Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	0.0	6.8	0	41	-	-	-	-	-	-	-	-	-	-	-	5.21E-05	8.55E-04	9.52E-05	8.04E-07	1.80E-05	1.11E-05	1.61E-01	3.81E-07	3.59E-07	1.61E-01	1.46E-01
		Excavator	430 hp	4.445	0.0	4.4	0	41	-	-	-	-	-	-	-	-	-	-	-	9.26E-05	1.11E-03	8.94E-04	4.38E-06	8.14E-06	7.49E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	0.0	3.2	0	41	-	-	-	-	-	-	-	-	-	-	-	4.94E-04	3.89E-03	1.71E-03	8.74E-06	1.14E-04	1.04E-04	8.70E-01	4.46E-05	-	8.70E-01	7.90E-01
	Drilling	Rotary drill	475 hp	7.3333	0.0	7.3	0	41	-	-	-	-	-	-	-	-	-	-	-	1.88E-04	2.60E-03	2.01E-03	1.06E-05	1.86E-05	1.72E-05	1.08E+00	4.25E-05	-	1.08E+00	9.84E-01
		3/4 ton Pickup truck		7.3333	0.0	7.3	0	41	-	-	-	-	-	-	-	-	-	-	-	3.67E-05	2.91E-05	4.40E-04	4.95E-07	4.10E-06	1.88E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	0.0	48.0	0	41	-	-	-	-	-	-	-	-	-	-	-	2.40E-04	1.91E-04	2.88E-03	3.24E-06	2.68E-05	1.23E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	0.0	48.0	0	41	-	-	-	-	-	-	-	-	-	-	-	3.02E-04	6.17E-03	4.36E-03	9.49E-06	2.07E-04	1.91E-04	7.34E-01	2.73E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	0.0	60.0	0	41	-	-	-	-	-	-	-	-	-	-	-	6.85E-04	9.62E-03	7.83E-03	3.98E-05	6.87E-05	6.32E-05	4.05E+00	1.93E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	0.0	60.0	0	41	-	-	-	-	-	-	-	-	-	-	-	3.00E-04	2.39E-04	3.60E-03	4.06E-06	3.36E-05	1.54E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Landfill	Crane 260'	375 hp	30.0107	0.0	30.0	0	41	-	-	-	-	-	-	-	-	-	-	-	3.42E-04	4.81E-03	3.92E-03	1.99E-05	3.44E-05	3.16E-05	2.03E+00	9.66E-05	-	2.03E+00	1.84E+00
	FloodWall	Crane 50'	263 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	-	-	-	-	-	9.92E-03	1.39E-01	1.13E-01	5.76E-04	9.96E-04	9.16E-04	5.87E+01	2.80E-03	-	5.87E+01	5.33E+01
		Pile hammer driver	325 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	-	-	-	-	-	2.18E-02	3.01E-01	2.33E-01	1.23E-03	2.16E-03	1.98E-03	1.25E+02	4.92E-03	-	1.25E+02	1.14E+02
		Generator	7.5 hp	636.7029	0.0	636.7	0	190	-	-	-	-	-	-	-	-	-	-	-	1.06E-02	7.57E-03	5.45E-01	2.63E-05	5.15E-04	5.14E-04	9.22E-01	6.01E-04	7.73E-04	1.17E+00	1.07E+00
		Concrete pump		394.214	0.0	394.2	0	190	-	-	-	-	-	-	-	-	-	-	-	3.03E-03	4.97E-02	5.54E-03	4.67E-05	1.04E-03	6.47E-04	9.35E+00	2.22E-05	2.09E-05	9.36E+00	8.49E+00
									8.78E-03	**1.25E-01**	**7.06E-02**	**3.03E-04**	**2.31E-03**	**1.71E-03**	**3.69E+01**	**1.23E-03**	**9.17E-05**	**3.69E+01**	**3.35E+01**	**1.75E-01**	**2.22E+00**	**2.66E+00**	**7.13E-03**	**7.47E-02**	**6.67E-02**	**7.29E+02**	**3.19E-02**	**2.77E-03**	**7.31E+02**	**6.63E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	11.1	36.9	52	211	4.73E-03	3.66E-03	5.65E-02	5.76E-05	4.82E-04	2.24E-04	3.50E-03	2.78E-03	4.20E-02	4.73E-05	3.91E-04	1.80E-04
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	211	3.52E-01	5.69E+00	6.31E-01	4.89E-03	1.26E-01	8.29E-02	2.60E-01	4.27E+00	4.75E-01	4.01E-03	8.96E-02	5.55E-02
Environmental protection measures		**3/4 ton Pickup truck**		1213	0.0	1,213.0	0	211	-	-	-	-	-	-	1.15E-01	9.14E-02	1.38E+00	1.55E-03	1.29E-02	5.90E-03
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	211	1.39E-04	1.38E-04	1.87E-03	2.40E-06	1.96E-05	8.94E-06	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	6.90E-04	9.38E-03	9.88E-03	5.50E-05	6.74E-05	6.20E-05	-	-	-	-	-	-
		Chain saw		0.7652	0.8	0.0	52	0	9.73E-04	6.25E-05	7.19E-03	8.00E-07	1.13E-05	1.13E-05	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	9.38E-04	9.01E-03	9.64E-03	5.17E-05	6.94E-05	6.38E-05	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	4.43E-04	6.01E-03	4.58E-03	2.34E-05	4.32E-05	3.98E-05	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	8.06E-04	7.39E-03	5.46E-03	3.54E-05	5.21E-05	4.79E-05	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	9.38E-04	9.01E-03	9.64E-03	5.17E-05	6.94E-05	6.38E-05	-	-	-	-	-	-
	Gravel	**Vibratory roller**	85 hp	16	16.0	0.0	52	0	4.81E-03	1.22E-01	1.56E-01	3.01E-04	8.09E-03	7.44E-03	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.7481	3.7	0.0	52	0	4.30E-03	5.84E-02	4.45E-02	2.27E-04	4.20E-04	3.86E-04	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	1.33E-03	1.80E-02	1.37E-02	7.01E-05	1.30E-04	1.19E-04	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	5.32E-04	8.61E-03	9.56E-04	7.40E-06	1.90E-04	1.25E-04	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	6.85E-03	6.71E-03	9.70E-02	4.53E-05	3.70E-04	1.66E-04	-	-	-	-	-	-
		Auger drill	10 hp	8.75	8.8	0.0	52	0	2.69E-02	1.99E-02	9.82E-01	4.74E-05	1.39E-02	1.39E-02	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	1.52E-03	2.87E-02	3.43E-02	6.12E-05	2.01E-03	1.85E-03	-	-	-	-	-	-
		Flatbed truck		4	4.0	0.0	52	0	3.13E-03	3.07E-03	4.43E-02	2.07E-05	1.69E-04	7.59E-05	-	-	-	-	-	-
Clear & Grub - Sediment Removal	***Clear Brush***	**1 ton pickup truck**		0.3026	0.0	0.3	0	42	-	-	-	-	-	-	9.46E-05	1.01E-04	1.27E-03	1.95E-06	1.58E-05	7.10E-06
		Excavator	94 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	1.80E-04	3.28E-03	5.88E-03	9.74E-06	2.32E-04	2.13E-04
		Front end loader	210 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	3.95E-04	3.51E-03	3.63E-03	2.03E-05	2.75E-05	2.53E-05
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	2.22E-04	3.63E-03	4.05E-04	3.42E-06	7.63E-05	4.73E-05
		Dump truck	10cy	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	2.22E-04	3.63E-03	4.05E-04	3.42E-06	7.63E-05	4.73E-05
		Brush chipper	275 hp	0.3026	0.0	0.3	0	42	-	-	-	-	-	-	5.35E-04	4.61E-03	3.36E-03	1.91E-05	3.28E-05	3.02E-05
		Front end loader	210 hp	0.1392	0.0	0.1	0	42	-	-	-	-	-	-	1.82E-04	1.61E-03	1.67E-03	9.32E-06	1.27E-05	1.16E-05
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	-	-	-	-	-	-	2.70E-03	2.87E-03	3.62E-02	5.57E-05	4.50E-04	2.02E-04
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	3.45E-04	4.40E-03	4.73E-03	2.56E-05	3.20E-05	2.94E-05
		Tractor/crawler/dozer	250 hp	0.2875	0.0	0.3	0	42	-	-	-	-	-	-	3.45E-04	4.40E-03	4.73E-03	2.56E-05	3.20E-05	2.94E-05
		Chain saw		0.2875	0.0	0.3	0	42	-	-	-	-	-	-	4.79E-04	2.91E-05	3.34E-03	3.72E-07	5.29E-06	5.25E-06
	Brush Piling	**Front end loader**	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	4.78E-04	4.24E-03	4.83E-03	2.54E-05	3.33E-05	3.06E-05
		Tractor/crawler/dozer	310 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	2.21E-04	2.82E-03	2.18E-03	1.09E-05	2.05E-05	1.89E-05
	Chipping	**Brush chipper**	250 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	4.38E-04	3.77E-03	2.81E-03	1.80E-05	2.69E-05	2.47E-05
		Front end loader	540 hp	0.1449	0.0	0.1	0	42	-	-	-	-	-	-	4.78E-04	4.24E-03	4.83E-03	2.54E-05	3.33E-05	3.06E-05
Clear & Grub - Access Rd	***Clear Brush***	**1 ton pickup truck**		5.1316	0.0	5.1	0	42	-	-	-	-	-	-	1.60E-03	1.71E-03	2.15E-02	3.31E-05	2.68E-04	1.20E-04
		Excavator	94 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	3.05E-03	5.56E-02	9.96E-02	1.65E-04	3.93E-03	3.62E-03
		Front end loader	210 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	6.70E-03	5.95E-02	6.15E-02	3.44E-04	4.66E-04	4.29E-04
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	3.76E-03	6.16E-02	6.86E-03	5.79E-05	1.29E-03	8.02E-04
		Dump truck	10cy	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	3.76E-03	6.16E-02	6.86E-03	5.79E-05	1.29E-03	8.02E-04
		Brush chipper	275 hp	5.1316	0.0	5.1	0	42	-	-	-	-	-	-	9.07E-03	7.82E-02	5.70E-02	3.25E-04	5.56E-04	5.12E-04
		Front end loader	210 hp	2.3595	0.0	2.4	0	42	-	-	-	-	-	-	3.08E-03	2.74E-02	2.83E-02	1.58E-04	2.14E-04	1.97E-04
	Cutting	**1 ton pickup truck**		2.925	0.0	2.9	0	42	-	-	-	-	-	-	9.14E-04	9.73E-04	1.23E-02	1.89E-05	1.53E-04	6.86E-05
		Tractor/crawler/dozer	250 hp	4.8751	0.0	4.9	0	42	-	-	-	-	-	-	5.85E-03	7.45E-02	8.02E-02	4.34E-04	5.42E-04	4.98E-04
		Tractor/crawler/dozer	250 hp	4.875	0.0	4.9	0	42	-	-	-	-	-	-	5.85E-03	7.45E-02	8.02E-02	4.34E-04	5.42E-04	4.98E-04
		Chain saw		4.8751	0.0	4.9	0	42	-	-	-	-	-	-	8.12E-03	4.93E-04	5.67E-02	6.31E-06	8.92E-05	8.90E-05
	Brush Piling	**Front end loader**	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	8.10E-03	7.20E-02	8.18E-02	4.30E-04	5.64E-04	5.19E-04
		Tractor/crawler/dozer	310 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	3.75E-03	4.78E-02	3.69E-02	1.84E-04	3.48E-04	3.20E-04
	Chipping	**Brush chipper**	250 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	7.43E-03	6.40E-02	4.76E-02	3.05E-04	4.56E-04	4.19E-04
		Front end loader	540 hp	2.457	0.0	2.5	0	42	-	-	-	-	-	-	8.10E-03	7.20E-02	8.18E-02	4.30E-04	5.64E-04	5.19E-04
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	106	-	-	-	-	-	-	6.85E-04	8.72E-03	9.39E-03	5.07E-05	6.34E-05	5.83E-05
		Front end loader	49 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	1.58E-03	1.74E-02	1.58E-02	2.44E-05	7.04E-04	6.47E-04
		Roller	47 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	1.29E-03	1.65E-02	1.40E-02	2.38E-05	6.32E-04	5.82E-04
		Water truck	3000 gal	4	0.0	4.0	0	106	-	-	-	-	-	-	1.16E-03	1.90E-02	2.12E-03	1.79E-05	4.00E-04	2.48E-04
		Excavator	300 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	2.19E-03	2.62E-02	2.12E-02	1.04E-04	1.93E-04	1.78E-04
		Front end loader	180 hp	4	0.0	4.0	0	106	-	-	-	-	-	-	1.77E-03	1.57E-02	1.63E-02	9.10E-05	1.23E-04	1.14E-04
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	106	-	-	-	-	-	-	2.06E-03	2.62E-02	2.82E-02	1.52E-04	1.90E-04	1.75E-04
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	106	-	-	-	-	-	-	2.88E-02	1.86E-02	1.06E+00	4.27E-05	1.41E-02	1.41E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	106	-	-	-	-	-	-	5.71E-02	1.03E+00	1.84E+00	3.46E-03	6.33E-02	5.82E-02
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	106	-	-	-	-	-	-	1.77E-05	3.12E-04	3.79E-04	6.60E-07	2.22E-05	2.05E-05
		Crane 94'	155 hp	155	0.0	155.0	0	21	-	-	-	-	-	-	1.95E-01	3.53E+00	6.28E+00	1.18E-02	2.16E-01	1.99E-01
		1 ton pickup truck		155	0.0	155.0	0	21	-	-	-	-	-	-	9.69E-02	1.03E-01	1.30E+00	2.00E-03	1.62E-02	7.27E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	21	-	-	-	-	-	-	3.46E-03	4.40E-02	4.74E-02	2.56E-04	3.20E-04	2.94E-04
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	8.72E-03	6.45E-03	3.19E-01	1.54E-05	4.52E-03	4.51E-03
		Crane 80'	130 hp	16	0.0	16.0	0	171	-	-	-	-	-	-	2.07E-03	3.75E-02	6.68E-02	1.26E-04	2.30E-03	2.12E-03
		Flatbed truck		8	0.0	8.0	0	171	-	-	-	-	-	-	1.61E-03	1.62E-03	2.25E-02	1.26E-05	1.01E-04	4.47E-05
		Generator	80 hp	6528	0.0	6,528.0	0	272	-	-	-	-	-	-	8.39E-01	1.24E+01	1.42E+01	2.92E-02	8.23E-01	7.57E-01
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	-	-	-	-	-	-	6.20E-04	4.41E-04	3.18E-02	1.53E-06	3.01E-05	3.00E-05
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	2.65E-01	3.60E+00	3.32E+00	1.74E-02	2.59E-02	2.38E-02	-	-	-	-	-	-
	Excavate	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	2.03E-01	2.59E+00	2.34E+00	1.19E-02	1.88E-02	1.73E-02
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	2.03E-01	2.59E+00	2.34E+00	1.19E-02	1.88E-02	1.73E-02
	Push	**Tractor/crawler/dozer**	600 hp	315.3846	0.0	315.4	0	190	-	-	-	-	-	-	2.03E-01	2.59E+00	2.34E+00	1.19E-02	1.88E-02	1.73E-02
	Build road	**Tractor/crawler/dozer**	600 hp	338.4616	0.0	338.5	0	190	-	-	-	-	-	-	2.18E-01	2.78E+00	2.51E+00	1.28E-02	2.02E-02	1.86E-02
	Cut	**Tractor/crawler/dozer**	600 hp	11.2308	0.0	11.2	0	190	-	-	-	-	-	-	7.24E-03	9.22E-02	8.32E-02	4.25E-04	6.70E-04	6.16E-04
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	190	-	-	-	-	-	-	2.04E-03	2.80E-02	5.33E-02	1.01E-04	1.91E-03	1.76E-03
	Graveling	**Asphalt distributor**	3000 gal	8	0.0	8.0	0	190	-	-	-	-	-	-	1.30E-03	2.12E-02	2.36E-03	2.00E-05	4.46E-04	2.76E-04
		Vibratory roller	85 hp	29.2583	0.0	29.3	0	190	-	-	-	-	-	-	2.54E-03	6.17E-02	7.95E-02	1.51E-04	4.11E-03	3.78E-03
		Tractor/crawler/dozer	310 hp	12.489	0.0	12.5	0	190	-	-	-	-	-	-	4.22E-03	5.37E-02	4.15E-02	2.07E-04	3.90E-04	3.59E-04
	Armoring	**1 ton pickup truck**		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	2.95E-04	3.14E-04	3.96E-03	6.09E-06	4.93E-05	2.21E-05
		Excavator	430 hp	4.2667	0.0	4.3	0	190	-	-	-	-	-	-	1.87E-03	2.24E-02	1.81E-02	8.85E-05	1.65E-04	1.51E-04
		1 ton pickup truck		4.2667	0.0	4.3	0	190	-	-	-	-	-	-	2.95E-04	3.14E-04	3.96E-03	6.09E-06	4.93E-05	2.21E-05
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	192	-	-	-	-	-	-	8.76E-02	9.28E-01	1.06E+00	5.89E-03	7.00E-03	6.44E-03
Excavation/Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	0.0	6.8	0	41	-	-	-	-	-	-	5.09E-03	8.34E-02	9.29E-03	7.84E-05	1.75E-03	1.09E-03
		Excavator	430 hp	4.445	0.0	4.4	0	41	-	-	-	-	-	-	9.04E-03	1.08E-01	8.72E-02	4.27E-04	7.95E-04	7.31E-04
		Tractor/crawler/dozer	850 hp	3.2327	0.0	3.2	0	41	-	-	-	-	-	-	4.82E-02	3.80E-01	1.67E-01	8.53E-04	1.11E-02	1.02E-02
	Drilling	**Rotary drill**	475 hp	7.3333	0.0	7.3	0	41	-	-	-	-	-	-	1.83E-02	2.54E-01	1.96E-01	1.04E-03	1.82E-03	1.67E-03
		3/4 ton Pickup truck		7.3333	0.0	7.3	0	41	-	-	-	-	-	-	3.58E-03	2.84E-03	4.29E-02	4.83E-05	4.00E-04	1.84E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	0.0	48.0	0	41	-	-	-	-	-	-	2.34E-02	1.86E-02	2.81E-01	3.16E-04	2.62E-03	1.20E-03
		Diamond cutting saw	50 hp	48	0.0	48.0	0	41	-	-	-	-	-	-	2.95E-02	6.02E-01	4.25E-01	9.26E-04	2.02E-02	1.86E-02
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	0.0	60.0	0	41	-	-	-	-	-	-	6.68E-02	9.39E-01	7.64E-01	3.88E-03	6.71E-03	6.17E-03
		3/4 ton Pickup truck		60.0214	0.0	60.0	0	41	-	-	-	-	-	-	2.93E-02	2.33E-02	3.51E-01	3.96E-04	3.28E-03	1.50E-03
	Landfill	**Crane 260'**	375 hp	30.0107	0.0	30.0	0	41	-	-	-	-	-	-	3.34E-02	4.69E-01	3.82E-01	1.94E-03	3.35E-03	3.09E-03
	FloodWall	**Crane 50'**	263 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	2.09E-01	2.93E+00	2.39E+00	1.21E-02	2.10E-02	1.93E-02
		Pile hammer driver	325 hp	1240	0.0	1,240.0	0	190	-	-	-	-	-	-	4.58E-01	6.34E+00	4.90E+00	2.59E-02	4.54E-02	4.18E-02
		Generator	7.5 hp	636.7029	0.0	636.7	0	190	-	-	-	-	-	-	2.24E-01	1.59E-01	1.15E+01	5.54E-04	1.09E-02	1.08E-02
		Concrete pump		394.214	0.0	394.2	0	190	-	-	-	-	-	-	6.38E-02	1.05E+00	1.17E-01	9.84E-04	2.20E-02	1.36E-02
									6.76E-01	**9.60E+00**	**5.43E+00**	**2.33E-02**	**1.78E-01**	**1.31E-01**	**3.87E+00**	**4.76E+01**	**6.05E+01**	**1.62E-01**	**1.50E+00**	**1.33E+00**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2016
Birthday of Martin Luther King, Jr.	1/18/2016
Washington's Birthday	2/15/2016
Memorial Day	5/30/2016
Independence Day	7/4/2016
Labor Day	9/5/2016
Columbus Day	10/10/2016
Veterans Day	11/11/2016
Thanksgiving Day	11/24/2016
Christmas Day	12/26/2016
New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/11/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
20	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2016
http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2017

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 2

Construction Start Year	2019	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	1696	209	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
		Chain saw		1.7209	19	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.125	0.962	0.724	0.005	0.007	0.006	402.522	0.011	0.000
		Front end loader	540 hp	0.8673	19	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
		Front end loader	49 hp	4	19	0.224	2.197	2.112	0.003	0.093	0.085	231.302	0.020	0.000
		Roller	47 hp	4	19	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000
		Water truck	3000 gal	4	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	300 hp	4	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Front end loader	180 hp	4	19	0.068	0.534	0.569	0.003	0.004	0.004	270.062	0.014	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
		Loader/backhoe	75 hp	0.0923	19	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
		Crane 94'	155 hp	155	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Crane 94'	155 hp	155	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	21	3.249	2.402	118.759	0.006	1.684	1.680	200.831	0.184	0.193
		Crane 80'	130 hp	16	21	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		Flatbed truck		8	21	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
		Generator	80 hp	5856	244	0.110	1.476	1.708	0.003	0.100	0.092	294.378	0.010	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Armoring	1 ton pickup truck		1.0667	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Excavator	430 hp	1.0667	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		1 ton pickup truck		1.0667	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Maintenance	Grader	215 hp	144	209	0.060	0.562	0.664	0.004	0.004	0.004	311.990	0.017	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	430 hp	4.445	22	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.194	1.437	0.634	0.003	0.043	0.039	316.617	0.018	0.000
	Drilling	Rotary drill	475 hp	7.3333	128	0.052	0.685	0.532	0.003	0.005	0.005	281.905	0.012	0.000
		3/4 ton Pickup truck		7.3333	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	128	0.130	2.363	1.738	0.004	0.082	0.075	277.553	0.012	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
		3/4 ton Pickup truck		60.0214	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Water truck	3000 gal	507	128	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 2

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2019 (tons per year)									Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
											GWP	1	21	310		
Construction Survey		3/4 ton pickup truck		48	209	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	209	1.28E-02	1.80E-01	2.37E-02	2.00E-04	4.17E-03	2.48E-03	4.01E+01	9.53E-05	8.97E-05	4.01E+01	3.64E+01
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	209	2.74E-03	2.37E-03	3.33E-02	4.75E-05	3.88E-04	1.74E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
	Fish relocation	3/4 ton pickup truck		16	19	6.19E-05	5.34E-05	7.52E-04	1.07E-06	8.76E-06	3.93E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	2.24E-06	2.87E-06	3.03E-05	6.94E-08	5.52E-07	2.42E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	2.45E-05	2.80E-04	3.04E-04	1.61E-06	2.08E-06	1.91E-06	1.43E-01	7.90E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	3.34E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.08E-06	6.24E-07	8.05E-04	7.30E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	3.50E-05	2.73E-04	3.17E-04	1.60E-06	2.21E-06	2.03E-06	1.60E-01	8.50E-06	-	1.60E-01	1.45E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.56E-05	1.78E-04	1.39E-04	6.84E-07	1.32E-06	1.22E-06	6.96E-02	3.85E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.98E-05	2.30E-04	1.73E-04	1.08E-06	1.67E-06	1.54E-06	9.62E-02	2.69E-06	-	9.63E-02	8.73E-02
		Front end loader	540 hp	0.8673	19	3.50E-05	2.73E-04	3.17E-04	1.60E-06	2.21E-06	2.03E-06	1.60E-01	8.50E-06	-	1.60E-01	1.45E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.05E-05	2.34E-04	2.55E-04	1.34E-06	1.74E-06	1.60E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.84E-05	4.75E-04	4.56E-04	6.46E-07	2.00E-05	1.84E-05	5.00E-02	4.37E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	4.02E-05	4.50E-04	4.05E-04	6.31E-07	1.80E-05	1.66E-05	4.88E-02	3.63E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	3.02E-05	4.25E-04	5.58E-05	4.72E-07	9.82E-06	5.86E-06	9.46E-02	2.25E-07	2.12E-07	9.47E-02	8.59E-02
		Excavator	300 hp	4	19	6.57E-05	7.06E-04	5.61E-04	2.75E-06	5.30E-06	4.88E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	5.42E-05	4.23E-04	4.52E-04	2.41E-06	3.43E-06	3.16E-06	2.14E-01	1.14E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	6.16E-05	7.03E-04	7.64E-04	4.03E-06	5.21E-06	4.80E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	5.28E-07	8.42E-06	1.05E-05	1.75E-08	6.15E-07	5.66E-07	1.49E-03	1.11E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.15E-03	1.88E-02	3.45E-02	6.20E-05	1.20E-03	1.10E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	1.15E-03	1.88E-02	3.45E-02	6.20E-05	1.20E-03	1.10E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	2.05E-05	2.34E-04	2.55E-04	1.34E-06	1.74E-06	1.60E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	21	3.72E-04	2.75E-04	1.36E-02	6.56E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	21	9.96E-05	1.62E-03	2.99E-03	5.37E-06	1.03E-04	9.52E-05	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	21	4.87E-05	5.25E-05	6.75E-04	5.33E-07	4.22E-06	1.82E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.66E-02	7.62E-01	8.82E-01	1.78E-03	5.15E-02	4.74E-02	1.52E+02	5.11E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	2.75E-03	3.14E-02	3.12E-02	1.56E-04	2.33E-04	2.14E-04	1.56E+01	8.61E-04	-	1.56E+01	1.41E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.75E-03	3.14E-02	3.12E-02	1.56E-04	2.33E-04	2.14E-04	1.56E+01	8.61E-04	-	1.56E+01	1.41E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	2.75E-03	3.14E-02	3.12E-02	1.56E-04	2.33E-04	2.14E-04	1.56E+01	8.61E-04	-	1.56E+01	1.41E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.75E-03	3.14E-02	3.12E-02	1.56E-04	2.33E-04	2.14E-04	1.56E+01	8.61E-04	-	1.56E+01	1.41E+01
	Armoring	1 ton pickup truck		1.0667	19	2.31E-06	2.97E-06	3.13E-05	7.17E-08	5.71E-07	2.50E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	2.51E-05	2.70E-04	2.15E-04	1.05E-06	2.03E-06	1.86E-06	1.07E-01	5.92E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	2.31E-06	2.97E-06	3.13E-05	7.17E-08	5.71E-07	2.50E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	209	2.04E-03	1.92E-02	2.27E-02	1.20E-04	1.48E-04	1.37E-04	1.06E+01	5.85E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	5.12E-05	7.21E-04	9.47E-05	7.99E-07	1.67E-05	9.93E-06	1.60E-01	3.81E-07	3.59E-07	1.60E-01	1.46E-01
		Excavator	430 hp	4.445	22	1.05E-04	1.12E-03	8.94E-04	4.38E-06	8.44E-06	7.77E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	5.88E-04	4.35E-03	1.92E-03	9.64E-06	1.29E-04	1.19E-04	9.59E-01	5.30E-05	-	9.60E-01	8.71E-01
	Drilling	Rotary drill	475 hp	7.3333	128	2.01E-04	2.63E-03	2.04E-03	1.06E-05	1.90E-05	1.75E-05	1.08E+00	4.63E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	128	2.84E-05	2.45E-05	3.44E-04	4.92E-07	4.01E-06	1.80E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	128	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	128	3.45E-04	6.25E-03	4.60E-03	9.49E-06	2.16E-04	1.99E-04	7.34E-01	3.11E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	128	7.71E-04	9.73E-03	8.11E-03	3.97E-05	7.09E-05	6.52E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	128	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
		Water truck	3000 gal	507	128	3.83E-03	5.39E-02	7.08E-03	5.98E-05	1.25E-03	7.43E-04	1.20E+01	2.85E-05	2.68E-05	1.20E+01	1.09E+01
	Landfill	Crane 260'	375 hp	30.0107	128	3.86E-04	4.87E-03	4.06E-03	1.99E-05	3.54E-05	3.26E-05	2.02E+00	1.12E-04	-	2.03E+00	1.84E+00
						9.62E-02	**1.22E+00**	**1.22E+00**	**3.12E-03**	**6.19E-02**	**5.49E-02**	**3.27E+02**	**1.35E-02**	**1.56E-03**	**3.28E+02**	**2.97E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 2

Construction Start Year	2019	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	209	3.55E-03	3.07E-03	4.32E-02	6.16E-05	5.03E-04	2.26E-04
Dust Control		Water truck	5000 gal	1696	209	2.45E-01	3.45E+00	4.53E-01	3.83E-03	7.97E-02	4.75E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	209	5.25E-02	4.53E-02	6.37E-01	9.10E-04	7.43E-03	3.33E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.30E-02	1.12E-02	1.58E-01	2.26E-04	1.84E-03	8.27E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	4.71E-04	6.04E-04	6.38E-03	1.46E-05	1.16E-04	5.09E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	5.16E-03	5.89E-02	6.41E-02	3.38E-04	4.37E-04	4.02E-04
		Chain saw		1.7209	19	7.03E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	7.36E-03	5.75E-02	6.67E-02	3.38E-04	4.65E-04	4.28E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	3.29E-03	3.75E-02	2.94E-02	1.44E-04	2.79E-04	2.56E-04
	Chipping	Brush chipper	250 hp	0.8673	19	6.28E-03	4.84E-02	3.64E-02	2.28E-04	3.51E-04	3.23E-04
		Front end loader	540 hp	0.8673	19	7.36E-03	5.75E-02	6.67E-02	3.38E-04	4.65E-04	4.28E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	4.32E-03	4.93E-02	5.36E-02	2.83E-04	3.66E-04	3.37E-04
		Front end loader	49 hp	4	19	1.02E-02	9.99E-02	9.61E-02	1.36E-04	4.22E-03	3.88E-03
		Roller	47 hp	4	19	8.46E-03	9.46E-02	8.52E-02	1.33E-04	3.80E-03	3.50E-03
		Water truck	3000 gal	4	19	6.36E-03	8.95E-02	1.18E-02	9.93E-05	2.07E-03	1.23E-03
		Excavator	300 hp	4	19	1.38E-02	1.49E-01	1.18E-01	5.79E-04	1.12E-03	1.03E-03
		Front end loader	180 hp	4	19	1.14E-02	8.92E-02	9.51E-02	5.08E-04	7.22E-04	6.64E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	1.30E-02	1.48E-01	1.61E-01	8.49E-04	1.10E-03	1.01E-03
		Loader/backhoe	75 hp	0.0923	19	1.11E-04	1.77E-03	2.21E-03	3.68E-06	1.29E-04	1.19E-04
		Crane 94'	155 hp	155	19	2.42E-01	3.95E+00	7.26E+00	1.31E-02	2.52E-01	2.32E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
		Crane 94'	155 hp	155	19	2.42E-01	3.95E+00	7.26E+00	1.31E-02	2.52E-01	2.32E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	4.32E-03	4.93E-02	5.36E-02	2.83E-04	3.66E-04	3.37E-04
	Dewatering	Concrete saw	13 hp	8	21	7.09E-02	5.24E-02	2.59E+00	1.25E-04	3.68E-02	3.67E-02
		Crane 80'	130 hp	16	21	1.90E-02	3.09E-01	5.69E-01	1.02E-03	1.97E-02	1.81E-02
		Flatbed truck		8	21	9.27E-03	1.00E-02	1.29E-01	1.01E-04	8.04E-04	3.47E-04
		Generator	80 hp	5856	244	9.29E-01	1.25E+01	1.45E+01	2.92E-02	8.45E-01	7.77E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	5.79E-01	6.60E+00	6.56E+00	3.29E-02	4.90E-02	4.51E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	5.79E-01	6.60E+00	6.56E+00	3.29E-02	4.90E-02	4.51E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	5.79E-01	6.60E+00	6.56E+00	3.29E-02	4.90E-02	4.51E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	5.79E-01	6.60E+00	6.56E+00	3.29E-02	4.90E-02	4.51E-02
	Armoring	1 ton pickup truck		1.0667	19	4.87E-04	6.24E-04	6.59E-03	1.51E-05	1.20E-04	5.26E-05
		Excavator	430 hp	1.0667	19	5.29E-03	5.68E-02	4.52E-02	2.21E-04	4.27E-04	3.93E-04
		1 ton pickup truck		1.0667	19	4.87E-04	6.24E-04	6.59E-03	1.51E-05	1.20E-04	5.26E-05
	Maintenance	Grader	215 hp	144	209	3.91E-02	3.67E-01	4.33E-01	2.29E-03	2.84E-03	2.61E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	9.31E-03	1.31E-01	1.72E-02	1.45E-04	3.03E-03	1.81E-03
		Excavator	430 hp	4.445	22	1.90E-02	2.04E-01	1.63E-01	7.97E-04	1.54E-03	1.41E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.07E-01	7.91E-01	3.49E-01	1.75E-03	2.35E-02	2.16E-02
	Drilling	Rotary drill	475 hp	7.3333	128	6.29E-03	8.22E-02	6.39E-02	3.32E-04	5.95E-04	5.47E-04
		3/4 ton Pickup truck		7.3333	128	8.86E-04	7.65E-04	1.08E-02	1.54E-05	1.25E-04	5.63E-05
	Cut with Diamond wire	3/4 ton Pickup truck		48	128	5.80E-03	5.01E-03	7.05E-02	1.01E-04	8.21E-04	3.68E-04
		Diamond cutting saw	50 hp	48	128	1.08E-02	1.95E-01	1.44E-01	2.97E-04	6.76E-03	6.22E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	128	2.41E-02	3.04E-01	2.53E-01	1.24E-03	2.21E-03	2.04E-03
		3/4 ton Pickup truck		60.0214	128	7.25E-03	6.26E-03	8.81E-02	1.26E-04	1.03E-03	4.61E-04
		Water truck	3000 gal	507	128	1.20E-01	1.68E+00	2.21E-01	1.87E-03	3.89E-02	2.32E-02
	Landfill	Crane 260'	375 hp	30.0107	128	1.20E-02	1.52E-01	1.27E-01	6.21E-04	1.11E-03	1.02E-03
						4.76E+00	**5.59E+01**	**6.47E+01**	**2.12E-01**	**1.83E+00**	**1.62E+00**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2019

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2021	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000
		Chain saw		1.7209	19	2.303	0.115	13.188	0.001	0.021	0.021	35.645	0.143	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.134	0.936	0.711	0.004	0.007	0.006	386.935	0.012	0.000
		Front end loader	540 hp	0.8673	19	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000
		Front end loader	49 hp	4	19	0.249	2.247	2.257	0.003	0.098	0.090	231.303	0.022	0.000
		Roller	47 hp	4	19	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000
		Water truck	3000 gal	4	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	300 hp	4	19	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000
		Front end loader	180 hp	4	19	0.076	0.543	0.576	0.003	0.005	0.004	270.060	0.015	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000
		Loader/backhoe	75 hp	0.0923	19	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000
		Crane 94'	155 hp	155	19	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000
		1 ton pickup truck		155	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000
		1 ton pickup truck		155	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.253	2.405	118.912	0.006	1.686	1.682	201.089	0.184	0.193
		Crane 80'	130 hp	16	23	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000
		Flatbed truck		8	23	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.120	1.489	1.736	0.003	0.102	0.094	294.380	0.011	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000
	Armoring	1 ton pickup truck		1.0667	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000
		1 ton pickup truck		1.0667	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.067	0.571	0.665	0.004	0.005	0.004	312.023	0.017	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
		Excavator	430 hp	4.445	22	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.177	1.311	0.579	0.003	0.039	0.036	289.013	0.016	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000
		3/4 ton Pickup truck		20	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.054	0.684	0.537	0.003	0.005	0.005	282.173	0.013	0.000
		3/4 ton Pickup truck		34.0003	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.146	2.395	1.830	0.004	0.085	0.078	277.566	0.013	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000
		3/4 ton Pickup truck		60.0214	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000
		Water truck	3000 gal	507	126	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000
		Horizontal boring drill	10 hp	55	126	0.098	2.489	1.168	0.004	0.091	0.083	283.780	0.031	0.000
		3/4 ton Pickup truck		60	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000
		Air compressor	50 hp	40	126	0.666	0.763	61.867	0.004	0.024	0.023	306.998	0.038	0.060
		3/4 ton Pickup truck		20	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

						GWP	1	21	310						
		Equipment	Equipment	Total	Days per	Annual Emissions - 2021 (tons per year)									Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	1.44E-04	1.37E-04	1.77E-03	3.22E-06	2.58E-05	1.14E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.31E-02	9.34E-02	2.48E-02	1.99E-04	3.45E-03	1.83E-03	3.98E+01	9.53E-05	8.97E-05	3.98E+01	3.61E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	2.13E-03	2.03E-03	2.62E-02	4.76E-05	3.81E-04	1.68E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	4.82E-05	4.58E-05	5.91E-04	1.07E-06	8.60E-06	3.79E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.57E-06	2.36E-06	2.17E-05	6.96E-08	5.42E-07	2.33E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	2.72E-05	2.83E-04	3.04E-04	1.61E-06	2.14E-06	1.97E-06	1.43E-01	7.90E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	3.67E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.28E-06	6.24E-07	8.09E-04	7.34E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	3.89E-05	2.78E-04	3.23E-04	1.62E-06	2.31E-06	2.12E-06	1.61E-01	8.92E-06	-	1.62E-01	1.47E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.73E-05	1.80E-04	1.39E-04	6.83E-07	1.36E-06	1.25E-06	6.96E-02	3.85E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	3.20E-05	2.24E-04	1.70E-04	1.04E-06	1.65E-06	1.52E-06	9.25E-02	2.89E-06	-	9.25E-02	8.40E-02
		Front end loader	540 hp	0.8673	19	3.89E-05	2.78E-04	3.23E-04	1.62E-06	2.31E-06	2.12E-06	1.61E-01	8.92E-06	-	1.62E-01	1.47E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.27E-05	2.37E-04	2.55E-04	1.34E-06	1.79E-06	1.65E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	5.39E-05	4.85E-04	4.88E-04	6.46E-07	2.12E-05	1.95E-05	5.00E-02	4.86E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	4.60E-05	4.61E-04	4.38E-04	6.31E-07	1.93E-05	1.77E-05	4.88E-02	4.15E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	3.08E-05	2.20E-04	5.86E-05	4.69E-07	8.14E-06	4.31E-06	9.39E-02	2.25E-07	2.12E-07	9.40E-02	8.53E-02
		Excavator	300 hp	4	19	7.17E-05	7.07E-04	5.61E-04	2.75E-06	5.41E-06	4.98E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	6.04E-05	4.31E-04	4.57E-04	2.41E-06	3.58E-06	3.29E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	6.82E-05	7.11E-04	7.64E-04	4.03E-06	5.38E-06	4.95E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	5.78E-07	8.53E-06	1.05E-05	1.75E-08	6.36E-07	5.85E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.27E-03	1.89E-02	3.45E-02	6.20E-05	1.25E-03	1.15E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.27E-03	1.89E-02	3.45E-02	6.20E-05	1.25E-03	1.15E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.27E-05	2.37E-04	2.55E-04	1.34E-06	1.79E-06	1.65E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.21E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16	23	1.10E-04	1.64E-03	2.99E-03	5.37E-06	1.08E-04	9.96E-05	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	3.47E-05	3.98E-05	4.78E-04	5.33E-07	4.15E-06	1.76E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	6.21E-02	7.69E-01	8.96E-01	1.78E-03	5.29E-02	4.86E-02	1.52E+02	5.60E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	3.03E-03	3.16E-02	2.85E-02	1.43E-04	2.39E-04	2.20E-04	1.42E+01	7.85E-04	-	1.42E+01	1.29E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.03E-03	3.16E-02	2.85E-02	1.43E-04	2.39E-04	2.20E-04	1.42E+01	7.85E-04	-	1.42E+01	1.29E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	3.03E-03	3.16E-02	2.85E-02	1.43E-04	2.39E-04	2.20E-04	1.42E+01	7.85E-04	-	1.42E+01	1.29E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.03E-03	3.16E-02	2.85E-02	1.43E-04	2.39E-04	2.20E-04	1.42E+01	7.85E-04	-	1.42E+01	1.29E+01
	Armoring	1 ton pickup truck		1.0667	19	1.62E-06	2.43E-06	2.25E-05	7.19E-08	5.60E-07	2.41E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	2.74E-05	2.70E-04	2.15E-04	1.05E-06	2.07E-06	1.90E-06	1.07E-01	5.92E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	1.62E-06	2.43E-06	2.25E-05	7.19E-08	5.60E-07	2.41E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.28E-03	1.95E-02	2.27E-02	1.20E-04	1.54E-04	1.42E-04	1.06E+01	5.89E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	5.23E-05	3.73E-04	9.93E-05	7.94E-07	1.38E-05	7.31E-06	1.59E-01	3.81E-07	3.59E-07	1.59E-01	1.45E-01
		Excavator	430 hp	4.445	22	1.14E-04	1.13E-03	8.94E-04	4.38E-06	8.62E-06	7.93E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	5.37E-04	3.97E-03	1.75E-03	8.80E-06	1.18E-04	1.09E-04	8.75E-01	4.84E-05	-	8.76E-01	7.95E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.13E-03	1.18E-02	9.13E-03	4.47E-05	8.90E-05	8.19E-05	4.56E+00	2.52E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.41E-04	1.47E-03	1.14E-03	5.59E-06	1.11E-05	1.02E-05	5.70E-01	3.15E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	6.02E-05	5.72E-05	7.39E-04	1.34E-06	1.08E-05	4.74E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	9.59E-04	1.22E-02	9.57E-03	4.93E-05	8.85E-05	8.14E-05	5.02E+00	2.24E-04	-	5.03E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	1.02E-04	9.73E-05	1.26E-03	2.28E-06	1.83E-05	8.06E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.44E-04	1.37E-04	1.77E-03	3.22E-06	2.58E-05	1.14E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.87E-04	6.34E-03	4.84E-03	9.49E-06	2.25E-04	2.07E-04	7.34E-01	3.49E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	8.56E-04	9.86E-03	8.12E-03	3.98E-05	7.30E-05	6.72E-05	4.05E+00	2.24E-04	-	4.06E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	1.17E-04	8.36E-04	6.64E-04	3.25E-06	6.94E-06	6.38E-06	3.32E-01	1.83E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.91E-03	2.79E-02	7.42E-03	5.94E-05	1.03E-03	5.47E-04	1.19E+01	2.85E-05	2.68E-05	1.19E+01	1.08E+01
	Landfill	Crane 260'	375 hp	30.0107	126	4.28E-04	4.93E-03	4.06E-03	1.99E-05	3.65E-05	3.36E-05	2.03E+00	1.12E-04	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	6.99E-04	8.05E-03	6.63E-03	3.25E-05	5.96E-05	5.48E-05	3.31E+00	1.83E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.97E-05	1.51E-03	7.08E-04	2.18E-06	5.49E-05	5.05E-05	1.72E-01	1.87E-05	-	1.72E-01	1.56E-01
		3/4 ton Pickup truck		60	126	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	2.85E-04	3.28E-03	2.70E-03	1.33E-05	2.43E-05	2.24E-05	1.35E+00	7.47E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.47E-03	1.68E-03	1.36E-01	8.23E-06	5.18E-05	5.17E-05	6.77E-01	8.29E-05	1.32E-04	7.19E-01	6.53E-01
		3/4 ton Pickup truck		20	126	6.02E-05	5.72E-05	7.39E-04	1.34E-06	1.08E-05	4.74E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						1.08E-01	**1.15E+00**	**1.39E+00**	**3.22E-03**	**6.29E-02**	**5.58E-02**	**3.39E+02**	**1.48E-02**	**1.84E-03**	**3.40E+02**	**3.08E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2021	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	2.75E-03	2.62E-03	3.38E-02	6.14E-05	4.92E-04	2.17E-04
Dust Control		Water truck	5000 gal	1696	210	2.49E-01	1.78E+00	4.73E-01	3.78E-03	6.58E-02	3.48E-02
Environmental protection measures	***Biologist***	3/4 ton pickup truck		709	210	4.07E-02	3.86E-02	4.99E-01	9.07E-04	7.26E-03	3.20E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.01E-02	9.64E-03	1.24E-01	2.26E-04	1.81E-03	7.98E-04
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	3.30E-04	4.96E-04	4.58E-03	1.46E-05	1.14E-04	4.90E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	5.72E-03	5.96E-02	6.41E-02	3.38E-04	4.51E-04	4.15E-04
		Chain saw		1.7209	19	7.72E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	8.20E-03	5.85E-02	6.81E-02	3.42E-04	4.86E-04	4.47E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	3.63E-03	3.79E-02	2.94E-02	1.44E-04	2.86E-04	2.63E-04
	Chipping	Brush chipper	250 hp	0.8673	19	6.74E-03	4.71E-02	3.58E-02	2.19E-04	3.48E-04	3.20E-04
		Front end loader	540 hp	0.8673	19	8.20E-03	5.85E-02	6.81E-02	3.42E-04	4.86E-04	4.47E-04
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	4.79E-03	4.99E-02	5.36E-02	2.83E-04	3.77E-04	3.47E-04
		Front end loader	49 hp	4	19	1.13E-02	1.02E-01	1.03E-01	1.36E-04	4.46E-03	4.10E-03
		Roller	47 hp	4	19	9.69E-03	9.71E-02	9.23E-02	1.33E-04	4.06E-03	3.74E-03
		Water truck	3000 gal	4	19	6.49E-03	4.64E-02	1.23E-02	9.87E-05	1.71E-03	9.08E-04
		Excavator	300 hp	4	19	1.51E-02	1.49E-01	1.18E-01	5.79E-04	1.14E-03	1.05E-03
		Front end loader	180 hp	4	19	1.27E-02	9.08E-02	9.62E-02	5.08E-04	7.54E-04	6.93E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	1.44E-02	1.50E-01	1.61E-01	8.49E-04	1.13E-03	1.04E-03
		Loader/backhoe	75 hp	0.0923	19	1.22E-04	1.80E-03	2.22E-03	3.68E-06	1.34E-04	1.23E-04
		Crane 94'	155 hp	155	19	2.67E-01	3.99E+00	7.26E+00	1.30E-02	2.63E-01	2.42E-01
		1 ton pickup truck		155	19	4.96E-02	7.44E-02	6.87E-01	2.20E-03	1.71E-02	7.36E-03
		Crane 94'	155 hp	155	20	2.54E-01	3.79E+00	6.90E+00	1.24E-02	2.50E-01	2.30E-01
		1 ton pickup truck		155	20	4.71E-02	7.07E-02	6.53E-01	2.09E-03	1.63E-02	6.99E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	4.55E-03	4.74E-02	5.10E-02	2.69E-04	3.58E-04	3.30E-04
	Dewatering	Concrete saw	13 hp	8	23	6.49E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	1.91E-02	2.85E-01	5.19E-01	9.33E-04	1.88E-02	1.73E-02
		Flatbed truck		8	23	6.03E-03	6.93E-03	8.32E-02	9.26E-05	7.22E-04	3.06E-04
		Generator	80 hp	5856	244	1.02E+00	1.26E+01	1.47E+01	2.92E-02	8.66E-01	7.97E-01
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	6.38E-01	6.65E+00	5.99E+00	3.01E-02	5.03E-02	4.63E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	6.38E-01	6.65E+00	5.99E+00	3.01E-02	5.03E-02	4.63E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	6.38E-01	6.65E+00	5.99E+00	3.01E-02	5.03E-02	4.63E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	6.38E-01	6.65E+00	5.99E+00	3.01E-02	5.03E-02	4.63E-02
	Armoring	1 ton pickup truck		1.0667	19	3.41E-04	5.12E-04	4.73E-03	1.51E-05	1.18E-04	5.06E-05
		Excavator	430 hp	1.0667	19	5.77E-03	5.69E-02	4.52E-02	2.21E-04	4.35E-04	4.01E-04
		1 ton pickup truck		1.0667	19	3.41E-04	5.12E-04	4.73E-03	1.51E-05	1.18E-04	5.06E-05
	Maintenance	Grader	215 hp	144	210	4.33E-02	3.71E-01	4.32E-01	2.28E-03	2.94E-03	2.70E-03
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	9.50E-03	6.79E-02	1.80E-02	1.44E-04	2.51E-03	1.33E-03
		Excavator	430 hp	4.445	22	2.08E-02	2.05E-01	1.63E-01	7.97E-04	1.57E-03	1.44E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	9.76E-02	7.22E-01	3.19E-01	1.60E-03	2.15E-02	1.98E-02
	Platform	Tractor/crawler/dozer	440 hp	40	20	2.26E-01	2.36E+00	1.83E+00	8.95E-03	1.78E-02	1.64E-02
		Tractor/crawler/dozer	440 hp	5	20	2.82E-02	2.94E-01	2.28E-01	1.12E-03	2.23E-03	2.05E-03
		3/4 ton Pickup truck		20	20	1.20E-02	1.14E-02	1.48E-01	2.69E-04	2.15E-03	9.48E-04
	Drilling	Rotary drill	475 hp	34.0003	126	3.04E-02	3.86E-01	3.04E-01	1.57E-03	2.81E-03	2.59E-03
		3/4 ton Pickup truck		34.0003	126	3.25E-03	3.09E-03	3.99E-02	7.25E-05	5.80E-04	2.56E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	4.59E-03	4.36E-03	5.63E-02	1.02E-04	8.19E-04	3.61E-04
		Diamond cutting saw	50 hp	48	126	1.23E-02	2.01E-01	1.54E-01	3.01E-04	7.15E-03	6.58E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	2.72E-02	3.13E-01	2.58E-01	1.26E-03	2.32E-03	2.13E-03
		3/4 ton Pickup truck		60.0214	126	5.74E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Load/Haul	Front end loader	350 hp	4	126	3.72E-03	2.65E-02	2.11E-02	1.03E-04	2.20E-04	2.03E-04
		Water truck	3000 gal	507	126	1.24E-01	8.86E-01	2.36E-01	1.89E-03	3.28E-02	1.74E-02
	Landfill	Crane 260'	375 hp	30.0107	126	1.36E-02	1.56E-01	1.29E-01	6.31E-04	1.16E-03	1.07E-03
	Micro-blast	Crane 260'	375 hp	49	126	2.22E-02	2.55E-01	2.10E-01	1.03E-03	1.89E-03	1.74E-03
		Horizontal boring drill	10 hp	55	126	1.89E-03	4.79E-02	2.25E-02	6.93E-05	1.74E-03	1.60E-03
		3/4 ton Pickup truck		60	126	5.73E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Demolish spillway	Crane 260'	375 hp	20	126	9.05E-03	1.04E-01	8.59E-02	4.21E-04	7.72E-04	7.11E-04
		Air compressor	50 hp	40	126	4.66E-02	5.34E-02	4.33E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	1.91E-03	1.82E-03	2.35E-02	4.27E-05	3.41E-04	1.50E-04
						5.46E+00	**5.68E+01**	**6.85E+01**	**2.13E-01**	**1.87E+00**	**1.66E+00**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2023	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2023 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000
		Chain saw		1.7209	19	2.509	0.115	13.187	0.001	0.021	0.021	35.644	0.156	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.075	0.538	0.548	0.003	0.004	0.004	273.357	0.015	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.063	0.611	0.471	0.002	0.005	0.004	234.966	0.013	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.157	1.006	0.773	0.005	0.008	0.007	411.577	0.014	0.000
		Front end loader	540 hp	0.8673	19	0.075	0.538	0.548	0.003	0.004	0.004	273.357	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000
		Front end loader	49 hp	4	19	0.269	2.286	2.372	0.003	0.102	0.094	231.300	0.024	0.000
		Roller	47 hp	4	19	0.073	1.863	2.268	0.003	0.068	0.062	235.492	0.022	0.000
		Water truck	3000 gal	4	19	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
		Excavator	300 hp	4	19	0.058	0.534	0.424	0.002	0.004	0.004	211.846	0.012	0.000
		Front end loader	180 hp	4	19	0.076	0.543	0.576	0.003	0.005	0.004	270.058	0.015	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000
		Loader/backhoe	75 hp	0.0923	19	0.081	1.131	1.383	0.002	0.086	0.079	195.357	0.015	0.000
		Crane 94'	155 hp	155	19	0.052	0.722	1.302	0.002	0.049	0.045	208.013	0.016	0.000
		1 ton pickup truck		155	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.052	0.722	1.302	0.002	0.049	0.045	208.013	0.016	0.000
		1 ton pickup truck		155	20	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.251	2.403	118.832	0.006	1.685	1.681	200.954	0.184	0.193
		Crane 80'	130 hp	16	23	0.052	0.722	1.302	0.002	0.049	0.045	208.013	0.016	0.000
		Flatbed truck		8	23	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135
		Generator	80 hp	5856	244	0.131	1.501	1.764	0.003	0.105	0.097	294.401	0.012	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.063	0.613	0.618	0.003	0.005	0.004	308.370	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.063	0.613	0.618	0.003	0.005	0.004	308.370	0.017	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.063	0.613	0.618	0.003	0.005	0.004	308.370	0.017	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.063	0.613	0.618	0.003	0.005	0.004	308.370	0.017	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.058	0.534	0.424	0.002	0.004	0.004	211.846	0.012	0.000
		1 ton pickup truck		1.0667	19	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.073	0.579	0.665	0.004	0.005	0.004	312.026	0.017	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
		Excavator	430 hp	4.445	22	0.058	0.534	0.424	0.002	0.004	0.004	211.846	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.201	1.485	0.655	0.003	0.044	0.041	327.216	0.018	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.063	0.611	0.471	0.002	0.005	0.004	234.966	0.013	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.063	0.611	0.471	0.002	0.005	0.004	234.966	0.013	0.000
		3/4 ton Pickup truck		20	20	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.053	0.668	0.544	0.003	0.005	0.004	283.890	0.013	0.000
		3/4 ton Pickup truck		34.0003	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.162	2.426	1.921	0.004	0.089	0.081	277.558	0.015	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000
		3/4 ton Pickup truck		60.0214	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.076	0.539	0.430	0.002	0.004	0.004	214.835	0.012	0.000
		Water truck	3000 gal	507	126	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000
		Horizontal boring drill	10 hp	55	126	0.101	2.501	2.636	0.004	0.092	0.084	283.073	0.026	0.000
		3/4 ton Pickup truck		60	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000
		Air compressor	50 hp	40	126	0.731	0.811	70.044	0.004	0.024	0.023	307.049	0.041	0.062
		3/4 ton Pickup truck		20	126	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2023
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2023 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
												GWP	1	21	310	
Construction Survey		**3/4 ton pickup truck**		48	210	1.08E-04	1.17E-04	1.39E-03	3.22E-06	2.54E-05	1.10E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.19E-02	4.65E-02	2.26E-02	1.97E-04	3.37E-03	1.75E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	1.60E-03	1.73E-03	2.05E-02	4.76E-05	3.76E-04	1.63E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	3.60E-05	3.90E-05	4.62E-04	1.07E-06	8.48E-06	3.67E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	1.08E-06	1.94E-06	1.58E-05	6.96E-08	5.35E-07	2.26E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	2.94E-05	2.85E-04	3.04E-04	1.61E-06	2.19E-06	2.01E-06	1.43E-01	7.90E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	4.00E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.49E-06	6.24E-07	8.14E-04	7.38E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	3.89E-05	2.78E-04	2.83E-04	1.42E-06	2.31E-06	2.12E-06	1.41E-01	7.80E-06	-	1.41E-01	1.28E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	1.87E-05	1.81E-04	1.39E-04	6.83E-07	1.39E-06	1.28E-06	6.96E-02	3.85E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	3.76E-05	2.41E-04	1.85E-04	1.11E-06	1.81E-06	1.66E-06	9.84E-02	3.39E-06	-	9.84E-02	8.93E-02
		Front end loader	540 hp	0.8673	19	3.89E-05	2.78E-04	2.83E-04	1.42E-06	2.31E-06	2.12E-06	1.41E-01	7.80E-06	-	1.41E-01	1.28E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	2.46E-05	2.38E-04	2.55E-04	1.34E-06	1.83E-06	1.68E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	5.82E-05	4.94E-04	5.12E-04	6.46E-07	2.21E-05	2.03E-05	5.00E-02	5.25E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.52E-05	3.86E-04	4.70E-04	6.31E-07	1.40E-05	1.29E-05	4.88E-02	4.65E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.80E-05	1.10E-04	5.33E-05	4.65E-07	7.94E-06	4.13E-06	9.33E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	7.67E-05	7.06E-04	5.61E-04	2.75E-06	5.49E-06	5.05E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	6.03E-05	4.31E-04	4.57E-04	2.41E-06	3.57E-06	3.29E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	7.39E-05	7.15E-04	7.64E-04	4.03E-06	5.49E-06	5.05E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	6.22E-07	8.63E-06	1.06E-05	1.75E-08	6.54E-07	6.02E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.39E-03	1.91E-02	3.45E-02	6.20E-05	1.31E-03	1.20E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.63E-04	2.92E-04	2.37E-03	1.04E-05	8.03E-05	3.39E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.39E-03	1.91E-02	3.45E-02	6.20E-05	1.31E-03	1.20E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	1.63E-04	2.92E-04	2.37E-03	1.04E-05	8.03E-05	3.39E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	2.46E-05	2.38E-04	2.55E-04	1.34E-06	1.83E-06	1.68E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	1.20E-04	1.66E-03	2.98E-03	5.37E-06	1.13E-04	1.04E-04	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	2.44E-05	3.03E-05	3.45E-04	5.32E-07	4.11E-06	1.72E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	6.75E-02	7.75E-01	9.11E-01	1.78E-03	5.42E-02	4.98E-02	1.52E+02	6.09E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.31E-03	3.20E-02	3.22E-02	1.62E-04	2.46E-04	2.26E-04	1.61E+01	8.89E-04	-	1.61E+01	1.46E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.31E-03	3.20E-02	3.22E-02	1.62E-04	2.46E-04	2.26E-04	1.61E+01	8.89E-04	-	1.61E+01	1.46E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	3.31E-03	3.20E-02	3.22E-02	1.62E-04	2.46E-04	2.26E-04	1.61E+01	8.89E-04	-	1.61E+01	1.46E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.31E-03	3.20E-02	3.22E-02	1.62E-04	2.46E-04	2.26E-04	1.61E+01	8.89E-04	-	1.61E+01	1.46E+01
	Armoring	**1 ton pickup truck**		1.0667	19	1.12E-06	2.01E-06	1.63E-05	7.19E-08	5.53E-07	2.34E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	2.93E-05	2.70E-04	2.15E-04	1.05E-06	2.10E-06	1.93E-06	1.07E-01	5.92E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	1.12E-06	2.01E-06	1.63E-05	7.19E-08	5.53E-07	2.34E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	2.49E-03	1.98E-02	2.27E-02	1.20E-04	1.59E-04	1.47E-04	1.06E+01	5.89E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.75E-05	1.86E-04	9.03E-05	7.89E-07	1.35E-05	6.99E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.44E-01
		Excavator	430 hp	4.445	22	1.22E-04	1.13E-03	8.94E-04	4.38E-06	8.75E-06	8.05E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	6.07E-04	4.50E-03	1.99E-03	9.97E-06	1.34E-04	1.23E-04	9.91E-01	5.48E-05	-	9.92E-01	9.00E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	1.23E-03	1.19E-02	9.13E-03	4.47E-05	9.11E-05	8.38E-05	4.56E+00	2.52E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.53E-04	1.48E-03	1.14E-03	5.59E-06	1.14E-05	1.05E-05	5.70E-01	3.15E-05	-	5.70E-01	5.18E-01
		3/4 ton Pickup truck		20	20	4.50E-05	4.88E-05	5.78E-04	1.34E-06	1.06E-05	4.59E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	9.47E-04	1.19E-02	9.69E-03	4.96E-05	8.67E-05	7.98E-05	5.05E+00	2.32E-04	-	5.06E+00	4.59E+00
		3/4 ton Pickup truck		34.0003	126	7.65E-05	8.30E-05	9.83E-04	2.28E-06	1.80E-05	7.81E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	1.08E-04	1.17E-04	1.39E-03	3.22E-06	2.54E-05	1.10E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	4.29E-04	6.42E-03	5.08E-03	9.49E-06	2.34E-04	2.15E-04	7.34E-01	3.87E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	9.37E-04	9.97E-03	8.11E-03	3.97E-05	7.51E-05	6.91E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	1.35E-04	1.46E-04	1.73E-03	4.03E-06	3.18E-05	1.38E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	1.17E-04	8.32E-04	6.64E-04	3.25E-06	6.91E-06	6.36E-06	3.32E-01	1.83E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.55E-03	1.39E-02	6.75E-03	5.90E-05	1.01E-03	5.23E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	4.69E-04	4.99E-03	4.06E-03	1.99E-05	3.75E-05	3.45E-05	2.02E+00	1.12E-04	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	7.65E-04	8.14E-03	6.62E-03	3.24E-05	6.13E-05	5.64E-05	3.31E+00	1.83E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	6.14E-05	1.52E-03	1.60E-03	2.22E-06	5.55E-05	5.11E-05	1.72E-01	1.55E-05	-	1.72E-01	1.56E-01
		3/4 ton Pickup truck		60	126	1.35E-04	1.46E-04	1.73E-03	4.03E-06	3.18E-05	1.38E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	3.12E-04	3.32E-03	2.70E-03	1.32E-05	2.50E-05	2.30E-05	1.35E+00	7.46E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.61E-03	1.79E-03	1.54E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	9.09E-05	1.36E-04	7.21E-01	6.54E-01
		3/4 ton Pickup truck		20	126	4.50E-05	4.88E-05	5.78E-04	1.34E-06	1.06E-05	4.59E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						1.13E-01	**1.10E+00**	**1.42E+00**	**3.29E-03**	**6.43E-02**	**5.71E-02**	**3.46E+02**	**1.57E-02**	**1.84E-03**	**3.47E+02**	**3.15E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2023	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2023 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	2.06E-03	2.23E-03	2.64E-02	6.14E-05	4.84E-04	2.10E-04
Dust Control		Water truck	5000 gal	1696	210	2.26E-01	8.85E-01	4.30E-01	3.76E-03	6.41E-02	3.33E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	3.04E-02	3.29E-02	3.90E-01	9.07E-04	7.16E-03	3.10E-03
	Fish relocation	3/4 ton pickup truck		16	19	7.58E-03	8.22E-03	9.74E-02	2.26E-04	1.78E-03	7.73E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	2.28E-04	4.09E-04	3.33E-03	1.46E-05	1.13E-04	4.76E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.20E-03	5.99E-02	6.41E-02	3.38E-04	4.61E-04	4.24E-04
		Chain saw		1.7209	19	8.42E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	8.20E-03	5.85E-02	5.95E-02	2.99E-04	4.86E-04	4.47E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	3.94E-03	3.81E-02	2.94E-02	1.44E-04	2.93E-04	2.70E-04
	Chipping	Brush chipper	250 hp	0.8673	19	7.92E-03	5.06E-02	3.89E-02	2.33E-04	3.81E-04	3.50E-04
		Front end loader	540 hp	0.8673	19	8.20E-03	5.85E-02	5.95E-02	2.99E-04	4.86E-04	4.47E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.19E-03	5.01E-02	5.36E-02	2.83E-04	3.85E-04	3.55E-04
		Front end loader	49 hp	4	19	1.23E-02	1.04E-01	1.08E-01	1.36E-04	4.65E-03	4.28E-03
		Roller	47 hp	4	19	3.20E-03	8.13E-02	9.89E-02	1.33E-04	2.95E-03	2.72E-03
		Water truck	3000 gal	4	19	5.90E-03	2.31E-02	1.12E-02	9.80E-05	1.67E-03	8.69E-04
		Excavator	300 hp	4	19	1.62E-02	1.49E-01	1.18E-01	5.79E-04	1.16E-03	1.06E-03
		Front end loader	180 hp	4	19	1.27E-02	9.07E-02	9.62E-02	5.08E-04	7.53E-04	6.92E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	1.56E-02	1.50E-01	1.61E-01	8.49E-04	1.16E-03	1.06E-03
		Loader/backhoe	75 hp	0.0923	19	1.31E-04	1.82E-03	2.22E-03	3.68E-06	1.38E-04	1.27E-04
		Crane 94'	155 hp	155	19	2.92E-01	4.03E+00	7.26E+00	1.30E-02	2.75E-01	2.53E-01
		1 ton pickup truck		155	19	3.42E-02	6.14E-02	4.99E-01	2.20E-03	1.69E-02	7.14E-03
		Crane 94'	155 hp	155	20	2.77E-01	3.83E+00	6.90E+00	1.24E-02	2.61E-01	2.40E-01
		1 ton pickup truck		155	20	3.25E-02	5.83E-02	4.74E-01	2.09E-03	1.61E-02	6.79E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	4.93E-03	4.76E-02	5.10E-02	2.69E-04	3.66E-04	3.37E-04
	Dewatering	Concrete saw	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.09E-02	2.88E-01	5.19E-01	9.33E-04	1.97E-02	1.81E-02
		Flatbed truck		8	23	4.25E-03	5.26E-03	6.00E-02	9.25E-05	7.15E-04	2.99E-04
		Generator	80 hp	5856	244	1.11E+00	1.27E+01	1.49E+01	2.92E-02	8.88E-01	8.17E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	6.96E-01	6.73E+00	6.78E+00	3.40E-02	5.18E-02	4.76E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	6.96E-01	6.73E+00	6.78E+00	3.40E-02	5.18E-02	4.76E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	6.96E-01	6.73E+00	6.78E+00	3.40E-02	5.18E-02	4.76E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	6.96E-01	6.73E+00	6.78E+00	3.40E-02	5.18E-02	4.76E-02
	Armoring	1 ton pickup truck		1.0667	19	2.36E-04	4.23E-04	3.44E-03	1.51E-05	1.16E-04	4.92E-05
		Excavator	430 hp	1.0667	19	6.18E-03	5.68E-02	4.52E-02	2.21E-04	4.42E-04	4.07E-04
		1 ton pickup truck		1.0667	19	2.36E-04	4.23E-04	3.44E-03	1.51E-05	1.16E-04	4.92E-05
	Maintenance	Grader	215 hp	144	210	4.74E-02	3.76E-01	4.32E-01	2.28E-03	3.03E-03	2.79E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.64E-03	3.38E-02	1.64E-02	1.43E-04	2.45E-03	1.27E-03
		Excavator	430 hp	4.445	22	2.22E-02	2.05E-01	1.63E-01	7.97E-04	1.59E-03	1.46E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.10E-01	8.18E-01	3.61E-01	1.81E-03	2.43E-02	2.24E-02
	Platform	Tractor/crawler/dozer	440 hp	40	20	2.45E-01	2.37E+00	1.83E+00	8.95E-03	1.82E-02	1.68E-02
		Tractor/crawler/dozer	440 hp	5	20	3.06E-02	2.96E-01	2.28E-01	1.12E-03	2.28E-03	2.10E-03
		3/4 ton Pickup truck		20	20	9.00E-03	9.76E-03	1.16E-01	2.69E-04	2.12E-03	9.18E-04
	Drilling	Rotary drill	475 hp	34.0003	126	3.01E-02	3.78E-01	3.08E-01	1.57E-03	2.75E-03	2.53E-03
		3/4 ton Pickup truck		34.0003	126	2.43E-03	2.63E-03	3.12E-02	7.25E-05	5.72E-04	2.48E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	3.43E-03	3.72E-03	4.40E-02	1.02E-04	8.07E-04	3.50E-04
		Diamond cutting saw	50 hp	48	126	1.36E-02	2.04E-01	1.61E-01	3.01E-04	7.43E-03	6.84E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	2.98E-02	3.17E-01	2.58E-01	1.26E-03	2.38E-03	2.19E-03
		3/4 ton Pickup truck		60.0214	126	4.29E-03	4.65E-03	5.51E-02	1.28E-04	1.01E-03	4.38E-04
	Load/Haul	Front end loader	350 hp	4	126	3.70E-03	2.64E-02	2.11E-02	1.03E-04	2.19E-04	2.02E-04
		Water truck	3000 gal	507	126	1.13E-01	4.41E-01	2.14E-01	1.87E-03	3.20E-02	1.66E-02
	Landfill	Crane 260'	375 hp	30.0107	126	1.49E-02	1.58E-01	1.29E-01	6.31E-04	1.19E-03	1.10E-03
	Micro-blast	Crane 260'	375 hp	49	126	2.43E-02	2.58E-01	2.10E-01	1.03E-03	1.95E-03	1.79E-03
		Horizontal boring drill	10 hp	55	126	1.95E-03	4.81E-02	5.07E-02	7.04E-05	1.76E-03	1.62E-03
		3/4 ton Pickup truck		60	126	4.29E-03	4.65E-03	5.51E-02	1.28E-04	1.01E-03	4.37E-04
	Demolish spillway	Crane 260'	375 hp	20	126	9.91E-03	1.05E-01	8.58E-02	4.20E-04	7.94E-04	7.31E-04
		Air compressor	50 hp	40	126	5.11E-02	5.67E-02	4.90E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	1.43E-03	1.55E-03	1.84E-02	4.26E-05	3.36E-04	1.46E-04
						5.79E+00	**5.60E+01**	**7.18E+01**	**2.29E-01**	**1.92E+00**	**1.70E+00**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
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Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2025	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2025 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.067	0.608	0.642	0.003	0.005	0.004	301.139	0.017	0.000
		Chain saw		1.7209	19	2.716	0.115	13.187	0.001	0.021	0.021	35.643	0.169	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.075	0.538	0.549	0.003	0.004	0.004	274.182	0.015	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.069	0.627	0.471	0.002	0.005	0.004	234.953	0.013	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.179	1.057	0.819	0.005	0.008	0.007	427.344	0.016	0.000
		Front end loader	540 hp	0.8673	19	0.075	0.538	0.549	0.003	0.004	0.004	274.182	0.015	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.067	0.608	0.642	0.003	0.005	0.004	301.139	0.017	0.000
		Front end loader	49 hp	4	19	0.284	2.315	2.455	0.003	0.105	0.097	231.297	0.026	0.000
		Roller	47 hp	4	19	0.079	1.869	2.412	0.003	0.069	0.064	235.465	0.025	0.000
		Water truck	3000 gal	4	19	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
		Excavator	300 hp	4	19	0.062	0.543	0.424	0.002	0.004	0.004	211.851	0.012	0.000
		Front end loader	180 hp	4	19	0.076	0.542	0.576	0.003	0.005	0.004	270.058	0.015	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.067	0.608	0.642	0.003	0.005	0.004	301.139	0.017	0.000
		Loader/backhoe	75 hp	0.0923	19	0.086	1.137	1.383	0.002	0.087	0.080	195.355	0.015	0.000
		Crane 94'	155 hp	155	19	0.057	0.730	1.302	0.002	0.051	0.047	208.005	0.016	0.000
		1 ton pickup truck		155	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
		Crane 94'	155 hp	155	20	0.057	0.730	1.302	0.002	0.051	0.047	208.005	0.016	0.000
		1 ton pickup truck		155	20	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.067	0.608	0.642	0.003	0.005	0.004	301.139	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.250	2.402	118.803	0.006	1.684	1.681	200.905	0.184	0.193
		Crane 80'	130 hp	16	23	0.057	0.730	1.302	0.002	0.051	0.047	208.005	0.016	0.000
		Flatbed truck		8	23	1.975	2.645	28.336	0.061	0.463	0.191	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.141	1.514	1.793	0.003	0.107	0.099	294.371	0.013	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.068	0.614	0.555	0.003	0.005	0.004	276.956	0.015	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.068	0.614	0.555	0.003	0.005	0.004	276.956	0.015	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.068	0.614	0.555	0.003	0.005	0.004	276.956	0.015	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.068	0.614	0.555	0.003	0.005	0.004	276.956	0.015	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
		Excavator	430 hp	1.0667	19	0.062	0.543	0.424	0.002	0.004	0.004	211.851	0.012	0.000
		1 ton pickup truck		1.0667	19	0.679	1.413	10.293	0.062	0.465	0.194	20,361.281	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.079	0.588	0.665	0.004	0.005	0.004	311.998	0.017	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
		Excavator	430 hp	4.445	22	0.062	0.543	0.424	0.002	0.004	0.004	211.851	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.180	1.333	0.589	0.003	0.040	0.036	293.882	0.016	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.069	0.627	0.471	0.002	0.005	0.004	234.953	0.013	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.069	0.627	0.471	0.002	0.005	0.004	234.953	0.013	0.000
		3/4 ton Pickup truck		20	20	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.054	0.668	0.552	0.003	0.005	0.004	285.965	0.014	0.000
		3/4 ton Pickup truck		34.0003	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.178	2.457	2.012	0.004	0.092	0.085	277.545	0.016	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.041	0.405	0.327	0.002	0.003	0.003	163.231	0.009	0.000
		3/4 ton Pickup truck		60.0214	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.076	0.541	0.430	0.002	0.004	0.004	214.809	0.012	0.000
		Water truck	3000 gal	507	126	6.515	25.808	12.372	0.106	1.813	0.947	21,149.472	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.041	0.405	0.327	0.002	0.003	0.003	163.231	0.009	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.041	0.405	0.327	0.002	0.003	0.003	163.231	0.009	0.000
		Horizontal boring drill	10 hp	55	126	0.104	2.510	2.659	0.004	0.093	0.085	279.762	0.026	0.000
		3/4 ton Pickup truck		60	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.041	0.405	0.327	0.002	0.003	0.003	163.231	0.009	0.000
		Air compressor	50 hp	40	126	0.796	0.858	78.254	0.004	0.024	0.023	307.220	0.045	0.064
		3/4 ton Pickup truck		20	126	1.504	1.882	20.210	0.061	0.474	0.203	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2025
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2025 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	7.96E-05	9.96E-05	1.07E-03	3.25E-06	2.51E-05	1.07E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.22E-02	4.82E-02	2.31E-02	1.98E-04	3.39E-03	1.77E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	1.18E-03	1.47E-03	1.58E-02	4.80E-05	3.71E-04	1.58E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	2.65E-05	3.32E-05	3.56E-04	1.08E-06	8.37E-06	3.57E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	7.72E-07	1.61E-06	1.17E-05	7.02E-08	5.29E-07	2.20E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	3.18E-05	2.88E-04	3.04E-04	1.61E-06	2.25E-06	2.07E-06	1.43E-01	7.90E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	4.33E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.69E-06	6.24E-07	8.18E-04	7.42E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	3.89E-05	2.78E-04	2.84E-04	1.42E-06	2.31E-06	2.12E-06	1.42E-01	7.83E-06	-	1.42E-01	1.29E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	2.05E-05	1.86E-04	1.39E-04	6.83E-07	1.45E-06	1.33E-06	6.96E-02	3.85E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	4.27E-05	2.53E-04	1.96E-04	1.15E-06	1.93E-06	1.78E-06	1.02E-01	3.85E-06	-	1.02E-01	9.27E-02
		Front end loader	540 hp	0.8673	19	3.89E-05	2.78E-04	2.84E-04	1.42E-06	2.31E-06	2.12E-06	1.42E-01	7.83E-06	-	1.42E-01	1.29E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.66E-05	2.41E-04	2.55E-04	1.34E-06	1.88E-06	1.73E-06	1.19E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	6.13E-05	5.00E-04	5.30E-04	6.46E-07	2.28E-05	2.10E-05	5.00E-02	5.53E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.63E-05	3.87E-04	5.00E-04	6.31E-07	1.44E-05	1.32E-05	4.88E-02	5.12E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.87E-05	1.14E-04	5.45E-05	4.67E-07	7.99E-06	4.17E-06	9.33E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	8.24E-05	7.18E-04	5.61E-04	2.75E-06	5.66E-06	5.20E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	6.03E-05	4.30E-04	4.57E-04	2.41E-06	3.57E-06	3.29E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	7.97E-05	7.24E-04	7.64E-04	4.03E-06	5.65E-06	5.19E-06	3.58E-01	1.98E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	6.55E-07	8.67E-06	1.05E-05	1.75E-08	6.66E-07	6.13E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.50E-03	1.93E-02	3.45E-02	6.20E-05	1.36E-03	1.25E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.16E-04	2.41E-04	1.76E-03	1.05E-05	7.94E-05	3.31E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.50E-03	1.93E-02	3.45E-02	6.20E-05	1.36E-03	1.25E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	1.16E-04	2.41E-04	1.76E-03	1.05E-05	7.94E-05	3.31E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.66E-05	2.41E-04	2.55E-04	1.34E-06	1.88E-06	1.73E-06	1.19E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	1.30E-04	1.67E-03	2.98E-03	5.37E-06	1.18E-04	1.08E-04	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	1.74E-05	2.33E-05	2.50E-04	5.36E-07	4.08E-06	1.69E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	7.30E-02	7.82E-01	9.26E-01	1.78E-03	5.55E-02	5.11E-02	1.52E+02	6.58E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	3.53E-03	3.20E-02	2.89E-02	1.45E-04	2.50E-04	2.30E-04	1.44E+01	7.99E-04	-	1.45E+01	1.31E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.53E-03	3.20E-02	2.89E-02	1.45E-04	2.50E-04	2.30E-04	1.44E+01	7.99E-04	-	1.45E+01	1.31E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	3.53E-03	3.20E-02	2.89E-02	1.45E-04	2.50E-04	2.30E-04	1.44E+01	7.99E-04	-	1.45E+01	1.31E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.53E-03	3.20E-02	2.89E-02	1.45E-04	2.50E-04	2.30E-04	1.44E+01	7.99E-04	-	1.45E+01	1.31E+01
	Armoring	1 ton pickup truck		1.0667	19	7.98E-07	1.66E-06	1.21E-05	7.25E-08	5.47E-07	2.28E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	3.15E-05	2.75E-04	2.15E-04	1.05E-06	2.16E-06	1.99E-06	1.07E-01	5.92E-06	-	1.07E-01	9.73E-02
		1 ton pickup truck		1.0667	19	7.98E-07	1.66E-06	1.21E-05	7.25E-08	5.47E-07	2.28E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	2.69E-03	2.01E-02	2.27E-02	1.20E-04	1.64E-04	1.51E-04	1.06E+01	5.89E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	4.87E-05	1.93E-04	9.25E-05	7.91E-07	1.35E-05	7.08E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.44E-01
		Excavator	430 hp	4.445	22	1.31E-04	1.14E-03	8.94E-04	4.38E-06	9.01E-06	8.29E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	5.46E-04	4.04E-03	1.78E-03	8.95E-06	1.20E-04	1.10E-04	8.90E-01	4.92E-05	-	8.91E-01	8.08E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.34E-03	1.22E-02	9.13E-03	4.47E-05	9.48E-05	8.72E-05	4.56E+00	2.52E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	1.67E-04	1.52E-03	1.14E-03	5.59E-06	1.18E-05	1.09E-05	5.70E-01	3.15E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	3.32E-05	4.15E-05	4.46E-04	1.36E-06	1.05E-05	4.46E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	9.66E-04	1.19E-02	9.82E-03	5.00E-05	8.69E-05	8.00E-05	5.09E+00	2.41E-04	-	5.10E+00	4.62E+00
		3/4 ton Pickup truck		34.0003	126	5.64E-05	7.05E-05	7.57E-04	2.30E-06	1.78E-05	7.59E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	7.96E-05	9.96E-05	1.07E-03	3.25E-06	2.51E-05	1.07E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	4.71E-04	6.50E-03	5.32E-03	9.49E-06	2.43E-04	2.24E-04	7.34E-01	4.25E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.01E-03	1.00E-02	8.11E-03	3.98E-05	7.68E-05	7.06E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	9.95E-05	1.25E-04	1.34E-03	4.07E-06	3.14E-05	1.34E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	1.17E-04	8.34E-04	6.64E-04	3.25E-06	6.92E-06	6.37E-06	3.31E-01	1.83E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.64E-03	1.44E-02	6.91E-03	5.92E-05	1.01E-03	5.29E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	5.06E-04	5.02E-03	4.06E-03	1.99E-05	3.84E-05	3.53E-05	2.02E+00	1.12E-04	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	8.26E-04	8.20E-03	6.62E-03	3.25E-05	6.27E-05	5.77E-05	3.31E+00	1.83E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	6.31E-05	1.52E-03	1.61E-03	2.19E-06	5.61E-05	5.16E-05	1.70E-01	1.58E-05	-	1.70E-01	1.54E-01
		3/4 ton Pickup truck		60	126	9.95E-05	1.24E-04	1.34E-03	4.07E-06	3.14E-05	1.34E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	3.37E-04	3.35E-03	2.70E-03	1.32E-05	2.56E-05	2.35E-05	1.35E+00	7.46E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.75E-03	1.89E-03	1.73E-01	8.23E-06	5.19E-05	5.18E-05	6.77E-01	9.90E-05	1.40E-04	7.23E-01	6.56E-01
		3/4 ton Pickup truck		20	126	3.32E-05	4.15E-05	4.46E-04	1.36E-06	1.05E-05	4.46E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						1.20E-01	**1.11E+00**	**1.44E+00**	**3.23E-03**	**6.58E-02**	**5.84E-02**	**3.40E+02**	**1.59E-02**	**1.84E-03**	**3.41E+02**	**3.09E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2025
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2025 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	1.52E-03	1.90E-03	2.04E-02	6.20E-05	4.78E-04	2.04E-04
Dust Control		Water truck	5000 gal	1696	210	2.32E-01	9.19E-01	4.41E-01	3.77E-03	6.46E-02	3.37E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	2.24E-02	2.80E-02	3.01E-01	9.15E-04	7.06E-03	3.01E-03
	Fish relocation	3/4 ton pickup truck		16	19	5.59E-03	6.99E-03	7.50E-02	2.28E-04	1.76E-03	7.52E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.63E-04	3.39E-04	2.47E-03	1.48E-05	1.11E-04	4.64E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	6.69E-03	6.07E-02	6.41E-02	3.38E-04	4.73E-04	4.36E-04
		Chain saw		1.7209	19	9.11E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	8.20E-03	5.85E-02	5.97E-02	3.00E-04	4.86E-04	4.47E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	4.31E-03	3.91E-02	2.94E-02	1.44E-04	3.05E-04	2.80E-04
	Chipping	Brush chipper	250 hp	0.8673	19	8.99E-03	5.32E-02	4.12E-02	2.42E-04	4.07E-04	3.74E-04
		Front end loader	540 hp	0.8673	19	8.20E-03	5.85E-02	5.97E-02	3.00E-04	4.86E-04	4.47E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	5.60E-03	5.08E-02	5.36E-02	2.83E-04	3.96E-04	3.64E-04
		Front end loader	49 hp	4	19	1.29E-02	1.05E-01	1.12E-01	1.36E-04	4.79E-03	4.41E-03
		Roller	47 hp	4	19	3.43E-03	8.15E-02	1.05E-01	1.33E-04	3.02E-03	2.78E-03
		Water truck	3000 gal	4	19	6.05E-03	2.40E-02	1.15E-02	9.82E-05	1.68E-03	8.79E-04
		Excavator	300 hp	4	19	1.73E-02	1.51E-01	1.18E-01	5.79E-04	1.19E-03	1.10E-03
		Front end loader	180 hp	4	19	1.27E-02	9.06E-02	9.62E-02	5.08E-04	7.52E-04	6.92E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	1.68E-02	1.52E-01	1.61E-01	8.49E-04	1.19E-03	1.09E-03
		Loader/backhoe	75 hp	0.0923	19	1.38E-04	1.83E-03	2.22E-03	3.68E-06	1.40E-04	1.29E-04
		Crane 94'	155 hp	155	19	3.15E-01	4.07E+00	7.26E+00	1.30E-02	2.86E-01	2.63E-01
		1 ton pickup truck		155	19	2.44E-02	5.08E-02	3.70E-01	2.22E-03	1.67E-02	6.97E-03
		Crane 94'	155 hp	155	20	3.00E-01	3.87E+00	6.90E+00	1.24E-02	2.72E-01	2.50E-01
		1 ton pickup truck		155	20	2.32E-02	4.83E-02	3.52E-01	2.11E-03	1.59E-02	6.62E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	5.32E-03	4.83E-02	5.10E-02	2.69E-04	3.76E-04	3.46E-04
	Dewatering	Concrete saw	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	2.26E-02	2.91E-01	5.19E-01	9.33E-04	2.05E-02	1.88E-02
		Flatbed truck		8	23	3.03E-03	4.06E-03	4.35E-02	9.32E-05	7.09E-04	2.94E-04
		Generator	80 hp	5856	244	1.20E+00	1.28E+01	1.52E+01	2.92E-02	9.10E-01	8.37E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	7.42E-01	6.74E+00	6.09E+00	3.06E-02	5.25E-02	4.83E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	7.42E-01	6.74E+00	6.09E+00	3.06E-02	5.25E-02	4.83E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	7.42E-01	6.74E+00	6.09E+00	3.06E-02	5.25E-02	4.83E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	7.42E-01	6.74E+00	6.09E+00	3.06E-02	5.25E-02	4.83E-02
	Armoring	1 ton pickup truck		1.0667	19	1.68E-04	3.50E-04	2.55E-03	1.53E-05	1.15E-04	4.79E-05
		Excavator	430 hp	1.0667	19	6.63E-03	5.78E-02	4.52E-02	2.21E-04	4.55E-04	4.19E-04
		1 ton pickup truck		1.0667	19	1.68E-04	3.50E-04	2.55E-03	1.53E-05	1.15E-04	4.79E-05
	Maintenance	Grader	215 hp	144	210	5.12E-02	3.82E-01	4.32E-01	2.28E-03	3.13E-03	2.88E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.85E-03	3.51E-02	1.68E-02	1.44E-04	2.46E-03	1.29E-03
		Excavator	430 hp	4.445	22	2.39E-02	2.08E-01	1.63E-01	7.97E-04	1.64E-03	1.51E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	9.92E-02	7.34E-01	3.24E-01	1.63E-03	2.18E-02	2.01E-02
	Platform	Tractor/crawler/dozer	440 hp	40	20	2.68E-01	2.43E+00	1.83E+00	8.95E-03	1.90E-02	1.74E-02
		Tractor/crawler/dozer	440 hp	5	20	3.35E-02	3.04E-01	2.28E-01	1.12E-03	2.37E-03	2.18E-03
		3/4 ton Pickup truck		20	20	6.63E-03	8.30E-03	8.91E-02	2.71E-04	2.09E-03	8.93E-04
	Drilling	Rotary drill	475 hp	34.0003	126	3.07E-02	3.77E-01	3.12E-01	1.59E-03	2.76E-03	2.54E-03
		3/4 ton Pickup truck		34.0003	126	1.79E-03	2.24E-03	2.40E-02	7.31E-05	5.65E-04	2.41E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.53E-03	3.16E-03	3.39E-02	1.03E-04	7.97E-04	3.40E-04
		Diamond cutting saw	50 hp	48	126	1.49E-02	2.06E-01	1.69E-01	3.01E-04	7.72E-03	7.10E-03
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	3.21E-02	3.19E-01	2.58E-01	1.26E-03	2.44E-03	2.24E-03
		3/4 ton Pickup truck		60.0214	126	3.16E-03	3.95E-03	4.24E-02	1.29E-04	9.97E-04	4.25E-04
	Load/Haul	Front end loader	350 hp	4	126	3.71E-03	2.65E-02	2.11E-02	1.03E-04	2.20E-04	2.02E-04
		Water truck	3000 gal	507	126	1.16E-01	4.58E-01	2.19E-01	1.88E-03	3.22E-02	1.68E-02
	Landfill	Crane 260'	375 hp	30.0107	126	1.61E-02	1.59E-01	1.29E-01	6.31E-04	1.22E-03	1.12E-03
	Micro-blast	Crane 260'	375 hp	49	126	2.62E-02	2.60E-01	2.10E-01	1.03E-03	1.99E-03	1.83E-03
		Horizontal boring drill	10 hp	55	126	2.00E-03	4.83E-02	5.12E-02	6.96E-05	1.78E-03	1.64E-03
		3/4 ton Pickup truck		60	126	3.16E-03	3.95E-03	4.24E-02	1.29E-04	9.96E-04	4.25E-04
	Demolish spillway	Crane 260'	375 hp	20	126	1.07E-02	1.06E-01	8.58E-02	4.20E-04	8.12E-04	7.47E-04
		Air compressor	50 hp	40	126	5.57E-02	6.01E-02	5.48E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	1.05E-03	1.32E-03	1.41E-02	4.30E-05	3.32E-04	1.42E-04
						6.12E+00	**5.63E+01**	**6.94E+01**	**2.15E-01**	**1.96E+00**	**1.75E+00**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2027	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2027 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.027	0.114	0.590	0.003	0.004	0.004	301.155	0.008	0.000
		Chain saw		1.7209	19	1.683	0.115	13.187	0.001	0.021	0.021	35.644	0.105	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.032	0.099	0.534	0.003	0.004	0.003	290.653	0.007	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.027	0.115	0.440	0.002	0.004	0.004	234.957	0.006	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.066	0.187	0.691	0.005	0.007	0.006	402.162	0.006	0.000
		Front end loader	540 hp	0.8673	19	0.032	0.099	0.534	0.003	0.004	0.003	290.653	0.007	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.027	0.114	0.590	0.003	0.004	0.004	301.155	0.008	0.000
		Front end loader	49 hp	4	19	0.159	1.249	1.738	0.003	0.006	0.005	231.301	0.014	0.000
		Roller	47 hp	4	19	0.134	1.238	1.607	0.003	0.005	0.005	235.524	0.012	0.000
		Water truck	3000 gal	4	19	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
		Excavator	300 hp	4	19	0.025	0.102	0.408	0.002	0.004	0.003	211.854	0.007	0.000
		Front end loader	180 hp	4	19	0.032	0.099	0.516	0.003	0.004	0.003	270.057	0.007	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.027	0.114	0.590	0.003	0.004	0.004	301.155	0.008	0.000
		Loader/backhoe	75 hp	0.0923	19	0.037	0.516	1.248	0.002	0.004	0.004	195.357	0.007	0.000
		Crane 94'	155 hp	155	19	0.017	0.077	1.175	0.002	0.003	0.003	208.035	0.005	0.000
		1 ton pickup truck		155	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.017	0.077	1.175	0.002	0.003	0.003	208.035	0.005	0.000
		1 ton pickup truck		155	20	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.027	0.114	0.590	0.003	0.004	0.004	301.155	0.008	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.252	2.404	118.855	0.006	1.685	1.682	200.993	0.184	0.193
		Crane 80'	130 hp	16	23	0.017	0.077	1.175	0.002	0.003	0.003	208.035	0.005	0.000
		Flatbed truck		8	23	1.465	2.125	21.302	0.061	0.460	0.189	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.062	0.703	1.651	0.003	0.005	0.005	294.376	0.006	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.027	0.115	0.547	0.003	0.004	0.004	291.784	0.008	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.027	0.115	0.547	0.003	0.004	0.004	291.784	0.008	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.027	0.115	0.547	0.003	0.004	0.004	291.784	0.008	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.027	0.115	0.547	0.003	0.004	0.004	291.784	0.008	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.025	0.102	0.408	0.002	0.004	0.003	211.854	0.007	0.000
		1 ton pickup truck		1.0667	19	0.522	1.201	8.140	0.062	0.462	0.191	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.030	0.111	0.600	0.004	0.004	0.004	311.997	0.008	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
		Excavator	430 hp	4.445	22	0.025	0.102	0.408	0.002	0.004	0.003	211.854	0.007	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.027	0.998	0.580	0.003	0.008	0.008	309.616	0.008	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.027	0.115	0.440	0.002	0.004	0.004	234.957	0.006	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.027	0.115	0.440	0.002	0.004	0.004	234.957	0.006	0.000
		3/4 ton Pickup truck		20	20	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.030	0.133	0.510	0.003	0.005	0.004	282.098	0.006	0.000
		3/4 ton Pickup truck		34.0003	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.098	1.390	1.556	0.004	0.005	0.005	277.581	0.009	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.016	0.076	0.302	0.002	0.003	0.002	163.266	0.004	0.000
		3/4 ton Pickup truck		60.0214	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.032	0.101	0.395	0.002	0.004	0.004	214.824	0.005	0.000
		Water truck	3000 gal	507	126	6.583	26.175	12.501	0.106	1.818	0.952	21,148.901	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.016	0.076	0.302	0.002	0.003	0.002	163.266	0.004	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.016	0.076	0.302	0.002	0.003	0.002	163.266	0.004	0.000
		Horizontal boring drill	10 hp	55	126	0.080	1.511	1.885	0.005	0.006	0.005	308.640	0.032	0.000
		3/4 ton Pickup truck		60	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.016	0.076	0.302	0.002	0.003	0.002	163.266	0.004	0.000
		Air compressor	50 hp	40	126	0.472	0.622	37.381	0.004	0.024	0.023	307.092	0.027	0.054
		3/4 ton Pickup truck		20	126	1.128	1.630	15.889	0.061	0.470	0.198	20,361.281	2.024	1.056
Data from Alt3_EnvrAirQualityReport.pdf														Total

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2027
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2027 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	5.97E-05	8.62E-05	8.41E-04	3.25E-06	2.49E-05	1.05E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.89E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	3/4 ton pickup truck		709	210	8.82E-04	1.27E-03	1.24E-02	4.80E-05	3.67E-04	1.55E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	3/4 ton pickup truck		16	19	1.99E-05	2.87E-05	2.80E-04	1.08E-06	8.29E-06	3.50E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	5.95E-07	1.37E-06	9.26E-06	7.02E-08	5.25E-07	2.17E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.27E-05	5.42E-05	2.80E-04	1.61E-06	1.93E-06	1.78E-06	1.43E-01	3.91E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	2.68E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	1.67E-06	6.24E-07	7.96E-04	7.22E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	1.63E-05	5.13E-05	2.76E-04	1.51E-06	1.94E-06	1.78E-06	1.50E-01	3.72E-06	-	1.50E-01	1.36E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	7.96E-06	3.40E-05	1.31E-04	6.83E-07	1.21E-06	1.12E-06	6.96E-02	1.91E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	1.57E-05	4.47E-05	1.65E-04	1.08E-06	1.57E-06	1.44E-06	9.61E-02	1.42E-06	-	9.61E-02	8.72E-02
		Front end loader	540 hp	0.8673	19	1.63E-05	5.13E-05	2.76E-04	1.51E-06	1.94E-06	1.78E-06	1.50E-01	3.72E-06	-	1.50E-01	1.36E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	1.06E-05	4.54E-05	2.34E-04	1.34E-06	1.62E-06	1.49E-06	1.20E-01	3.27E-06	-	1.20E-01	1.08E-01
		Front end loader	49 hp	4	19	3.43E-05	2.70E-04	3.75E-04	6.46E-07	1.25E-06	1.15E-06	5.00E-02	3.10E-06	-	5.00E-02	4.54E-02
		Roller	47 hp	4	19	2.77E-05	2.57E-04	3.33E-04	6.31E-07	1.10E-06	1.01E-06	4.88E-02	2.50E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	2.90E-05	1.15E-04	5.51E-05	4.67E-07	8.02E-06	4.20E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.35E-05	1.35E-04	5.39E-04	2.75E-06	4.87E-06	4.48E-06	2.80E-01	8.65E-06	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	2.53E-05	7.88E-05	4.09E-04	2.41E-06	3.01E-06	2.77E-06	2.14E-01	5.31E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	3.19E-05	1.36E-04	7.03E-04	4.03E-06	4.85E-06	4.47E-06	3.59E-01	9.81E-06	-	3.59E-01	3.25E-01
		Loader/backhoe	75 hp	0.0923	19	2.80E-07	3.93E-06	9.53E-06	1.75E-08	3.37E-08	3.10E-08	1.49E-03	5.55E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.38E-04	2.03E-03	3.11E-02	6.20E-05	7.36E-05	6.77E-05	5.51E+00	1.40E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	8.93E-05	2.05E-04	1.39E-03	1.05E-05	7.89E-05	3.26E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.38E-04	2.03E-03	3.11E-02	6.20E-05	7.36E-05	6.77E-05	5.51E+00	1.40E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	8.93E-05	2.05E-04	1.39E-03	1.05E-05	7.89E-05	3.26E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.06E-05	4.54E-05	2.34E-04	1.34E-06	1.62E-06	1.49E-06	1.20E-01	3.27E-06	-	1.20E-01	1.08E-01
	Dewatering	Concrete saw	13 hp	8	23	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	3.79E-05	1.76E-04	2.69E-03	5.37E-06	6.37E-06	5.86E-06	4.77E-01	1.22E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	1.29E-05	1.87E-05	1.88E-04	5.36E-07	4.06E-06	1.67E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	3.20E-02	3.63E-01	8.52E-01	1.78E-03	2.68E-03	2.47E-03	1.52E+02	2.89E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	1.40E-03	5.99E-03	2.85E-02	1.53E-04	2.14E-04	1.96E-04	1.52E+01	4.16E-04	-	1.52E+01	1.38E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	1.40E-03	5.99E-03	2.85E-02	1.53E-04	2.14E-04	1.96E-04	1.52E+01	4.16E-04	-	1.52E+01	1.38E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.40E-03	5.99E-03	2.85E-02	1.53E-04	2.14E-04	1.96E-04	1.52E+01	4.16E-04	-	1.52E+01	1.38E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	1.40E-03	5.99E-03	2.85E-02	1.53E-04	2.14E-04	1.96E-04	1.52E+01	4.16E-04	-	1.52E+01	1.38E+01
	Armoring	1 ton pickup truck		1.0667	19	6.14E-07	1.41E-06	9.57E-06	7.25E-08	5.43E-07	2.24E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.28E-05	5.17E-05	2.06E-04	1.05E-06	1.86E-06	1.71E-06	1.07E-01	3.31E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	6.14E-07	1.41E-06	9.57E-06	7.25E-08	5.43E-07	2.24E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	1.04E-03	3.80E-03	2.05E-02	1.20E-04	1.39E-04	1.28E-04	1.06E+01	2.71E-04	-	1.07E+01	9.66E+00
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	4.92E-05	1.96E-04	9.34E-05	7.91E-07	1.36E-05	7.11E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.44E-01
		Excavator	430 hp	4.445	22	5.33E-05	2.15E-04	8.59E-04	4.38E-06	7.75E-06	7.13E-06	4.46E-01	1.38E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	8.12E-05	3.02E-03	1.76E-03	9.43E-06	2.56E-05	2.36E-05	9.38E-01	2.57E-05	-	9.38E-01	8.51E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	5.21E-04	2.23E-03	8.54E-03	4.47E-05	7.94E-05	7.30E-05	4.56E+00	1.25E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	6.51E-05	2.78E-04	1.07E-03	5.59E-06	9.92E-06	9.13E-06	5.70E-01	1.56E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	2.49E-05	3.59E-05	3.50E-04	1.36E-06	1.04E-05	4.37E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	5.33E-04	2.37E-03	9.08E-03	4.93E-05	8.38E-05	7.71E-05	5.02E+00	1.14E-04	-	5.02E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	4.23E-05	6.11E-05	5.95E-04	2.30E-06	1.76E-05	7.43E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	5.97E-05	8.62E-05	8.41E-04	3.25E-06	2.49E-05	1.05E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	2.60E-04	3.68E-03	4.12E-03	9.49E-06	1.32E-05	1.22E-05	7.34E-01	2.35E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	4.09E-04	1.90E-03	7.48E-03	3.98E-05	6.67E-05	6.14E-05	4.05E+00	1.03E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	7.46E-05	1.08E-04	1.05E-03	4.07E-06	3.11E-05	1.31E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	4.93E-05	1.55E-04	6.09E-04	3.25E-06	5.87E-06	5.40E-06	3.32E-01	8.21E-06	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.68E-03	1.46E-02	6.99E-03	5.91E-05	1.02E-03	5.32E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	2.04E-04	9.48E-04	3.74E-03	1.99E-05	3.33E-05	3.07E-05	2.03E+00	5.16E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	3.34E-04	1.55E-03	6.11E-03	3.25E-05	5.45E-05	5.01E-05	3.31E+00	8.43E-05	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	4.84E-05	9.16E-04	1.14E-03	2.91E-06	3.60E-06	3.31E-06	1.87E-01	1.97E-05	-	1.88E-01	1.70E-01
		3/4 ton Pickup truck		60	126	7.46E-05	1.08E-04	1.05E-03	4.07E-06	3.11E-05	1.31E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	1.36E-04	6.32E-04	2.49E-03	1.32E-05	2.22E-05	2.04E-05	1.35E+00	3.44E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.04E-03	1.37E-03	8.24E-02	8.23E-06	5.19E-05	5.18E-05	6.77E-01	5.87E-05	1.18E-04	7.15E-01	6.48E-01
		3/4 ton Pickup truck		20	126	2.49E-05	3.59E-05	3.50E-04	1.36E-06	1.04E-05	4.37E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						6.15E-02	**4.82E-01**	**1.25E+00**	**3.26E-03**	**9.63E-03**	**6.78E-03**	**3.43E+02**	**9.00E-03**	**1.82E-03**	**3.44E+02**	**3.12E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2027
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2027 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	1.14E-03	1.64E-03	1.60E-02	6.19E-05	4.74E-04	2.00E-04
Dust Control		Water truck	5000 gal	1696	210	2.34E-01	9.32E-01	4.45E-01	3.77E-03	6.47E-02	3.39E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	1.68E-02	2.43E-02	2.37E-01	9.15E-04	6.99E-03	2.95E-03
	Fish relocation	3/4 ton pickup truck		16	19	4.19E-03	6.05E-03	5.90E-02	2.28E-04	1.74E-03	7.36E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	1.25E-04	2.88E-04	1.95E-03	1.48E-05	1.11E-04	4.57E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	2.67E-03	1.14E-02	5.89E-02	3.38E-04	4.07E-04	3.75E-04
		Chain saw		1.7209	19	5.64E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	3.43E-03	1.08E-02	5.80E-02	3.18E-04	4.08E-04	3.75E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.68E-03	7.16E-03	2.75E-02	1.44E-04	2.55E-04	2.35E-04
	Chipping	Brush chipper	250 hp	0.8673	19	3.31E-03	9.41E-03	3.48E-02	2.28E-04	3.30E-04	3.03E-04
		Front end loader	540 hp	0.8673	19	3.43E-03	1.08E-02	5.80E-02	3.18E-04	4.08E-04	3.75E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.24E-03	9.55E-03	4.93E-02	2.83E-04	3.41E-04	3.13E-04
		Front end loader	49 hp	4	19	7.23E-03	5.68E-02	7.90E-02	1.36E-04	2.64E-04	2.43E-04
		Roller	47 hp	4	19	5.82E-03	5.40E-02	7.01E-02	1.33E-04	2.32E-04	2.13E-04
		Water truck	3000 gal	4	19	6.11E-03	2.43E-02	1.16E-02	9.82E-05	1.69E-03	8.84E-04
		Excavator	300 hp	4	19	7.05E-03	2.85E-02	1.14E-01	5.79E-04	1.02E-03	9.43E-04
		Front end loader	180 hp	4	19	5.32E-03	1.66E-02	8.62E-02	5.08E-04	6.33E-04	5.82E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	6.71E-03	2.87E-02	1.48E-01	8.49E-04	1.02E-03	9.40E-04
		Loader/backhoe	75 hp	0.0923	19	5.89E-05	8.28E-04	2.01E-03	3.68E-06	7.10E-06	6.53E-06
		Crane 94'	155 hp	155	19	9.23E-02	4.28E-01	6.55E+00	1.31E-02	1.55E-02	1.43E-02
		1 ton pickup truck		155	19	1.88E-02	4.32E-02	2.93E-01	2.22E-03	1.66E-02	6.85E-03
		Crane 94'	155 hp	155	20	8.77E-02	4.07E-01	6.22E+00	1.24E-02	1.47E-02	1.35E-02
		1 ton pickup truck		155	20	1.79E-02	4.10E-02	2.78E-01	2.11E-03	1.58E-02	6.51E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.12E-03	9.08E-03	4.68E-02	2.69E-04	3.24E-04	2.98E-04
	Dewatering	Concrete saw	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	6.60E-03	3.06E-02	4.68E-01	9.33E-04	1.11E-03	1.02E-03
		Flatbed truck		8	23	2.25E-03	3.26E-03	3.27E-02	9.32E-05	7.06E-04	2.90E-04
		Generator	80 hp	5856	244	5.24E-01	5.95E+00	1.40E+01	2.92E-02	4.39E-02	4.04E-02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	2.95E-01	1.26E+00	6.00E+00	3.22E-02	4.50E-02	4.14E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	2.95E-01	1.26E+00	6.00E+00	3.22E-02	4.50E-02	4.14E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	2.95E-01	1.26E+00	6.00E+00	3.22E-02	4.50E-02	4.14E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	2.95E-01	1.26E+00	6.00E+00	3.22E-02	4.50E-02	4.14E-02
	Armoring	1 ton pickup truck		1.0667	19	1.29E-04	2.97E-04	2.01E-03	1.53E-05	1.14E-04	4.72E-05
		Excavator	430 hp	1.0667	19	2.69E-03	1.09E-02	4.34E-02	2.21E-04	3.92E-04	3.60E-04
		1 ton pickup truck		1.0667	19	1.29E-04	2.97E-04	2.01E-03	1.53E-05	1.14E-04	4.72E-05
	Maintenance	Grader	215 hp	144	210	1.98E-02	7.24E-02	3.90E-01	2.28E-03	2.65E-03	2.44E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.95E-03	3.56E-02	1.70E-02	1.44E-04	2.47E-03	1.29E-03
		Excavator	430 hp	4.445	22	9.70E-03	3.92E-02	1.56E-01	7.97E-04	1.41E-03	1.30E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.48E-02	5.49E-01	3.20E-01	1.71E-03	4.66E-03	4.29E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.04E-01	4.45E-01	1.71E+00	8.95E-03	1.59E-02	1.46E-02
		Tractor/crawler/dozer	440 hp	5	20	1.30E-02	5.56E-02	2.14E-01	1.12E-03	1.98E-03	1.83E-03
		3/4 ton Pickup truck		20	20	4.97E-03	7.18E-03	7.01E-02	2.71E-04	2.07E-03	8.74E-04
	Drilling	Rotary drill	475 hp	34.0003	126	1.69E-02	7.51E-02	2.88E-01	1.56E-03	2.66E-03	2.45E-03
		3/4 ton Pickup truck		34.0003	126	1.34E-03	1.94E-03	1.89E-02	7.31E-05	5.59E-04	2.36E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.89E-03	2.74E-03	2.67E-02	1.03E-04	7.89E-04	3.33E-04
		Diamond cutting saw	50 hp	48	126	8.27E-03	1.17E-01	1.31E-01	3.01E-04	4.20E-04	3.87E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.30E-02	6.02E-02	2.38E-01	1.26E-03	2.12E-03	1.95E-03
		3/4 ton Pickup truck		60.0214	126	2.37E-03	3.42E-03	3.34E-02	1.29E-04	9.87E-04	4.16E-04
	Load/Haul	Front end loader	350 hp	4	126	1.57E-03	4.93E-03	1.93E-02	1.03E-04	1.86E-04	1.71E-04
		Water truck	3000 gal	507	126	1.17E-01	4.64E-01	2.22E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	6.49E-03	3.01E-02	1.19E-01	6.31E-04	1.06E-03	9.74E-04
	Micro-blast	Crane 260'	375 hp	49	126	1.06E-02	4.91E-02	1.94E-01	1.03E-03	1.73E-03	1.59E-03
		Horizontal boring drill	10 hp	55	126	1.54E-03	2.91E-02	3.63E-02	9.24E-05	1.14E-04	1.05E-04
		3/4 ton Pickup truck		60	126	2.37E-03	3.42E-03	3.34E-02	1.29E-04	9.87E-04	4.16E-04
	Demolish spillway	Crane 260'	375 hp	20	126	4.32E-03	2.01E-02	7.92E-02	4.21E-04	7.06E-04	6.49E-04
		Air compressor	50 hp	40	126	3.30E-02	4.35E-02	2.62E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	7.89E-04	1.14E-03	1.11E-02	4.30E-05	3.29E-04	1.39E-04
Data from Alt3_EnvrAirQualityReport.pdf						**2.71E+00**	**1.54E+01**	**6.28E+01**	**2.22E-01**	**4.82E-01**	**3.81E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2029
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2029 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.627	0.003	0.004	0.004	301.165	0.010	0.000
		Chain saw		1.7209	19	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.549	0.003	0.004	0.004	286.791	0.009	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.462	0.002	0.004	0.004	234.949	0.008	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.073	0.184	0.685	0.004	0.007	0.006	389.821	0.007	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.549	0.003	0.004	0.004	286.791	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.627	0.003	0.004	0.004	301.165	0.010	0.000
		Front end loader	49 hp	4	19	0.194	1.290	1.939	0.003	0.007	0.006	231.303	0.018	0.000
		Roller	47 hp	4	19	0.164	1.275	1.785	0.003	0.006	0.005	235.545	0.015	0.000
		Water truck	3000 gal	4	19	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.855	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.544	0.003	0.004	0.004	270.066	0.008	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.627	0.003	0.004	0.004	301.165	0.010	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.315	0.002	0.005	0.004	195.357	0.009	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.245	0.002	0.003	0.003	208.071	0.007	0.000
		1 ton pickup truck		155	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.245	0.002	0.003	0.003	208.071	0.007	0.000
		1 ton pickup truck		155	20	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.627	0.003	0.004	0.004	301.165	0.010	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.250	2.403	118.808	0.006	1.684	1.681	200.914	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.245	0.002	0.003	0.003	208.071	0.007	0.000
		Flatbed truck		8	23	1.131	1.787	16.593	0.061	0.459	0.188	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.069	0.709	1.679	0.003	0.005	0.005	294.391	0.006	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.530	0.003	0.004	0.004	269.731	0.009	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.530	0.003	0.004	0.004	269.731	0.009	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.530	0.003	0.004	0.004	269.731	0.009	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.530	0.003	0.004	0.004	269.731	0.009	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.029	0.104	0.424	0.002	0.004	0.004	211.855	0.008	0.000
		1 ton pickup truck		1.0667	19	0.413	1.030	6.565	0.062	0.459	0.188	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.633	0.004	0.004	0.004	311.988	0.010	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.855	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.563	0.003	0.009	0.008	286.216	0.010	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.462	0.002	0.004	0.004	234.949	0.008	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.462	0.002	0.004	0.004	234.949	0.008	0.000
		3/4 ton Pickup truck		20	20	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.523	0.003	0.005	0.004	282.098	0.007	0.000
		3/4 ton Pickup truck		34.0003	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.114	1.408	1.647	0.004	0.005	0.005	277.553	0.010	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.316	0.002	0.003	0.003	163.216	0.005	0.000
		3/4 ton Pickup truck		60.0214	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.411	0.002	0.004	0.004	214.820	0.006	0.000
		Water truck	3000 gal	507	126	6.592	26.288	12.519	0.106	1.819	0.953	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.316	0.002	0.003	0.003	163.216	0.005	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.316	0.002	0.003	0.003	163.216	0.005	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	1.194	0.004	0.006	0.006	289.997	0.032	0.000
		3/4 ton Pickup truck		60	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.316	0.002	0.003	0.003	163.216	0.005	0.000
		Air compressor	50 hp	40	126	0.536	0.669	45.525	0.004	0.024	0.023	306.925	0.030	0.056
		3/4 ton Pickup truck		20	126	0.843	1.423	12.380	0.061	0.466	0.195	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2029
Speed of Onsite Trucks 10 mph

						GWP	1	21	310						
		Equipment	Equipment	Total	Days per	Annual Emissions - 2029 (tons per year)									Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	4.46E-05	7.53E-05	6.55E-04	3.25E-06	2.47E-05	1.03E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.91E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	6.59E-04	1.11E-03	9.68E-03	4.80E-05	3.64E-04	1.52E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	1.49E-05	2.51E-05	2.18E-04	1.08E-06	8.22E-06	3.44E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	4.70E-07	1.17E-06	7.47E-06	7.02E-08	5.23E-07	2.15E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	2.97E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	4.82E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	3.01E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	1.87E-06	6.24E-07	8.01E-04	7.26E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	2.83E-04	1.49E-06	2.06E-06	1.89E-06	1.48E-01	4.46E-06	-	1.48E-01	1.34E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.37E-04	6.83E-07	1.26E-06	1.16E-06	6.96E-02	2.35E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	1.74E-05	4.39E-05	1.64E-04	1.05E-06	1.57E-06	1.44E-06	9.32E-02	1.57E-06	-	9.32E-02	8.46E-02
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	2.83E-04	1.49E-06	2.06E-06	1.89E-06	1.48E-01	4.46E-06	-	1.48E-01	1.34E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.22E-05	4.61E-05	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.04E-06	-	1.20E-01	1.08E-01
		Front end loader	49 hp	4	19	4.19E-05	2.79E-04	4.19E-04	6.46E-07	1.42E-06	1.30E-06	5.00E-02	3.78E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	3.41E-05	2.64E-04	3.70E-04	6.31E-07	1.24E-06	1.14E-06	4.88E-02	3.08E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	2.91E-05	1.16E-04	5.52E-05	4.67E-07	8.02E-06	4.20E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.31E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	6.45E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	3.67E-05	1.38E-04	7.47E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.21E-05	-	3.59E-01	3.25E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.00E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	6.73E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.30E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	1.74E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	7.05E-05	1.76E-04	1.12E-03	1.05E-05	7.85E-05	3.22E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.30E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	1.74E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	7.05E-05	1.76E-04	1.12E-03	1.05E-05	7.85E-05	3.22E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.22E-05	4.61E-05	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.04E-06	-	1.20E-01	1.08E-01
	Dewatering	Concrete saw	13 hp	8	23	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.86E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.50E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	9.98E-06	1.58E-05	1.46E-04	5.35E-07	4.05E-06	1.66E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	3.58E-02	3.66E-01	8.67E-01	1.78E-03	2.84E-03	2.61E-03	1.52E+02	3.23E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.77E-02	1.41E-04	2.22E-04	2.04E-04	1.41E+01	4.75E-04	-	1.41E+01	1.28E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.77E-02	1.41E-04	2.22E-04	2.04E-04	1.41E+01	4.75E-04	-	1.41E+01	1.28E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.77E-02	1.41E-04	2.22E-04	2.04E-04	1.41E+01	4.75E-04	-	1.41E+01	1.28E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.77E-02	1.41E-04	2.22E-04	2.04E-04	1.41E+01	4.75E-04	-	1.41E+01	1.28E+01
	Armoring	1 ton pickup truck		1.0667	19	4.85E-07	1.21E-06	7.72E-06	7.25E-08	5.40E-07	2.22E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.48E-05	5.26E-05	2.15E-04	1.05E-06	1.94E-06	1.78E-06	1.07E-01	3.89E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	4.85E-07	1.21E-06	7.72E-06	7.25E-08	5.40E-07	2.22E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	1.23E-03	3.88E-03	2.16E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.30E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	4.93E-05	1.96E-04	9.36E-05	7.91E-07	1.36E-05	7.12E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.70E-03	8.72E-06	2.69E-05	2.47E-05	8.67E-01	2.93E-05	-	8.68E-01	7.87E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	6.00E-04	2.26E-03	8.96E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.54E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.12E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	1.92E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	1.86E-05	3.14E-05	2.73E-04	1.35E-06	1.03E-05	4.30E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	5.85E-04	2.38E-03	9.32E-03	4.93E-05	8.55E-05	7.86E-05	5.02E+00	1.31E-04	-	5.02E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	3.16E-05	5.33E-05	4.64E-04	2.30E-06	1.75E-05	7.30E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	4.46E-05	7.53E-05	6.55E-04	3.25E-06	2.47E-05	1.03E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.02E-04	3.73E-03	4.36E-03	9.49E-06	1.41E-05	1.30E-05	7.34E-01	2.73E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	4.66E-04	1.92E-03	7.83E-03	3.97E-05	6.89E-05	6.34E-05	4.05E+00	1.28E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	5.58E-05	9.41E-05	8.19E-04	4.07E-06	3.08E-05	1.29E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	5.94E-05	1.59E-04	6.34E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	9.98E-06	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.68E-03	1.47E-02	7.00E-03	5.91E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	2.33E-04	9.60E-04	3.91E-03	1.99E-05	3.44E-05	3.17E-05	2.02E+00	6.38E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	3.80E-04	1.57E-03	6.39E-03	3.24E-05	5.62E-05	5.17E-05	3.31E+00	1.04E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	7.24E-04	2.23E-06	3.76E-06	3.46E-06	1.76E-01	1.91E-05	-	1.76E-01	1.60E-01
		3/4 ton Pickup truck		60	126	5.58E-05	9.41E-05	8.19E-04	4.06E-06	3.08E-05	1.29E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	1.55E-04	6.40E-04	2.61E-03	1.32E-05	2.30E-05	2.11E-05	1.35E+00	4.25E-05	-	1.35E+00	1.22E+00
		Air compressor	50 hp	40	126	1.18E-03	1.47E-03	1.00E-01	8.23E-06	5.18E-05	5.17E-05	6.77E-01	6.68E-05	1.23E-04	7.16E-01	6.50E-01
		3/4 ton Pickup truck		20	126	1.86E-05	3.14E-05	2.73E-04	1.35E-06	1.03E-05	4.30E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						6.66E-02	**4.86E-01**	**1.28E+00**	**3.21E-03**	**9.85E-03**	**6.98E-03**	**3.38E+02**	**9.85E-03**	**1.83E-03**	**3.39E+02**	**3.07E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2029	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2029 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	8.50E-04	1.43E-03	1.25E-02	6.19E-05	4.70E-04	1.96E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.36E-01	4.46E-01	3.77E-03	6.48E-02	3.39E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	1.26E-02	2.12E-02	1.84E-01	9.15E-04	6.94E-03	2.90E-03
	Fish relocation	3/4 ton pickup truck		16	19	3.13E-03	5.28E-03	4.60E-02	2.28E-04	1.73E-03	7.24E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	9.89E-05	2.47E-04	1.57E-03	1.48E-05	1.10E-04	4.52E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	3.08E-03	1.16E-02	6.26E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	6.34E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	5.96E-02	3.13E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.93E-03	7.26E-03	2.88E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	Brush chipper	250 hp	0.8673	19	3.66E-03	9.23E-03	3.45E-02	2.21E-04	3.30E-04	3.04E-04
		Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	5.96E-02	3.13E-04	4.33E-04	3.98E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.58E-03	9.70E-03	5.24E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	8.83E-03	5.87E-02	8.82E-02	1.36E-04	2.98E-04	2.74E-04
		Roller	47 hp	4	19	7.18E-03	5.56E-02	7.79E-02	1.33E-04	2.60E-04	2.40E-04
		Water truck	3000 gal	4	19	6.12E-03	2.44E-02	1.16E-02	9.82E-05	1.69E-03	8.84E-04
		Excavator	300 hp	4	19	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	6.42E-03	1.71E-02	9.08E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	7.73E-03	2.91E-02	1.57E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	6.83E-05	8.40E-04	2.11E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	1.05E-01	4.33E-01	6.94E+00	1.31E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	1.48E-02	3.70E-02	2.36E-01	2.22E-03	1.65E-02	6.78E-03
		Crane 94'	155 hp	155	20	9.97E-02	4.11E-01	6.60E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	1.41E-02	3.52E-02	2.24E-01	2.11E-03	1.57E-02	6.44E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.45E-03	9.21E-03	4.98E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	Concrete saw	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	7.51E-03	3.09E-02	4.97E-01	9.34E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	1.73E-03	2.74E-03	2.54E-02	9.31E-05	7.04E-04	2.88E-04
		Generator	80 hp	5856	244	5.86E-01	6.01E+00	1.42E+01	2.92E-02	4.66E-02	4.28E-02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.82E+00	2.98E-02	4.67E-02	4.29E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.82E+00	2.98E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.82E+00	2.98E-02	4.67E-02	4.29E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.82E+00	2.98E-02	4.67E-02	4.29E-02
	Armoring	1 ton pickup truck		1.0667	19	1.02E-04	2.55E-04	1.63E-03	1.53E-05	1.14E-04	4.67E-05
		Excavator	430 hp	1.0667	19	3.12E-03	1.11E-02	4.52E-02	2.21E-04	4.08E-04	3.75E-04
		1 ton pickup truck		1.0667	19	1.02E-04	2.55E-04	1.63E-03	1.53E-05	1.14E-04	4.67E-05
	Maintenance	Grader	215 hp	144	210	2.33E-02	7.39E-02	4.12E-01	2.28E-03	2.79E-03	2.56E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.96E-03	3.57E-02	1.70E-02	1.44E-04	2.47E-03	1.29E-03
		Excavator	430 hp	4.445	22	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.70E-02	5.57E-01	3.10E-01	1.58E-03	4.89E-03	4.49E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.20E-01	4.52E-01	1.79E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	1.50E-02	5.65E-02	2.24E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	3.72E-03	6.27E-03	5.46E-02	2.71E-04	2.06E-03	8.59E-04
	Drilling	Rotary drill	475 hp	34.0003	126	1.86E-02	7.54E-02	2.96E-01	1.56E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		34.0003	126	1.00E-03	1.69E-03	1.47E-02	7.31E-05	5.55E-04	2.32E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.42E-03	2.39E-03	2.08E-02	1.03E-04	7.83E-04	3.27E-04
		Diamond cutting saw	50 hp	48	126	9.60E-03	1.18E-01	1.38E-01	3.01E-04	4.49E-04	4.13E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.48E-02	6.10E-02	2.49E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	1.77E-03	2.99E-03	2.60E-02	1.29E-04	9.79E-04	4.09E-04
	Load/Haul	Front end loader	350 hp	4	126	1.89E-03	5.06E-03	2.01E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.17E-01	4.66E-01	2.22E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	7.39E-03	3.05E-02	1.24E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	Crane 260'	375 hp	49	126	1.21E-02	4.98E-02	2.03E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.72E-03	2.90E-02	2.30E-02	7.08E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	1.77E-03	2.99E-03	2.60E-02	1.29E-04	9.79E-04	4.09E-04
	Demolish spillway	Crane 260'	375 hp	20	126	4.93E-03	2.03E-02	8.28E-02	4.20E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	3.75E-02	4.68E-02	3.19E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	5.90E-04	9.96E-04	8.66E-03	4.30E-05	3.26E-04	1.36E-04
						3.01E+00	**1.55E+01**	**6.37E+01**	**2.12E-01**	**4.94E-01**	**3.92E-01**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2031
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2031 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.642	0.003	0.004	0.004	301.162	0.011	0.000
		Chain saw		1.7209	19	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.560	0.003	0.004	0.004	282.348	0.010	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.471	0.002	0.004	0.004	234.955	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.087	0.198	0.746	0.005	0.007	0.007	415.165	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.560	0.003	0.004	0.004	282.348	0.010	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.642	0.003	0.004	0.004	301.162	0.011	0.000
		Front end loader	49 hp	4	19	0.224	1.326	2.112	0.003	0.007	0.007	231.301	0.020	0.000
		Roller	47 hp	4	19	0.194	1.310	1.954	0.003	0.007	0.006	235.486	0.017	0.000
		Water truck	3000 gal	4	19	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.849	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.569	0.003	0.004	0.004	270.067	0.009	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.642	0.003	0.004	0.004	301.162	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.373	0.002	0.005	0.004	195.356	0.010	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.302	0.002	0.003	0.003	208.090	0.008	0.000
		1 ton pickup truck		155	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.302	0.002	0.003	0.003	208.090	0.008	0.000
		1 ton pickup truck		155	20	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.642	0.003	0.004	0.004	301.162	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.252	2.404	118.859	0.006	1.685	1.682	200.999	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.302	0.002	0.003	0.003	208.090	0.008	0.000
		Flatbed truck		8	23	0.873	1.543	12.845	0.061	0.457	0.187	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.077	0.716	1.708	0.003	0.006	0.005	294.377	0.007	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.579	0.003	0.004	0.004	289.219	0.011	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.579	0.003	0.004	0.004	289.219	0.011	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.579	0.003	0.004	0.004	289.219	0.011	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.579	0.003	0.004	0.004	289.219	0.011	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.029	0.104	0.424	0.002	0.004	0.004	211.849	0.008	0.000
		1 ton pickup truck		1.0667	19	0.342	0.905	5.526	0.062	0.458	0.187	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.664	0.004	0.004	0.004	312.014	0.011	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.849	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.615	0.003	0.009	0.008	306.894	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.471	0.002	0.004	0.004	234.955	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.471	0.002	0.004	0.004	234.955	0.009	0.000
		3/4 ton Pickup truck		20	20	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.533	0.003	0.005	0.004	282.072	0.008	0.000
		3/4 ton Pickup truck		34.0003	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.130	1.427	1.739	0.004	0.006	0.005	277.576	0.012	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.327	0.002	0.003	0.003	163.275	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.426	0.002	0.004	0.004	214.828	0.008	0.000
		Water truck	3000 gal	507	126	6.597	26.369	12.528	0.106	1.820	0.953	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.327	0.002	0.003	0.003	163.275	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.327	0.002	0.003	0.003	163.275	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	1.185	0.004	0.006	0.006	287.880	0.031	0.000
		3/4 ton Pickup truck		60	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.327	0.002	0.003	0.003	163.275	0.006	0.000
		Air compressor	50 hp	40	126	0.601	0.716	53.710	0.004	0.024	0.023	307.047	0.034	0.058
		3/4 ton Pickup truck		20	126	0.600	1.244	9.266	0.061	0.463	0.192	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2031
Speed of Onsite Trucks 10 mph

						GWP		1		21		310			
		Equipment	Equipment	Total	Days per	Annual Emissions - 2031 (tons per year)									Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	3.18E-05	6.58E-05	4.90E-04	3.25E-06	2.45E-05	1.02E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.93E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	4.69E-04	9.72E-04	7.24E-03	4.80E-05	3.62E-04	1.50E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	1.06E-05	2.19E-05	1.63E-04	1.08E-06	8.17E-06	3.39E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	3.89E-07	1.03E-06	6.29E-06	7.02E-08	5.21E-07	2.13E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	3.04E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	5.19E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	3.34E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.08E-06	6.24E-07	8.05E-04	7.30E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	2.89E-04	1.47E-06	2.06E-06	1.89E-06	1.46E-01	5.11E-06	-	1.46E-01	1.32E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.39E-04	6.83E-07	1.26E-06	1.16E-06	6.96E-02	2.53E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.08E-05	4.73E-05	1.78E-04	1.12E-06	1.72E-06	1.58E-06	9.92E-02	1.88E-06	-	9.93E-02	9.01E-02
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	2.89E-04	1.47E-06	2.06E-06	1.89E-06	1.46E-01	5.11E-06	-	1.46E-01	1.32E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.84E-05	2.87E-04	4.56E-04	6.46E-07	1.55E-06	1.43E-06	5.00E-02	4.37E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	4.02E-05	2.71E-04	4.05E-04	6.31E-07	1.37E-06	1.26E-06	4.88E-02	3.63E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	2.91E-05	1.16E-04	5.52E-05	4.67E-07	8.02E-06	4.20E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.52E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	7.51E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	3.67E-05	1.38E-04	7.64E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.30E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.05E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	7.77E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	5.84E-05	1.55E-04	9.44E-04	1.05E-05	7.82E-05	3.20E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	5.84E-05	1.55E-04	9.44E-04	1.05E-05	7.82E-05	3.20E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	23	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.99E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.73E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	7.70E-06	1.36E-05	1.13E-04	5.34E-07	4.03E-06	1.65E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	3.96E-02	3.70E-01	8.82E-01	1.78E-03	3.00E-03	2.76E-03	1.52E+02	3.57E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	3.02E-02	1.52E-04	2.22E-04	2.04E-04	1.51E+01	5.48E-04	-	1.51E+01	1.37E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	3.02E-02	1.52E-04	2.22E-04	2.04E-04	1.51E+01	5.48E-04	-	1.51E+01	1.37E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	3.02E-02	1.52E-04	2.22E-04	2.04E-04	1.51E+01	5.48E-04	-	1.51E+01	1.37E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	3.02E-02	1.52E-04	2.22E-04	2.04E-04	1.51E+01	5.48E-04	-	1.51E+01	1.37E+01
	Armoring	1 ton pickup truck		1.0667	19	4.02E-07	1.06E-06	6.50E-06	7.25E-08	5.38E-07	2.20E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.48E-05	5.26E-05	2.15E-04	1.05E-06	1.94E-06	1.78E-06	1.07E-01	3.89E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	4.02E-07	1.06E-06	6.50E-06	7.25E-08	5.38E-07	2.20E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	1.23E-03	3.88E-03	2.27E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.85E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	4.93E-05	1.97E-04	9.36E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.86E-03	9.35E-06	2.69E-05	2.47E-05	9.30E-01	3.38E-05	-	9.30E-01	8.44E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	6.00E-04	2.26E-03	9.13E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.66E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.14E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	2.07E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	1.32E-05	2.74E-05	2.04E-04	1.35E-06	1.02E-05	4.23E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	5.85E-04	2.38E-03	9.48E-03	4.93E-05	8.55E-05	7.86E-05	5.02E+00	1.42E-04	-	5.02E+00	4.56E+00
		3/4 ton Pickup truck		34.0003	126	2.25E-05	4.66E-05	3.47E-04	2.30E-06	1.74E-05	7.19E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	3.18E-05	6.58E-05	4.90E-04	3.25E-06	2.45E-05	1.02E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.45E-04	3.78E-03	4.60E-03	9.49E-06	1.50E-05	1.38E-05	7.34E-01	3.11E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	4.66E-04	1.92E-03	8.11E-03	3.98E-05	6.89E-05	6.34E-05	4.05E+00	1.47E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	3.97E-05	8.23E-05	6.13E-04	4.06E-06	3.06E-05	1.27E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	5.94E-05	1.59E-04	6.58E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	1.16E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.47E-02	7.00E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	2.33E-04	9.60E-04	4.06E-03	1.99E-05	3.44E-05	3.17E-05	2.03E+00	7.36E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	3.80E-04	1.57E-03	6.62E-03	3.25E-05	5.62E-05	5.17E-05	3.31E+00	1.20E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	7.19E-04	2.21E-06	3.76E-06	3.46E-06	1.75E-01	1.90E-05	-	1.75E-01	1.59E-01
		3/4 ton Pickup truck		60	126	3.97E-05	8.23E-05	6.13E-04	4.06E-06	3.06E-05	1.27E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	1.55E-04	6.40E-04	2.70E-03	1.32E-05	2.30E-05	2.11E-05	1.35E+00	4.91E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.33E-03	1.58E-03	1.18E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	7.48E-05	1.27E-04	7.18E-01	6.51E-01
		3/4 ton Pickup truck		20	126	1.32E-05	2.74E-05	2.04E-04	1.35E-06	1.02E-05	4.23E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						7.03E-02	**4.89E-01**	**1.33E+00**	**3.25E-03**	**1.00E-02**	**7.12E-03**	**3.42E+02**	**1.07E-02**	**1.83E-03**	**3.43E+02**	**3.11E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2031	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2031 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	6.05E-04	1.25E-03	9.34E-03	6.19E-05	4.67E-04	1.93E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.39E-01	4.46E-01	3.77E-03	6.48E-02	3.39E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	8.94E-03	1.85E-02	1.38E-01	9.14E-04	6.89E-03	2.86E-03
	Fish relocation	3/4 ton pickup truck		16	19	2.23E-03	4.62E-03	3.44E-02	2.28E-04	1.72E-03	7.13E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	8.19E-05	2.17E-04	1.32E-03	1.48E-05	1.10E-04	4.48E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	3.08E-03	1.16E-02	6.41E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	7.03E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.09E-02	3.09E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.93E-03	7.26E-03	2.94E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	Brush chipper	250 hp	0.8673	19	4.38E-03	9.96E-03	3.76E-02	2.35E-04	3.62E-04	3.33E-04
		Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.09E-02	3.09E-04	4.33E-04	3.98E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.58E-03	9.70E-03	5.36E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	1.02E-02	6.03E-02	9.61E-02	1.36E-04	3.27E-04	3.01E-04
		Roller	47 hp	4	19	8.46E-03	5.71E-02	8.52E-02	1.33E-04	2.88E-04	2.65E-04
		Water truck	3000 gal	4	19	6.12E-03	2.45E-02	1.16E-02	9.83E-05	1.69E-03	8.85E-04
		Excavator	300 hp	4	19	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	6.42E-03	1.71E-02	9.51E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	7.73E-03	2.91E-02	1.61E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	6.83E-05	8.40E-04	2.21E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	1.05E-01	4.33E-01	7.26E+00	1.31E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	1.23E-02	3.26E-02	1.99E-01	2.22E-03	1.65E-02	6.73E-03
		Crane 94'	155 hp	155	20	9.97E-02	4.11E-01	6.90E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	1.17E-02	3.09E-02	1.89E-01	2.11E-03	1.56E-02	6.39E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.45E-03	9.21E-03	5.10E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	Concrete saw	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	7.51E-03	3.09E-02	5.19E-01	9.34E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	1.34E-03	2.37E-03	1.97E-02	9.29E-05	7.02E-04	2.86E-04
		Generator	80 hp	5856	244	6.48E-01	6.06E+00	1.45E+01	2.92E-02	4.92E-02	4.52E-02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.36E+00	3.19E-02	4.67E-02	4.29E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.36E+00	3.19E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.36E+00	3.19E-02	4.67E-02	4.29E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.36E+00	3.19E-02	4.67E-02	4.29E-02
	Armoring	1 ton pickup truck		1.0667	19	8.46E-05	2.24E-04	1.37E-03	1.53E-05	1.13E-04	4.63E-05
		Excavator	430 hp	1.0667	19	3.12E-03	1.11E-02	4.52E-02	2.21E-04	4.08E-04	3.75E-04
		1 ton pickup truck		1.0667	19	8.46E-05	2.24E-04	1.37E-03	1.53E-05	1.13E-04	4.63E-05
	Maintenance	Grader	215 hp	144	210	2.33E-02	7.39E-02	4.31E-01	2.28E-03	2.79E-03	2.56E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.96E-03	3.58E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.70E-02	5.57E-01	3.39E-01	1.70E-03	4.89E-03	4.49E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.20E-01	4.52E-01	1.83E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	1.50E-02	5.65E-02	2.28E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	2.65E-03	5.49E-03	4.09E-02	2.71E-04	2.04E-03	8.46E-04
	Drilling	Rotary drill	475 hp	34.0003	126	1.86E-02	7.54E-02	3.01E-01	1.56E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		34.0003	126	7.14E-04	1.48E-03	1.10E-02	7.30E-05	5.51E-04	2.28E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	1.01E-03	2.09E-03	1.56E-02	1.03E-04	7.78E-04	3.22E-04
		Diamond cutting saw	50 hp	48	126	1.09E-02	1.20E-01	1.46E-01	3.01E-04	4.77E-04	4.39E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.48E-02	6.10E-02	2.58E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	1.26E-03	2.61E-03	1.95E-02	1.29E-04	9.73E-04	4.03E-04
	Load/Haul	Front end loader	350 hp	4	126	1.89E-03	5.06E-03	2.09E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.17E-01	4.68E-01	2.22E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	7.39E-03	3.05E-02	1.29E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	Crane 260'	375 hp	49	126	1.21E-02	4.98E-02	2.10E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.72E-03	2.90E-02	2.28E-02	7.03E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	1.26E-03	2.61E-03	1.95E-02	1.29E-04	9.72E-04	4.03E-04
	Demolish spillway	Crane 260'	375 hp	20	126	4.93E-03	2.03E-02	8.58E-02	4.21E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	4.21E-02	5.01E-02	3.76E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	4.20E-04	8.71E-04	6.49E-03	4.30E-05	3.24E-04	1.34E-04
						3.07E+00	**1.56E+01**	**6.73E+01**	**2.21E-01**	**4.96E-01**	**3.95E-01**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2033
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2033 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.642	0.003	0.004	0.004	301.168	0.011	0.000
		Chain saw		1.7209	19	2.303	0.115	13.187	0.001	0.021	0.021	35.644	0.143	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.556	0.003	0.004	0.004	277.531	0.010	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.471	0.002	0.004	0.004	234.976	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.093	0.193	0.733	0.004	0.007	0.007	399.089	0.008	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.556	0.003	0.004	0.004	277.531	0.010	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.642	0.003	0.004	0.004	301.168	0.011	0.000
		Front end loader	49 hp	4	19	0.249	1.356	2.257	0.003	0.008	0.007	231.302	0.022	0.000
		Roller	47 hp	4	19	0.222	1.343	2.115	0.003	0.007	0.007	235.530	0.020	0.000
		Water truck	3000 gal	4	19	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.857	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.576	0.003	0.004	0.004	270.055	0.010	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.642	0.003	0.004	0.004	301.168	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.383	0.002	0.005	0.004	195.355	0.010	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.302	0.002	0.003	0.003	208.020	0.008	0.000
		1 ton pickup truck		155	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.302	0.002	0.003	0.003	208.020	0.008	0.000
		1 ton pickup truck		155	20	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.642	0.003	0.004	0.004	301.168	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.255	2.406	118.960	0.006	1.686	1.683	201.170	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.302	0.002	0.003	0.003	208.020	0.008	0.000
		Flatbed truck		8	23	0.723	1.394	10.684	0.061	0.457	0.186	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.084	0.722	1.736	0.003	0.006	0.006	294.397	0.008	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.529	0.003	0.004	0.004	264.004	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.529	0.003	0.004	0.004	264.004	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.529	0.003	0.004	0.004	264.004	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.529	0.003	0.004	0.004	264.004	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.029	0.104	0.424	0.002	0.004	0.004	211.857	0.008	0.000
		1 ton pickup truck		1.0667	19	0.305	0.834	4.998	0.062	0.457	0.186	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.665	0.004	0.004	0.004	311.989	0.011	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.857	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.561	0.003	0.009	0.008	280.138	0.010	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.471	0.002	0.004	0.004	234.976	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.471	0.002	0.004	0.004	234.976	0.009	0.000
		3/4 ton Pickup truck		20	20	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.539	0.003	0.005	0.004	283.011	0.008	0.000
		3/4 ton Pickup truck		34.0003	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.146	1.446	1.830	0.004	0.006	0.006	277.572	0.013	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.327	0.002	0.003	0.003	163.286	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.430	0.002	0.004	0.004	214.835	0.008	0.000
		Water truck	3000 gal	507	126	6.605	26.445	12.543	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.327	0.002	0.003	0.003	163.286	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.327	0.002	0.003	0.003	163.286	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	1.215	0.004	0.006	0.006	295.190	0.032	0.000
		3/4 ton Pickup truck		60	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.327	0.002	0.003	0.003	163.286	0.006	0.000
		Air compressor	50 hp	40	126	0.666	0.764	61.875	0.004	0.024	0.023	307.040	0.038	0.060
		3/4 ton Pickup truck		20	126	0.468	1.130	7.490	0.061	0.461	0.190	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2033
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2033 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	210	2.48E-05	5.98E-05	3.96E-04	3.25E-06	2.44E-05	1.00E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.23E-02	4.94E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	3.66E-04	8.83E-04	5.85E-03	4.80E-05	3.60E-04	1.48E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	8.25E-06	1.99E-05	1.32E-04	1.08E-06	8.13E-06	3.35E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.48E-07	9.50E-07	5.69E-06	7.02E-08	5.20E-07	2.12E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	3.04E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	5.19E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	3.67E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.28E-06	6.24E-07	8.09E-04	7.34E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	1.96E-05	5.24E-05	2.87E-04	1.44E-06	2.06E-06	1.89E-06	1.43E-01	5.21E-06	-	1.43E-01	1.30E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.39E-04	6.84E-07	1.26E-06	1.16E-06	6.96E-02	2.53E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	2.22E-05	4.60E-05	1.75E-04	1.07E-06	1.70E-06	1.57E-06	9.54E-02	2.00E-06	-	9.54E-02	8.66E-02
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	2.87E-04	1.44E-06	2.06E-06	1.89E-06	1.43E-01	5.21E-06	-	1.43E-01	1.30E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	5.39E-05	2.93E-04	4.88E-04	6.46E-07	1.67E-06	1.54E-06	5.00E-02	4.86E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	4.60E-05	2.78E-04	4.38E-04	6.31E-07	1.49E-06	1.37E-06	4.88E-02	4.15E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.57E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	7.79E-06	-	2.14E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	3.67E-05	1.38E-04	7.64E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.30E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.05E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	7.94E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	5.22E-05	1.43E-04	8.54E-04	1.05E-05	7.80E-05	3.18E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	5.22E-05	1.43E-04	8.54E-04	1.05E-05	7.80E-05	3.18E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.73E-04	2.76E-04	1.36E-02	6.58E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.22E-05	3.04E-02	2.76E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.99E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.73E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	6.38E-06	1.23E-05	9.42E-05	5.34E-07	4.03E-06	1.64E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.33E-02	3.73E-01	8.96E-01	1.78E-03	3.16E-03	2.91E-03	1.52E+02	3.91E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.76E-02	1.38E-04	2.22E-04	2.04E-04	1.38E+01	5.01E-04	-	1.38E+01	1.25E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.76E-02	1.38E-04	2.22E-04	2.04E-04	1.38E+01	5.01E-04	-	1.38E+01	1.25E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.76E-02	1.38E-04	2.22E-04	2.04E-04	1.38E+01	5.01E-04	-	1.38E+01	1.25E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.76E-02	1.38E-04	2.22E-04	2.04E-04	1.38E+01	5.01E-04	-	1.38E+01	1.25E+01
	Armoring	**1 ton pickup truck**		1.0667	19	3.59E-07	9.81E-07	5.88E-06	7.25E-08	5.37E-07	2.19E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.48E-05	5.26E-05	2.15E-04	1.05E-06	1.94E-06	1.78E-06	1.07E-01	3.89E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.59E-07	9.81E-07	5.88E-06	7.25E-08	5.37E-07	2.19E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	1.23E-03	3.88E-03	2.27E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.87E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.38E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.70E-03	8.53E-06	2.69E-05	2.47E-05	8.49E-01	3.09E-05	-	8.49E-01	7.70E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	6.00E-04	2.26E-03	9.13E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.66E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.14E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	2.07E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	1.03E-05	2.49E-05	1.65E-04	1.35E-06	1.02E-05	4.18E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	5.85E-04	2.38E-03	9.60E-03	4.95E-05	8.55E-05	7.86E-05	5.04E+00	1.49E-04	-	5.04E+00	4.57E+00
		3/4 ton Pickup truck		34.0003	126	1.75E-05	4.24E-05	2.81E-04	2.30E-06	1.73E-05	7.11E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	2.48E-05	5.98E-05	3.96E-04	3.25E-06	2.44E-05	1.00E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	3.87E-04	3.83E-03	4.84E-03	9.49E-06	1.59E-05	1.46E-05	7.34E-01	3.49E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	4.66E-04	1.92E-03	8.12E-03	3.98E-05	6.89E-05	6.34E-05	4.05E+00	1.47E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	3.10E-05	7.48E-05	4.96E-04	4.06E-06	3.05E-05	1.26E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	5.94E-05	1.59E-04	6.64E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	1.21E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	2.33E-04	9.60E-04	4.06E-03	1.99E-05	3.44E-05	3.17E-05	2.03E+00	7.36E-05	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	3.80E-04	1.57E-03	6.63E-03	3.25E-05	5.62E-05	5.17E-05	3.31E+00	1.20E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	7.37E-04	2.27E-06	3.76E-06	3.46E-06	1.79E-01	1.95E-05	-	1.79E-01	1.63E-01
		3/4 ton Pickup truck		60	126	3.09E-05	7.47E-05	4.95E-04	4.06E-06	3.05E-05	1.26E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.55E-04	6.40E-04	2.70E-03	1.32E-05	2.30E-05	2.11E-05	1.35E+00	4.91E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.47E-03	1.68E-03	1.36E-01	8.23E-06	5.18E-05	5.17E-05	6.77E-01	8.29E-05	1.32E-04	7.19E-01	6.53E-01
		3/4 ton Pickup truck		20	126	1.03E-05	2.49E-05	1.65E-04	1.35E-06	1.02E-05	4.18E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						7.42E-02	**4.93E-01**	**1.35E+00**	**3.20E-03**	**1.02E-02**	**7.27E-03**	**3.37E+02**	**1.09E-02**	**1.84E-03**	**3.38E+02**	**3.06E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2033	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2033 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	4.72E-04	1.14E-03	7.55E-03	6.19E-05	4.64E-04	1.91E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.42E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	6.97E-03	1.68E-02	1.11E-01	9.14E-04	6.86E-03	2.82E-03
measures	*Fish relocation*	3/4 ton pickup truck		16	19	1.74E-03	4.20E-03	2.78E-02	2.28E-04	1.71E-03	7.05E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	7.32E-05	2.00E-04	1.20E-03	1.48E-05	1.09E-04	4.46E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	3.08E-03	1.16E-02	6.41E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	7.72E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.04E-02	3.03E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.93E-03	7.26E-03	2.94E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	Brush chipper	250 hp	0.8673	19	4.67E-03	9.69E-03	3.69E-02	2.26E-04	3.59E-04	3.30E-04
		Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.04E-02	3.03E-04	4.33E-04	3.98E-04
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.58E-03	9.70E-03	5.36E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	1.13E-02	6.17E-02	1.03E-01	1.36E-04	3.51E-04	3.23E-04
		Roller	47 hp	4	19	9.69E-03	5.86E-02	9.23E-02	1.33E-04	3.14E-04	2.89E-04
		Water truck	3000 gal	4	19	6.13E-03	2.45E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	6.42E-03	1.71E-02	9.62E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	7.73E-03	2.91E-02	1.61E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	6.83E-05	8.40E-04	2.22E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	1.05E-01	4.33E-01	7.26E+00	1.30E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	1.10E-02	3.00E-02	1.80E-01	2.22E-03	1.64E-02	6.69E-03
		Crane 94'	155 hp	155	20	9.97E-02	4.11E-01	6.90E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	1.04E-02	2.85E-02	1.71E-01	2.11E-03	1.56E-02	6.36E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.45E-03	9.21E-03	5.10E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	Concrete saw	13 hp	8	23	6.49E-02	4.80E-02	2.37E+00	1.14E-04	3.36E-02	3.36E-02
		Crane 80'	130 hp	16	23	7.51E-03	3.09E-02	5.19E-01	9.33E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	1.11E-03	2.14E-03	1.64E-02	9.29E-05	7.00E-04	2.85E-04
		Generator	80 hp	5856	244	7.10E-01	6.11E+00	1.47E+01	2.92E-02	5.18E-02	4.77E-02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.81E+00	2.91E-02	4.67E-02	4.29E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.81E+00	2.91E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.81E+00	2.91E-02	4.67E-02	4.29E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.81E+00	2.91E-02	4.67E-02	4.29E-02
	Armoring	1 ton pickup truck		1.0667	19	7.56E-05	2.07E-04	1.24E-03	1.53E-05	1.13E-04	4.61E-05
		Excavator	430 hp	1.0667	19	3.12E-03	1.11E-02	4.52E-02	2.21E-04	4.08E-04	3.75E-04
		1 ton pickup truck		1.0667	19	7.56E-05	2.07E-04	1.24E-03	1.53E-05	1.13E-04	4.61E-05
	Maintenance	Grader	215 hp	144	210	2.33E-02	7.39E-02	4.32E-01	2.28E-03	2.79E-03	2.56E-03
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	8.98E-03	3.59E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.70E-02	5.57E-01	3.09E-01	1.55E-03	4.89E-03	4.49E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.20E-01	4.52E-01	1.83E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	1.50E-02	5.65E-02	2.28E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	2.06E-03	4.98E-03	3.30E-02	2.71E-04	2.03E-03	8.37E-04
	Drilling	Rotary drill	475 hp	34.0003	126	1.86E-02	7.54E-02	3.05E-01	1.57E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		34.0003	126	5.57E-04	1.34E-03	8.91E-03	7.31E-05	5.48E-04	2.26E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	7.86E-04	1.90E-03	1.26E-02	1.03E-04	7.74E-04	3.19E-04
		Diamond cutting saw	50 hp	48	126	1.23E-02	1.21E-01	1.54E-01	3.01E-04	5.05E-04	4.65E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.48E-02	6.10E-02	2.58E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	9.83E-04	2.37E-03	1.57E-02	1.29E-04	9.68E-04	3.99E-04
	Load/Haul	Front end loader	350 hp	4	126	1.89E-03	5.06E-03	2.11E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.17E-01	4.69E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	7.39E-03	3.05E-02	1.29E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	Crane 260'	375 hp	49	126	1.21E-02	4.98E-02	2.10E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.72E-03	2.90E-02	2.34E-02	7.21E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	9.82E-04	2.37E-03	1.57E-02	1.29E-04	9.67E-04	3.98E-04
	Demolish spillway	Crane 260'	375 hp	20	126	4.93E-03	2.03E-02	8.58E-02	4.21E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	4.66E-02	5.34E-02	4.33E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	3.27E-04	7.91E-04	5.24E-03	4.30E-05	3.22E-04	1.33E-04
						3.14E+00	**1.56E+01**	**6.58E+01**	**2.09E-01**	**4.99E-01**	**3.97E-01**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
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Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2035
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2035 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
measures	*Fish relocation*	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Chain saw		1.7209	19	2.509	0.115	13.187	0.001	0.021	0.021	35.643	0.156	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.625	0.003	0.004	0.004	312.041	0.011	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.108	0.207	0.797	0.005	0.008	0.007	424.504	0.010	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.625	0.003	0.004	0.004	312.041	0.011	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Front end loader	49 hp	4	19	0.269	1.380	2.372	0.003	0.008	0.008	231.302	0.024	0.000
		Roller	47 hp	4	19	0.054	1.087	2.268	0.003	0.004	0.004	235.535	0.022	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.576	0.003	0.004	0.004	270.067	0.010	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.383	0.002	0.005	0.004	195.357	0.010	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.251	2.403	118.829	0.006	1.685	1.681	200.948	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.091	0.728	1.764	0.003	0.006	0.006	294.375	0.008	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.575	0.003	0.004	0.004	286.944	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.575	0.003	0.004	0.004	286.944	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.575	0.003	0.004	0.004	286.944	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.575	0.003	0.004	0.004	286.944	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.665	0.004	0.004	0.004	311.993	0.011	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.610	0.003	0.009	0.008	304.481	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.544	0.003	0.005	0.004	283.590	0.009	0.000
		3/4 ton Pickup truck		34.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.162	1.465	1.921	0.004	0.006	0.006	277.562	0.015	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.430	0.002	0.004	0.004	214.817	0.008	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	2.597	0.004	0.006	0.006	278.915	0.025	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Air compressor	50 hp	40	126	0.731	0.811	70.045	0.004	0.024	0.023	307.054	0.041	0.062
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2035
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2035 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	3.05E-04	8.20E-04	4.96E-03	4.80E-05	3.58E-04	1.47E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	3.04E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	5.19E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	4.00E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.49E-06	6.24E-07	8.13E-04	7.38E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	1.96E-05	5.24E-05	3.23E-04	1.62E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01	1.46E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.39E-04	6.84E-07	1.26E-06	1.16E-06	6.96E-02	2.53E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	2.59E-05	4.95E-05	1.90E-04	1.14E-06	1.87E-06	1.72E-06	1.01E-01	2.34E-06	-	1.02E-01	9.21E-02
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	3.23E-04	1.62E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01	1.46E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.08E-01
		Front end loader	49 hp	4	19	5.82E-05	2.98E-04	5.12E-04	6.46E-07	1.76E-06	1.62E-06	5.00E-02	5.25E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.12E-05	2.25E-04	4.70E-04	6.31E-07	8.61E-07	7.92E-07	4.88E-02	4.65E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.57E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	7.79E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	3.67E-05	1.38E-04	7.64E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.30E-05	-	3.59E-01	3.25E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.06E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	7.94E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.08E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.99E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.73E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	4.71E-02	3.76E-01	9.11E-01	1.78E-03	3.32E-03	3.05E-03	1.52E+02	4.25E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	3.00E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	3.00E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	3.00E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	3.00E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Armoring	**1 ton pickup truck**		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.48E-05	5.26E-05	2.15E-04	1.05E-06	1.94E-06	1.78E-06	1.07E-01	3.89E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	1.23E-03	3.88E-03	2.27E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.87E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.85E-03	9.27E-06	2.69E-05	2.47E-05	9.22E-01	3.35E-05	-	9.23E-01	8.37E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	6.00E-04	2.26E-03	9.13E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.66E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.14E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	2.07E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	5.85E-04	2.38E-03	9.68E-03	4.96E-05	8.55E-05	7.86E-05	5.05E+00	1.53E-04	-	5.05E+00	4.58E+00
		3/4 ton Pickup truck		34.0003	126	1.46E-05	3.93E-05	2.38E-04	2.30E-06	1.72E-05	7.04E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	4.29E-04	3.88E-03	5.08E-03	9.49E-06	1.68E-05	1.55E-05	7.34E-01	3.87E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	4.66E-04	1.92E-03	8.11E-03	3.97E-05	6.89E-05	6.34E-05	4.05E+00	1.47E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	5.94E-05	1.59E-04	6.64E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	1.21E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	2.33E-04	9.60E-04	4.06E-03	1.99E-05	3.44E-05	3.17E-05	2.02E+00	7.36E-05	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	3.80E-04	1.57E-03	6.62E-03	3.25E-05	5.62E-05	5.17E-05	3.31E+00	1.20E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	1.57E-03	2.19E-06	3.76E-06	3.46E-06	1.69E-01	1.53E-05	-	1.69E-01	1.54E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.55E-04	6.40E-04	2.70E-03	1.32E-05	2.30E-05	2.11E-05	1.35E+00	4.91E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.61E-03	1.79E-03	1.54E-01	8.23E-06	5.19E-05	5.17E-05	6.77E-01	9.09E-05	1.36E-04	7.21E-01	6.54E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						7.80E-02	**4.96E-01**	**1.39E+00**	**3.25E-03**	**1.03E-02**	**7.42E-03**	**3.42E+02**	**1.14E-02**	**1.84E-03**	**3.43E+02**	**3.11E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2035	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2035 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection measures	***Biologist***	3/4 ton pickup truck		709	210	5.80E-03	1.56E-02	9.44E-02	9.14E-04	6.83E-03	2.80E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	3.08E-03	1.16E-02	6.41E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	8.42E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.79E-02	3.41E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.93E-03	7.26E-03	2.94E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	Brush chipper	250 hp	0.8673	19	5.46E-03	1.04E-02	4.01E-02	2.40E-04	3.93E-04	3.61E-04
		Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.79E-02	3.41E-04	4.33E-04	3.98E-04
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	2.58E-03	9.70E-03	5.36E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	1.23E-02	6.27E-02	1.08E-01	1.36E-04	3.71E-04	3.41E-04
		Roller	47 hp	4	19	2.35E-03	4.74E-02	9.89E-02	1.33E-04	1.81E-04	1.67E-04
		Water truck	3000 gal	4	19	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	6.42E-03	1.71E-02	9.62E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	7.73E-03	2.91E-02	1.61E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	6.83E-05	8.40E-04	2.22E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	1.05E-01	4.33E-01	7.26E+00	1.31E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	9.97E-02	4.11E-01	6.90E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.45E-03	9.21E-03	5.10E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	Concrete saw	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	7.51E-03	3.09E-02	5.19E-01	9.33E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	7.72E-01	6.16E+00	1.49E+01	2.92E-02	5.44E-02	5.01E-02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.31E+00	3.17E-02	4.67E-02	4.29E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.31E+00	3.17E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.31E+00	3.17E-02	4.67E-02	4.29E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.31E+00	3.17E-02	4.67E-02	4.29E-02
	Armoring	1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
		Excavator	430 hp	1.0667	19	3.12E-03	1.11E-02	4.52E-02	2.21E-04	4.08E-04	3.75E-04
		1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
	Maintenance	Grader	215 hp	144	210	2.33E-02	7.39E-02	4.32E-01	2.28E-03	2.79E-03	2.56E-03
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.70E-02	5.57E-01	3.36E-01	1.69E-03	4.89E-03	4.49E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.20E-01	4.52E-01	1.83E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	1.50E-02	5.65E-02	2.28E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	Rotary drill	475 hp	34.0003	126	1.86E-02	7.54E-02	3.07E-01	1.57E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		34.0003	126	4.64E-04	1.25E-03	7.54E-03	7.31E-05	5.46E-04	2.23E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	1.36E-02	1.23E-01	1.61E-01	3.01E-04	5.34E-04	4.91E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.48E-02	6.10E-02	2.58E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	Front end loader	350 hp	4	126	1.89E-03	5.06E-03	2.11E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	7.39E-03	3.05E-02	1.29E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	Crane 260'	375 hp	49	126	1.21E-02	4.98E-02	2.10E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.72E-03	2.90E-02	5.00E-02	6.94E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	Crane 260'	375 hp	20	126	4.93E-03	2.03E-02	8.58E-02	4.20E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	5.11E-02	5.67E-02	4.90E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
						3.20E+00	**1.57E+01**	**6.86E+01**	**2.20E-01**	**5.01E-01**	**3.99E-01**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2037
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2037 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection measures	***Biologist***	3/4 ton pickup truck		709	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Chain saw		1.7209	19	2.716	0.115	13.188	0.001	0.021	0.021	35.643	0.156	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.627	0.003	0.004	0.004	312.041	0.011	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.107	0.191	0.739	0.004	0.007	0.007	424.504	0.010	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.627	0.003	0.004	0.004	312.041	0.011	0.000
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Front end loader	49 hp	4	19	0.284	1.397	2.455	0.003	0.008	0.008	231.302	0.024	0.000
		Roller	47 hp	4	19	0.054	1.087	2.412	0.003	0.004	0.004	235.510	0.025	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.576	0.003	0.004	0.004	270.067	0.010	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.383	0.002	0.005	0.004	195.357	0.010	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.251	2.403	118.834	0.006	1.685	1.681	200.957	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.099	0.734	1.793	0.003	0.007	0.006	294.375	0.008	0.000
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.516	0.003	0.004	0.004	286.944	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.516	0.003	0.004	0.004	286.944	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.516	0.003	0.004	0.004	286.944	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.516	0.003	0.004	0.004	286.944	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.665	0.004	0.004	0.004	311.993	0.011	0.000
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.548	0.003	0.009	0.008	304.481	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.549	0.003	0.005	0.004	283.590	0.009	0.000
		3/4 ton Pickup truck		34.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.178	1.484	2.012	0.004	0.007	0.006	277.562	0.015	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.430	0.002	0.004	0.004	214.817	0.008	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	2.664	0.004	0.006	0.006	278.915	0.025	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Air compressor	50 hp	40	126	0.796	0.858	78.260	0.004	0.024	0.023	307.242	0.045	0.064
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
														Total

* 5-ft dam demolition would occur after dewatering well pumps are tested and area dewatered; could occur anytime after dewatering completed and area excavated; would not take entire 6 months shown, but could happen within this time frame

Data from Alt3_EnvrAirQualityReport.pdf

Haul trips
Change from Alt 2
On-highway vehicles

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2037
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2037 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
												GWP	1	21	310	
Construction Survey		**3/4 ton pickup truck**		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		**Water truck**	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		709	210	3.05E-04	8.20E-04	4.96E-03	4.80E-05	3.58E-04	1.47E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	3.04E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	5.19E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	4.33E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.49E-06	6.24E-07	8.13E-04	7.38E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	1.96E-05	5.24E-05	3.24E-04	1.62E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01	1.46E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.39E-04	6.84E-07	1.26E-06	1.16E-06	6.96E-02	2.53E-06	-	6.97E-02	6.32E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	2.57E-05	4.55E-05	1.77E-04	1.04E-06	1.74E-06	1.60E-06	1.01E-01	2.34E-06	-	1.02E-01	9.21E-02
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	3.24E-04	1.62E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01	1.46E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.08E-01
		Front end loader	49 hp	4	19	6.13E-05	3.02E-04	5.30E-04	6.46E-07	1.83E-06	1.68E-06	5.00E-02	5.25E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.12E-05	2.25E-04	5.00E-04	6.31E-07	8.61E-07	7.92E-07	4.88E-02	5.12E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.57E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	7.79E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	3.67E-05	1.38E-04	7.64E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.30E-05	-	3.59E-01	3.25E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.05E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	7.94E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.08E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.98E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.73E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.09E-02	3.79E-01	9.26E-01	1.78E-03	3.48E-03	3.20E-03	1.52E+02	4.25E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.69E-02	1.35E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.69E-02	1.35E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.69E-02	1.35E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.69E-02	1.35E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Armoring	**1 ton pickup truck**		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.48E-05	5.26E-05	2.15E-04	1.05E-06	1.94E-06	1.78E-06	1.07E-01	3.89E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	**Grader**	215 hp	144	210	1.23E-03	3.88E-03	2.27E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.87E-04	-	1.07E+01	9.67E+00
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.66E-03	8.33E-06	2.69E-05	2.47E-05	9.22E-01	3.35E-05	-	9.23E-01	8.37E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	6.00E-04	2.26E-03	9.13E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.66E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.14E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	2.07E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	5.85E-04	2.38E-03	9.77E-03	4.97E-05	8.55E-05	7.86E-05	5.05E+00	1.53E-04	-	5.05E+00	4.58E+00
		3/4 ton Pickup truck		34.0003	126	1.46E-05	3.93E-05	2.38E-04	2.30E-06	1.72E-05	7.04E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	4.71E-04	3.93E-03	5.32E-03	9.49E-06	1.77E-05	1.63E-05	7.34E-01	3.87E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	4.66E-04	1.92E-03	8.12E-03	3.98E-05	6.89E-05	6.34E-05	4.05E+00	1.47E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	**Front end loader**	350 hp	4	126	5.94E-05	1.59E-04	6.64E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	1.21E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	2.33E-04	9.60E-04	4.06E-03	1.99E-05	3.44E-05	3.17E-05	2.02E+00	7.36E-05	-	2.03E+00	1.84E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	3.80E-04	1.57E-03	6.63E-03	3.25E-05	5.62E-05	5.17E-05	3.31E+00	1.20E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	1.61E-03	2.20E-06	3.76E-06	3.46E-06	1.69E-01	1.53E-05	-	1.69E-01	1.54E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.55E-04	6.40E-04	2.70E-03	1.33E-05	2.30E-05	2.11E-05	1.35E+00	4.91E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.75E-03	1.89E-03	1.73E-01	8.24E-06	5.19E-05	5.18E-05	6.77E-01	9.91E-05	1.40E-04	7.23E-01	6.56E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						8.20E-02	**4.99E-01**	**1.41E+00**	**3.18E-03**	**1.05E-02**	**7.57E-03**	**3.42E+02**	**1.14E-02**	**1.84E-03**	**3.43E+02**	**3.11E+02**

* 5-ft dam demolition would occur after dewatering well pumps are tested and area dewatered; could occur anytime after dewatering comp

Data from Alt3_EnvrAirQualityReport.pdf

Haul trips
Change from Alt 2
On-highway vehicles

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2037	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2037 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		48	210	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		**Water truck**	5000 gal	1696	210	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		709	210	5.80E-03	1.56E-02	9.44E-02	9.14E-04	6.83E-03	2.80E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	3.08E-03	1.16E-02	6.41E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	9.11E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	**Front end loader**	540 hp	0.8673	19	4.12E-03	1.10E-02	6.81E-02	3.42E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.93E-03	7.26E-03	2.94E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	**Brush chipper**	250 hp	0.8673	19	5.41E-03	9.59E-03	3.72E-02	2.18E-04	3.67E-04	3.38E-04
		Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.81E-02	3.42E-04	4.33E-04	3.98E-04
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	2.58E-03	9.70E-03	5.36E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	1.29E-02	6.35E-02	1.12E-01	1.36E-04	3.85E-04	3.54E-04
		Roller	47 hp	4	19	2.35E-03	4.74E-02	1.05E-01	1.33E-04	1.81E-04	1.67E-04
		Water truck	3000 gal	4	19	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	6.42E-03	1.71E-02	9.62E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	7.73E-03	2.91E-02	1.61E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	6.83E-05	8.40E-04	2.22E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	1.05E-01	4.33E-01	7.26E+00	1.30E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	9.97E-02	4.11E-01	6.90E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	2.45E-03	9.21E-03	5.10E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	**Concrete saw**	13 hp	8	23	6.48E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	7.51E-03	3.09E-02	5.19E-01	9.33E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	8.35E-01	6.22E+00	1.52E+01	2.92E-02	5.71E-02	5.25E-02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.40E-01	1.28E+00	5.67E+00	2.84E-02	4.67E-02	4.29E-02
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.40E-01	1.28E+00	5.67E+00	2.84E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	5.67E+00	2.84E-02	4.67E-02	4.29E-02
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	3.40E-01	1.28E+00	5.67E+00	2.84E-02	4.67E-02	4.29E-02
	Armoring	**1 ton pickup truck**		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
		Excavator	430 hp	1.0667	19	3.12E-03	1.11E-02	4.52E-02	2.21E-04	4.08E-04	3.75E-04
		1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
	Maintenance	**Grader**	215 hp	144	210	2.33E-02	7.39E-02	4.32E-01	2.28E-03	2.79E-03	2.56E-03
Demolition	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.70E-02	5.57E-01	3.02E-01	1.51E-03	4.89E-03	4.49E-03
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	1.20E-01	4.52E-01	1.83E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	1.50E-02	5.65E-02	2.28E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	**Rotary drill**	475 hp	34.0003	126	1.86E-02	7.54E-02	3.10E-01	1.58E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		34.0003	126	4.64E-04	1.25E-03	7.54E-03	7.31E-05	5.46E-04	2.23E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	1.49E-02	1.25E-01	1.69E-01	3.01E-04	5.62E-04	5.17E-04
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	1.48E-02	6.10E-02	2.58E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	**Front end loader**	350 hp	4	126	1.89E-03	5.06E-03	2.11E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	**Crane 260'**	375 hp	30.0107	126	7.39E-03	3.05E-02	1.29E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	**Crane 260'**	375 hp	49	126	1.21E-02	4.98E-02	2.10E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.72E-03	2.90E-02	5.13E-02	6.97E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	**Crane 260'**	375 hp	20	126	4.93E-03	2.03E-02	8.59E-02	4.21E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	5.57E-02	6.01E-02	5.48E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
						3.27E+00	**1.57E+01**	**6.69E+01**	**2.07E-01**	**5.04E-01**	**4.02E-01**

* 5-ft dam demolition would occur after dewatering well pumps are tested and area dewatered; could occur anytime after dewatering comp

Data from Alt3_EnvrAirQualityReport.pdf

Haul trips
Change from Alt 2
On-highway vehicles

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2039
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2039 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		709	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Chain saw		1.7209	19	2.923	0.115	13.188	0.001	0.021	0.021	35.643	0.156	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.631	0.003	0.004	0.004	312.041	0.011	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.124	0.205	0.804	0.005	0.008	0.007	424.504	0.010	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.631	0.003	0.004	0.004	312.041	0.011	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Front end loader	49 hp	4	19	0.284	1.397	2.455	0.003	0.008	0.008	231.302	0.024	0.000
		Roller	47 hp	4	19	0.054	1.087	2.500	0.003	0.004	0.004	235.501	0.026	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.576	0.003	0.004	0.004	270.067	0.010	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.383	0.002	0.005	0.004	195.357	0.010	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.254	2.405	118.923	0.006	1.686	1.682	201.107	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.106	0.741	1.821	0.003	0.007	0.006	294.375	0.008	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.574	0.003	0.004	0.004	286.944	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.574	0.003	0.004	0.004	286.944	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.574	0.003	0.004	0.004	286.944	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.574	0.003	0.004	0.004	286.944	0.010	0.000
	Armoring	1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	1.0667	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		1 ton pickup truck		1.0667	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.665	0.004	0.004	0.004	311.993	0.011	0.000
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.609	0.003	0.009	0.008	304.481	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.556	0.003	0.005	0.004	283.590	0.009	0.000
		3/4 ton Pickup truck		34.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.194	1.503	2.103	0.004	0.007	0.006	277.562	0.015	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.430	0.002	0.004	0.004	214.817	0.008	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	2.754	0.004	0.006	0.006	278.915	0.025	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Air compressor	50 hp	40	126	0.860	0.905	86.414	0.004	0.024	0.023	307.177	0.049	0.065
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year 2039
Speed of Onsite Trucks 10 mph

						GWP	1	21	310						
		Equipment	Equipment	Total	Days per	Annual Emissions - 2039 (tons per year)									Metric Tons
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
Dust Control		Water truck	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01	3.59E+01
Environmental protection	*Biologist*	3/4 ton pickup truck		709	210	3.05E-04	8.20E-04	4.96E-03	4.80E-05	3.58E-04	1.47E-04	1.59E+01	1.58E-03	8.25E-04	1.62E+01	1.47E+01
measures	*Fish relocation*	3/4 ton pickup truck		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02	2.14E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	3.04E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	5.19E-06	-	1.43E-01	1.30E-01
		Chain saw		1.7209	19	4.66E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.49E-06	6.24E-07	8.13E-04	7.38E-04
	Brush Piling	Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	3.25E-04	1.63E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01	1.46E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.39E-04	6.83E-07	1.26E-06	1.16E-06	6.96E-02	2.53E-06	-	6.97E-02	6.32E-02
	Chipping	Brush chipper	250 hp	0.8673	19	2.96E-05	4.91E-05	1.92E-04	1.10E-06	1.91E-06	1.76E-06	1.01E-01	2.34E-06	-	1.02E-01	9.21E-02
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	3.25E-04	1.63E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01	1.46E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.08E-01
		Front end loader	49 hp	4	19	6.13E-05	3.02E-04	5.30E-04	6.46E-07	1.83E-06	1.68E-06	5.00E-02	5.25E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	1.12E-05	2.25E-04	5.18E-04	6.31E-07	8.61E-07	7.92E-07	4.88E-02	5.41E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02	8.47E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01	2.54E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.57E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	7.79E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	3.67E-05	1.38E-04	7.64E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.30E-05	-	3.59E-01	3.25E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.06E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	7.94E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00	5.00E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01	1.08E-01
	Dewatering	Concrete saw	13 hp	8	23	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.22E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.98E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.73E-05	-	4.77E-01	4.33E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.47E-02	3.82E-01	9.40E-01	1.78E-03	3.64E-03	3.35E-03	1.52E+02	4.25E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.99E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.99E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.99E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.99E-02	1.50E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01	1.36E+01
	Armoring	1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
		Excavator	430 hp	1.0667	19	1.48E-05	5.26E-05	2.15E-04	1.05E-06	1.94E-06	1.78E-06	1.07E-01	3.89E-06	-	1.07E-01	9.72E-02
		1 ton pickup truck		1.0667	19	3.38E-07	9.30E-07	5.54E-06	7.25E-08	5.36E-07	2.18E-07	2.39E-02	2.38E-06	1.24E-06	2.44E-02	2.21E-02
	Maintenance	Grader	215 hp	144	210	1.23E-03	3.88E-03	2.27E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.87E-04	-	1.07E+01	9.67E+00
Demolition	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01	1.43E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.84E-03	9.26E-06	2.69E-05	2.47E-05	9.22E-01	3.35E-05	-	9.23E-01	8.37E-01
	Platform	Tractor/crawler/dozer	440 hp	40	20	6.00E-04	2.26E-03	9.13E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.66E-04	-	4.56E+00	4.14E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.14E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	2.07E-05	-	5.70E-01	5.17E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
	Drilling	Rotary drill	475 hp	34.0003	126	5.85E-04	2.38E-03	9.90E-03	5.00E-05	8.55E-05	7.86E-05	5.05E+00	1.53E-04	-	5.05E+00	4.58E+00
		3/4 ton Pickup truck		34.0003	126	1.46E-05	3.93E-05	2.38E-04	2.30E-06	1.72E-05	7.04E-06	7.63E-01	7.59E-05	3.96E-05	7.77E-01	7.05E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	126	5.13E-04	3.97E-03	5.56E-03	9.49E-06	1.86E-05	1.71E-05	7.34E-01	3.87E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	4.66E-04	1.92E-03	8.11E-03	3.97E-05	6.89E-05	6.34E-05	4.05E+00	1.47E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Load/Haul	Front end loader	350 hp	4	126	5.94E-05	1.59E-04	6.64E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	1.21E-05	-	3.32E-01	3.01E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01	1.07E+01
	Landfill	Crane 260'	375 hp	30.0107	126	2.33E-04	9.60E-04	4.06E-03	1.99E-05	3.44E-05	3.17E-05	2.02E+00	7.36E-05	-	2.03E+00	1.84E+00
	Micro-blast	Crane 260'	375 hp	49	126	3.80E-04	1.57E-03	6.62E-03	3.24E-05	5.62E-05	5.17E-05	3.31E+00	1.20E-04	-	3.31E+00	3.00E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	1.67E-03	2.23E-06	3.76E-06	3.46E-06	1.69E-01	1.53E-05	-	1.69E-01	1.54E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	20	126	1.55E-04	6.40E-04	2.70E-03	1.32E-05	2.30E-05	2.11E-05	1.35E+00	4.91E-05	-	1.35E+00	1.23E+00
		Air compressor	50 hp	40	126	1.90E-03	2.00E-03	1.91E-01	8.23E-06	5.19E-05	5.18E-05	6.77E-01	1.07E-04	1.44E-04	7.24E-01	6.57E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01	4.15E-01
						8.60E-02	**5.03E-01**	**1.46E+00**	**3.25E-03**	**1.07E-02**	**7.71E-03**	**3.42E+02**	**1.14E-02**	**1.85E-03**	**3.43E+02**	**3.11E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episodes 3 through 21

Construction Start Year	2039	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2039 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		Water truck	5000 gal	1696	210	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection measures	***Biologist***	3/4 ton pickup truck		709	210	5.80E-03	1.56E-02	9.44E-02	9.14E-04	6.83E-03	2.80E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	***Cutting***	1 ton pickup truck		1.0325	19	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	3.08E-03	1.16E-02	6.41E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	9.80E-03	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.85E-02	3.44E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	1.93E-03	7.26E-03	2.94E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	Brush chipper	250 hp	0.8673	19	6.23E-03	1.03E-02	4.04E-02	2.33E-04	4.02E-04	3.69E-04
		Front end loader	540 hp	0.8673	19	4.12E-03	1.10E-02	6.85E-02	3.44E-04	4.33E-04	3.98E-04
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	2.58E-03	9.70E-03	5.36E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	1.29E-02	6.35E-02	1.12E-01	1.36E-04	3.85E-04	3.54E-04
		Roller	47 hp	4	19	2.35E-03	4.74E-02	1.09E-01	1.33E-04	1.81E-04	1.67E-04
		Water truck	3000 gal	4	19	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	6.42E-03	1.71E-02	9.62E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	7.73E-03	2.91E-02	1.61E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	6.83E-05	8.40E-04	2.22E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	1.05E-01	4.33E-01	7.26E+00	1.30E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	9.97E-02	4.11E-01	6.90E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	2.45E-03	9.21E-03	5.10E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	Concrete saw	13 hp	8	23	6.49E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	7.51E-03	3.09E-02	5.19E-01	9.33E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	8.97E-01	6.27E+00	1.54E+01	2.92E-02	5.97E-02	5.49E-02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.30E+00	3.16E-02	4.67E-02	4.29E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.30E+00	3.16E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.30E+00	3.16E-02	4.67E-02	4.29E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	3.40E-01	1.28E+00	6.30E+00	3.16E-02	4.67E-02	4.29E-02
	Armoring	1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
		Excavator	430 hp	1.0667	19	3.12E-03	1.11E-02	4.52E-02	2.21E-04	4.08E-04	3.75E-04
		1 ton pickup truck		1.0667	19	7.12E-05	1.96E-04	1.17E-03	1.53E-05	1.13E-04	4.59E-05
	Maintenance	Grader	215 hp	144	210	2.33E-02	7.39E-02	4.32E-01	2.28E-03	2.79E-03	2.56E-03
Demolition	***Excavation for Dam Demo***	Asphalt distributor	3000 gal	6.7805	22	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	1.70E-02	5.57E-01	3.35E-01	1.68E-03	4.89E-03	4.49E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	1.20E-01	4.52E-01	1.83E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	1.50E-02	5.65E-02	2.28E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	Rotary drill	475 hp	34.0003	126	1.86E-02	7.54E-02	3.14E-01	1.59E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		34.0003	126	4.64E-04	1.25E-03	7.54E-03	7.31E-05	5.46E-04	2.23E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	1.63E-02	1.26E-01	1.77E-01	3.01E-04	5.91E-04	5.43E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	1.48E-02	6.10E-02	2.58E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	Front end loader	350 hp	4	126	1.89E-03	5.06E-03	2.11E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	7.39E-03	3.05E-02	1.29E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	Crane 260'	375 hp	49	126	1.21E-02	4.98E-02	2.10E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.72E-03	2.90E-02	5.30E-02	7.07E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	Crane 260'	375 hp	20	126	4.93E-03	2.03E-02	8.58E-02	4.20E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	6.02E-02	6.34E-02	6.05E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
						3.34E+00	**1.58E+01**	**7.03E+01**	**2.19E-01**	**5.07E-01**	**4.04E-01**

Data from Alt3_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
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Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year	2066
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2066 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		48	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	1696	210	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	1.7208	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Chain saw		1.7209	19	3.026	0.115	13.188	0.001	0.021	0.021	35.643	0.156	0.039
	Brush Piling	Front end loader	540 hp	0.8673	19	0.038	0.102	0.566	0.003	0.004	0.004	312.041	0.011	0.000
		Tractor/crawler/dozer	310 hp	0.8673	19	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
	Chipping	Brush chipper	250 hp	0.8673	19	0.116	0.187	0.735	0.004	0.007	0.007	424.504	0.010	0.000
		Front end loader	540 hp	0.8673	19	0.038	0.102	0.566	0.003	0.004	0.004	312.041	0.011	0.000
Landscaping	*Fish Passage*	Excavator	454 hp	24	20	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Loader/backhoe	75 hp	24	20	0.043	0.523	1.383	0.002	0.005	0.004	195.357	0.010	0.000
		Tractor/crawler/dozer	440 hp	24	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Front end loader	49 hp	4	19	0.284	1.397	2.455	0.003	0.008	0.008	231.302	0.024	0.000
		Roller	47 hp	4	19	0.054	1.087	2.500	0.003	0.004	0.004	235.521	0.026	0.000
		Water truck	3000 gal	4	19	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	300 hp	4	19	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Front end loader	180 hp	4	19	0.038	0.102	0.576	0.003	0.004	0.004	270.067	0.010	0.000
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
		Loader/backhoe	75 hp	0.0923	19	0.043	0.523	1.383	0.002	0.005	0.004	195.357	0.010	0.000
		Crane 94'	155 hp	155	19	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	19	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		1 ton pickup truck		155	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.031	0.116	0.642	0.003	0.004	0.004	301.144	0.011	0.000
	Dewatering	Concrete saw	13 hp	8	23	3.253	2.405	118.916	0.006	1.686	1.682	201.097	0.184	0.193
		Crane 80'	130 hp	16	23	0.019	0.078	1.302	0.002	0.003	0.003	208.063	0.008	0.000
		Flatbed truck		8	23	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.110	0.744	1.835	0.003	0.007	0.007	294.375	0.008	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.539	0.003	0.004	0.004	286.944	0.010	0.000
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.539	0.003	0.004	0.004	286.944	0.010	0.000
		Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.539	0.003	0.004	0.004	286.944	0.010	0.000
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	0.031	0.117	0.539	0.003	0.004	0.004	286.944	0.010	0.000
	Maintenance	Grader	215 hp	144	210	0.036	0.114	0.665	0.004	0.004	0.004	311.993	0.011	0.000
	Dismantling	Tractor/crawler/dozer	600 hp	157.6923	20	0.031	0.117	0.539	0.003	0.004	0.004	286.944	0.010	0.000
		Tractor/crawler/dozer	600 hp	157.6923	20	0.031	0.117	0.539	0.003	0.004	0.004	286.944	0.010	0.000
		1 ton pickup truck		0.9333	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
		Excavator	430 hp	0.9333	20	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Excavator	300 hp	341.6667	20	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		1 ton pickup truck		0.9333	20	0.288	0.791	4.714	0.062	0.456	0.185	20,361.282	2.024	1.056
Rindge Dam & Spillway Demolition*	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
		Excavator	430 hp	4.445	22	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Tractor/crawler/dozer	850 hp	3.2327	22	0.031	1.012	0.572	0.003	0.009	0.008	304.481	0.011	0.000
	Platform	Tractor/crawler/dozer	440 hp	40	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		Tractor/crawler/dozer	440 hp	5	20	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		3/4 ton Pickup truck		20	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Drilling	Rotary drill	475 hp	34.0003	126	0.033	0.133	0.535	0.003	0.005	0.004	283.590	0.009	0.000
		3/4 ton Pickup truck		30.0003	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	126	0.202	1.512	2.149	0.004	0.007	0.007	277.562	0.015	0.000
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		3/4 ton Pickup truck		60.0214	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	4	126	0.039	0.103	0.430	0.002	0.004	0.004	214.817	0.008	0.000
		Water truck	3000 gal	507	126	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Landfill	Crane 260'	375 hp	30.0107	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
	Micro-blast	Crane 260'	375 hp	49	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Horizontal boring drill	10 hp	55	126	0.089	1.506	2.687	0.004	0.006	0.006	278.915	0.025	0.000
		3/4 ton Pickup truck		60	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Demolish spillway	Crane 260'	375 hp	20	126	0.019	0.077	0.327	0.002	0.003	0.003	163.228	0.006	0.000
		Air compressor	50 hp	40	126	0.892	0.929	90.470	0.004	0.024	0.023	307.077	0.050	0.066
		3/4 ton Pickup truck		20	126	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Rindge Dam Concrete Arc Foundation Demolition	*Drilling*	Rotary drill	475 hp	120.7333	40	0.033	0.133	0.535	0.003	0.005	0.004	283.590	0.009	0.000
		3/4 ton Pickup truck		128.7333	40	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
	Load/Haul	Front end loader	350 hp	34	40	0.039	0.103	0.430	0.002	0.004	0.004	214.817	0.008	0.000
		Water truck	3000 gal	15	40	6.605	26.471	12.542	0.106	1.821	0.954	21,147.638	0.051	0.048
	Fracture	Excavator	400 hp	540	40	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Excavator	300 hp	540	40	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Excavator	300 hp	270	40	0.029	0.104	0.424	0.002	0.004	0.004	211.859	0.008	0.000
		Tractor/crawler/dozer	440 hp	270	40	0.031	0.116	0.471	0.002	0.004	0.004	234.974	0.009	0.000
		3/4 ton Pickup truck		540	40	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
Road Improvement Plan	*Asphalt Road*	Asphalt hopper	300 hp	442.5143	20	0.050	0.113	0.494	0.002	0.005	0.004	246.860	0.009	0.000
		Line Striper	23 hp	92.576	20	0.188	0.447	8.453	0.002	0.018	0.018	230.360	0.011	0.024
		Roller	70 hp	442.5143	20	0.031	0.515	1.577	0.003	0.004	0.004	222.771	0.010	0.000
		Vibratory roller	33 hp	442.5143	20	0.089	1.506	2.687	0.004	0.006	0.006	274.411	0.027	0.000
		Flatbed truck		92.576	20	0.630	1.299	9.351	0.061	0.456	0.185	20,361.282	4.604	2.135
		3/4 ton Pickup truck		92.576	20	0.390	1.049	6.341	0.061	0.459	0.188	20,361.282	2.024	1.056
														Total

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year 2066
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2066 (tons per year)									
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
											GWP	1	21	310	
Construction Survey		**3/4 ton pickup truck**		48	210	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00
Dust Control		**Water truck**	5000 gal	1696	210	1.23E-02	4.95E-02	2.34E-02	1.98E-04	3.40E-03	1.78E-03	3.95E+01	9.53E-05	8.97E-05	3.96E+01
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	210	5.28E-04	1.42E-03	8.59E-03	8.32E-05	6.21E-04	2.54E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01
	Fish relocation	**3/4 ton pickup truck**		16	19	6.88E-06	1.85E-05	1.12E-04	1.08E-06	8.09E-06	3.31E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		1.0325	19	3.28E-07	9.00E-07	5.37E-06	7.02E-08	5.19E-07	2.11E-07	2.32E-02	2.30E-06	1.20E-06	2.36E-02
		Tractor/crawler/dozer	250 hp	1.7208	19	1.46E-05	5.51E-05	3.04E-04	1.61E-06	2.01E-06	1.85E-06	1.43E-01	5.19E-06	-	1.43E-01
		Chain saw		1.7209	19	4.82E-05	1.83E-06	2.10E-04	2.34E-08	3.31E-07	3.30E-07	5.68E-04	2.49E-06	6.24E-07	8.13E-04
	Brush Piling	**Front end loader**	540 hp	0.8673	19	1.96E-05	5.24E-05	2.92E-04	1.47E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01
		Tractor/crawler/dozer	310 hp	0.8673	19	9.17E-06	3.45E-05	1.39E-04	6.84E-07	1.26E-06	1.16E-06	6.96E-02	2.53E-06	-	6.97E-02
	Chipping	**Brush chipper**	250 hp	0.8673	19	2.78E-05	4.47E-05	1.76E-04	9.99E-07	1.75E-06	1.61E-06	1.01E-01	2.34E-06	-	1.02E-01
		Front end loader	540 hp	0.8673	19	1.96E-05	5.24E-05	2.92E-04	1.47E-06	2.06E-06	1.89E-06	1.61E-01	5.86E-06	-	1.61E-01
Landscaping	***Fish Passage***	**Excavator**	454 hp	24	20	3.52E-04	1.25E-03	5.10E-03	2.50E-05	4.60E-05	4.24E-05	2.54E+00	9.25E-05	-	2.55E+00
		Loader/backhoe	75 hp	24	20	8.44E-05	1.04E-03	2.74E-03	4.55E-06	9.59E-06	8.82E-06	3.88E-01	2.06E-05	-	3.88E-01
		Tractor/crawler/dozer	440 hp	24	20	3.60E-04	1.36E-03	5.48E-03	2.68E-05	4.94E-05	4.55E-05	2.74E+00	9.94E-05	-	2.74E+00
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01
		Front end loader	49 hp	4	19	6.13E-05	3.02E-04	5.30E-04	6.46E-07	1.83E-06	1.68E-06	5.00E-02	5.25E-06	-	5.01E-02
		Roller	47 hp	4	19	1.12E-05	2.25E-04	5.18E-04	6.31E-07	8.61E-07	7.92E-07	4.88E-02	5.41E-06	-	4.89E-02
		Water truck	3000 gal	4	19	2.91E-05	1.17E-04	5.53E-05	4.67E-07	8.03E-06	4.21E-06	9.32E-02	2.25E-07	2.12E-07	9.33E-02
		Excavator	300 hp	4	19	3.88E-05	1.38E-04	5.61E-04	2.75E-06	5.07E-06	4.67E-06	2.80E-01	1.02E-05	-	2.80E-01
		Front end loader	180 hp	4	19	3.05E-05	8.10E-05	4.57E-04	2.41E-06	3.21E-06	2.95E-06	2.14E-01	7.79E-06	-	2.15E-01
	36" Diversion Pipe - gradir	**Tractor/crawler/dozer**	180 hp	6	19	3.67E-05	1.38E-04	7.64E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.30E-05	-	3.59E-01
		Loader/backhoe	75 hp	0.0923	19	3.25E-07	3.99E-06	1.05E-05	1.75E-08	3.69E-08	3.39E-08	1.49E-03	7.94E-08	-	1.49E-03
		Crane 94'	155 hp	155	19	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00
		1 ton pickup truck		155	19	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00
		Crane 94'	155 hp	155	20	4.98E-04	2.05E-03	3.45E-02	6.20E-05	7.65E-05	7.04E-05	5.51E+00	2.00E-04	-	5.51E+00
		1 ton pickup truck		155	20	4.92E-05	1.35E-04	8.05E-04	1.05E-05	7.79E-05	3.17E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	1.22E-05	4.61E-05	2.55E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	4.35E-06	-	1.20E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.22E-05	3.04E-02
		Crane 80'	130 hp	16	23	4.32E-05	1.78E-04	2.98E-03	5.37E-06	6.63E-06	6.10E-06	4.77E-01	1.73E-05	-	4.77E-01
		Flatbed truck		8	23	5.56E-06	1.15E-05	8.25E-05	5.35E-07	4.02E-06	1.63E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01
		Generator	80 hp	5856	244	5.66E-02	3.84E-01	9.48E-01	1.78E-03	3.72E-03	3.42E-03	1.52E+02	4.25E-03	-	1.52E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.81E-02	1.41E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01
	Push	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.81E-02	1.41E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01
		Tractor/crawler/dozer	600 hp	78.8462	19	1.62E-03	6.08E-03	2.81E-02	1.41E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01
	Build road	**Tractor/crawler/dozer**	600 hp	78.8462	19	1.62E-03	6.08E-03	2.81E-02	1.41E-04	2.22E-04	2.04E-04	1.50E+01	5.44E-04	-	1.50E+01
	Maintenance	**Grader**	215 hp	144	210	1.23E-03	3.88E-03	2.27E-02	1.20E-04	1.46E-04	1.35E-04	1.06E+01	3.87E-04	-	1.07E+01
	Dismantling	**Tractor/crawler/dozer**	600 hp	157.6923	20	3.23E-03	1.22E-02	5.62E-02	2.82E-04	4.43E-04	4.08E-04	2.99E+01	1.09E-03	-	2.99E+01
		Tractor/crawler/dozer	600 hp	157.6923	20	3.23E-03	1.22E-02	5.62E-02	2.82E-04	4.43E-04	4.08E-04	2.99E+01	1.09E-03	-	2.99E+01
		1 ton pickup truck		0.9333	20	2.96E-07	8.14E-07	4.85E-06	6.34E-08	4.69E-07	1.91E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02
		Excavator	430 hp	0.9333	20	1.30E-05	4.60E-05	1.88E-04	9.20E-07	1.70E-06	1.56E-06	9.37E-02	3.41E-06	-	9.38E-02
		Excavator	300 hp	341.6667	20	3.31E-03	1.17E-02	4.79E-02	2.35E-04	4.33E-04	3.99E-04	2.39E+01	8.70E-04	-	2.40E+01
		1 ton pickup truck		0.9333	20	2.96E-07	8.14E-07	4.85E-06	6.34E-08	4.69E-07	1.91E-07	2.09E-02	2.08E-06	1.09E-06	2.13E-02
Rindge Dam & Spillway Demolition*	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	22	4.94E-05	1.98E-04	9.37E-05	7.92E-07	1.36E-05	7.13E-06	1.58E-01	3.81E-07	3.59E-07	1.58E-01
		Excavator	430 hp	4.445	22	6.18E-05	2.19E-04	8.94E-04	4.38E-06	8.08E-06	7.43E-06	4.46E-01	1.62E-05	-	4.47E-01
		Tractor/crawler/dozer	850 hp	3.2327	22	9.36E-05	3.06E-03	1.73E-03	8.69E-06	2.69E-05	2.47E-05	9.22E-01	3.35E-05	-	9.23E-01
	Platform	**Tractor/crawler/dozer**	440 hp	40	20	6.00E-04	2.26E-03	9.13E-03	4.47E-05	8.24E-05	7.58E-05	4.56E+00	1.66E-04	-	4.56E+00
		Tractor/crawler/dozer	440 hp	5	20	7.50E-05	2.82E-04	1.14E-03	5.59E-06	1.03E-05	9.47E-06	5.70E-01	2.07E-05	-	5.70E-01
		3/4 ton Pickup truck		20	20	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01
	Drilling	**Rotary drill**	475 hp	34.0003	126	5.85E-04	2.38E-03	9.52E-03	4.79E-05	8.55E-05	7.86E-05	5.05E+00	1.53E-04	-	5.05E+00
		3/4 ton Pickup truck		30.0003	126	1.29E-05	3.47E-05	2.10E-04	2.03E-06	1.52E-05	6.21E-06	6.73E-01	6.69E-05	3.49E-05	6.86E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	126	2.06E-05	5.55E-05	3.36E-04	3.25E-06	2.43E-05	9.93E-06	1.08E+00	1.07E-04	5.59E-05	1.10E+00
		Diamond cutting saw	50 hp	48	126	5.34E-04	4.00E-03	5.68E-03	9.49E-06	1.90E-05	1.75E-05	7.34E-01	3.87E-05	-	7.35E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	126	4.66E-04	1.92E-03	8.11E-03	3.97E-05	6.89E-05	6.34E-05	4.05E+00	1.47E-04	-	4.05E+00
		3/4 ton Pickup truck		60.0214	126	2.58E-05	6.94E-05	4.20E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00
	Load/Haul	**Front end loader**	350 hp	4	126	5.94E-05	1.59E-04	6.64E-04	3.25E-06	6.24E-06	5.74E-06	3.32E-01	1.21E-05	-	3.32E-01
		Water truck	3000 gal	507	126	3.69E-03	1.48E-02	7.01E-03	5.92E-05	1.02E-03	5.33E-04	1.18E+01	2.85E-05	2.68E-05	1.18E+01
	Landfill	**Crane 260'**	375 hp	30.0107	126	2.33E-04	9.60E-04	4.06E-03	1.99E-05	3.44E-05	3.17E-05	2.02E+00	7.36E-05	-	2.03E+00
	Micro-blast	**Crane 260'**	375 hp	49	126	3.80E-04	1.57E-03	6.62E-03	3.24E-05	5.62E-05	5.17E-05	3.31E+00	1.20E-04	-	3.31E+00
		Horizontal boring drill	10 hp	55	126	5.41E-05	9.13E-04	1.63E-03	2.15E-06	3.76E-06	3.46E-06	1.69E-01	1.53E-05	-	1.69E-01
		3/4 ton Pickup truck		60	126	2.58E-05	6.94E-05	4.19E-04	4.06E-06	3.03E-05	1.24E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00
	Demolish spillway	**Crane 260'**	375 hp	20	126	1.55E-04	6.40E-04	2.70E-03	1.32E-05	2.30E-05	2.11E-05	1.35E+00	4.91E-05	-	1.35E+00
		Air compressor	50 hp	40	126	1.97E-03	2.05E-03	1.99E-01	8.23E-06	5.19E-05	5.18E-05	6.77E-01	1.11E-04	1.46E-04	7.25E-01
		3/4 ton Pickup truck		20	126	8.60E-06	2.31E-05	1.40E-04	1.35E-06	1.01E-05	4.14E-06	4.49E-01	4.46E-05	2.33E-05	4.57E-01
Rindge Dam Concrete Arc Foundation Demolition	***Drilling***	**Rotary drill**	475 hp	120.7333	40	2.08E-03	8.44E-03	3.38E-02	1.70E-04	3.03E-04	2.79E-04	1.79E+01	5.44E-04	-	1.79E+01
		3/4 ton Pickup truck		128.7333	40	5.53E-05	1.49E-04	9.00E-04	8.72E-06	6.51E-05	2.66E-05	2.89E+00	2.87E-04	1.50E-04	2.94E+00
	Load/Haul	**Front end loader**	350 hp	34	40	5.05E-04	1.35E-03	5.64E-03	2.77E-05	5.31E-05	4.88E-05	2.82E+00	1.02E-04	-	2.82E+00
		Water truck	3000 gal	15	40	1.09E-04	4.38E-04	2.07E-04	1.75E-06	3.01E-05	1.58E-05	3.50E-01	8.43E-07	7.94E-07	3.50E-01
	Fracture	**Excavator**	400 hp	540	40	6.98E-03	2.48E-02	1.01E-01	4.95E-04	9.13E-04	8.40E-04	5.04E+01	1.83E-03	-	5.05E+01
		Excavator	300 hp	540	40	5.24E-03	1.86E-02	7.58E-02	3.71E-04	6.85E-04	6.30E-04	3.78E+01	1.38E-03	-	3.79E+01
		Excavator	300 hp	270	40	2.62E-03	9.28E-03	3.79E-02	1.86E-04	3.42E-04	3.15E-04	1.89E+01	6.88E-04	-	1.89E+01
		Tractor/crawler/dozer	440 hp	270	40	4.05E-03	1.52E-02	6.16E-02	3.02E-04	5.56E-04	5.11E-04	3.08E+01	1.12E-03	-	3.08E+01
		3/4 ton Pickup truck		540	40	2.32E-04	6.25E-04	3.77E-03	3.66E-05	2.73E-04	1.12E-04	1.21E+01	1.20E-03	6.29E-04	1.23E+01
Road Improvement Plan	***Asphalt Road***	**Asphalt hopper**	300 hp	442.5143	20	7.29E-03	1.66E-02	7.23E-02	3.55E-04	6.79E-04	6.24E-04	3.61E+01	1.31E-03	-	3.62E+01
		Line Striper	23 hp	92.576	20	4.41E-04	1.05E-03	1.98E-02	5.37E-06	4.31E-05	4.30E-05	5.41E-01	2.49E-05	5.54E-05	5.58E-01
		Roller	70 hp	442.5143	20	1.04E-03	1.76E-02	5.38E-02	8.92E-05	1.37E-04	1.26E-04	7.61E+00	3.54E-04	-	7.61E+00
		Vibratory roller	33 hp	442.5143	20	1.44E-03	2.42E-02	4.32E-02	5.71E-05	9.99E-05	9.19E-05	4.42E+00	4.32E-04	-	4.43E+00
		Flatbed truck		92.576	20	6.43E-05	1.33E-04	9.54E-04	6.19E-06	4.65E-05	1.89E-05	2.08E+00	4.70E-04	2.18E-04	2.16E+00
		3/4 ton Pickup truck		92.576	20	3.98E-05	1.07E-04	6.47E-04	6.27E-06	4.68E-05	1.92E-05	2.08E+00	2.07E-04	1.08E-04	2.12E+00
						1.31E-01	**6.83E-01**	**2.15E+00**	**6.21E-03**	**1.67E-02**	**1.29E-02**	**6.70E+02**	**2.58E-02**	**3.61E-03**	**6.71E+02**

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Ecosystem Restoration Feasibility Study
Construction Equipment - Alternative 3 - Episode 22

Construction Start Year	2066
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Metric Tons CO2e/yr	Peak Daily Emissions - 2066 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		48	210	9.95E-01	3.93E-04	1.06E-03	6.39E-03	6.19E-05	4.62E-04	1.89E-04
Dust Control		Water truck	5000 gal	1696	210	3.59E+01	2.35E-01	9.43E-01	4.47E-01	3.77E-03	6.48E-02	3.40E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	2.55E+01	1.01E-02	2.71E-02	1.64E-01	1.59E-03	1.18E-02	4.85E-03
	Fish relocation	3/4 ton pickup truck		16	19	3.32E-01	1.45E-03	3.90E-03	2.35E-02	2.28E-04	1.70E-03	6.97E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		1.0325	19	2.14E-02	6.90E-05	1.90E-04	1.13E-03	1.48E-05	1.09E-04	4.44E-05
		Tractor/crawler/dozer	250 hp	1.7208	19	1.30E-01	3.08E-03	1.16E-02	6.41E-02	3.38E-04	4.23E-04	3.89E-04
		Chain saw		1.7209	19	7.38E-04	1.02E-02	3.85E-04	4.42E-02	4.92E-06	6.96E-05	6.95E-05
	Brush Piling	Front end loader	540 hp	0.8673	19	1.46E-01	4.12E-03	1.10E-02	6.15E-02	3.09E-04	4.33E-04	3.98E-04
		Tractor/crawler/dozer	310 hp	0.8673	19	6.32E-02	1.93E-03	7.26E-03	2.94E-02	1.44E-04	2.65E-04	2.44E-04
	Chipping	Brush chipper	250 hp	0.8673	19	9.21E-02	5.85E-03	9.40E-03	3.70E-02	2.10E-04	3.68E-04	3.39E-04
		Front end loader	540 hp	0.8673	19	1.46E-01	4.12E-03	1.10E-02	6.15E-02	3.09E-04	4.33E-04	3.98E-04
Landscaping	*Fish Passage*	Excavator	454 hp	24	20	2.31E+00	7.04E-02	2.50E-01	1.02E+00	4.99E-03	9.21E-03	8.47E-03
		Loader/backhoe	75 hp	24	20	3.52E-01	1.69E-02	2.08E-01	5.49E-01	9.09E-04	1.92E-03	1.76E-03
		Tractor/crawler/dozer	440 hp	24	20	2.48E+00	7.20E-02	2.71E-01	1.10E+00	5.37E-03	9.88E-03	9.09E-03
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	1.08E-01	2.58E-03	9.70E-03	5.36E-02	2.83E-04	3.54E-04	3.25E-04
		Front end loader	49 hp	4	19	4.54E-02	1.29E-02	6.35E-02	1.12E-01	1.36E-04	3.85E-04	3.54E-04
		Roller	47 hp	4	19	4.44E-02	2.35E-03	4.74E-02	1.09E-01	1.33E-04	1.81E-04	1.67E-04
		Water truck	3000 gal	4	19	8.47E-02	6.13E-03	2.46E-02	1.16E-02	9.83E-05	1.69E-03	8.86E-04
		Excavator	300 hp	4	19	2.54E-01	8.16E-03	2.90E-02	1.18E-01	5.79E-04	1.07E-03	9.82E-04
		Front end loader	180 hp	4	19	1.95E-01	6.42E-03	1.71E-02	9.62E-02	5.08E-04	6.75E-04	6.21E-04
	36" Diversion Pipe - gradir	Tractor/crawler/dozer	180 hp	6	19	3.25E-01	7.73E-03	2.91E-02	1.61E-01	8.49E-04	1.06E-03	9.76E-04
		Loader/backhoe	75 hp	0.0923	19	1.35E-03	6.83E-05	8.40E-04	2.22E-03	3.68E-06	7.76E-06	7.14E-06
		Crane 94'	155 hp	155	19	5.00E+00	1.05E-01	4.33E-01	7.26E+00	1.30E-02	1.61E-02	1.48E-02
		1 ton pickup truck		155	19	3.21E+00	1.04E-02	2.84E-02	1.70E-01	2.22E-03	1.64E-02	6.67E-03
		Crane 94'	155 hp	155	20	5.00E+00	9.97E-02	4.11E-01	6.90E+00	1.24E-02	1.53E-02	1.41E-02
		1 ton pickup truck		155	20	3.21E+00	9.83E-03	2.70E-02	1.61E-01	2.11E-03	1.56E-02	6.33E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	1.08E-01	2.45E-03	9.21E-03	5.10E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	Concrete saw	13 hp	8	23	2.75E-02	6.49E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	4.33E-01	7.51E-03	3.09E-02	5.19E-01	9.33E-04	1.15E-03	1.06E-03
		Flatbed truck		8	23	1.69E-01	9.67E-04	1.99E-03	1.43E-02	9.30E-05	6.99E-04	2.84E-04
		Generator	80 hp	5856	244	1.38E+02	9.28E-01	6.30E+00	1.55E+01	2.92E-02	6.10E-02	5.61E-02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	78.8462	19	1.36E+01	3.40E-01	1.28E+00	5.92E+00	2.97E-02	4.67E-02	4.29E-02
	Push	Tractor/crawler/dozer	600 hp	78.8462	19	1.36E+01	3.40E-01	1.28E+00	5.92E+00	2.97E-02	4.67E-02	4.29E-02
		Tractor/crawler/dozer	600 hp	78.8462	19	1.36E+01	3.40E-01	1.28E+00	5.92E+00	2.97E-02	4.67E-02	4.29E-02
	Build road	Tractor/crawler/dozer	600 hp	78.8462	19	1.36E+01	3.40E-01	1.28E+00	5.92E+00	2.97E-02	4.67E-02	4.29E-02
	Maintenance	Grader	215 hp	144	210	9.67E+00	2.33E-02	7.39E-02	4.32E-01	2.28E-03	2.79E-03	2.56E-03
	Dismantling	Tractor/crawler/dozer	600 hp	157.6923	20	2.72E+01	6.46E-01	2.43E+00	1.12E+01	5.64E-02	8.87E-02	8.16E-02
		Tractor/crawler/dozer	600 hp	157.6923	20	2.72E+01	6.46E-01	2.43E+00	1.12E+01	5.64E-02	8.87E-02	8.16E-02
		1 ton pickup truck		0.9333	20	1.93E-02	5.92E-05	1.63E-04	9.70E-04	1.27E-05	9.38E-05	3.81E-05
		Excavator	430 hp	0.9333	20	8.51E-02	2.59E-03	9.20E-03	3.75E-02	1.84E-04	3.39E-04	3.12E-04
		Excavator	300 hp	341.6667	20	2.17E+01	6.63E-01	2.35E+00	9.59E+00	4.70E-02	8.66E-02	7.97E-02
		1 ton pickup truck		0.9333	20	1.93E-02	5.92E-05	1.63E-04	9.70E-04	1.27E-05	9.38E-05	3.81E-05
Rindge Dam & Spillway Demolition*	*Excavation for Dam Demo*	Asphalt distributor	3000 gal	6.7805	22	1.43E-01	8.98E-03	3.60E-02	1.70E-02	1.44E-04	2.47E-03	1.30E-03
		Excavator	430 hp	4.445	22	4.05E-01	1.12E-02	3.98E-02	1.63E-01	7.97E-04	1.47E-03	1.35E-03
		Tractor/crawler/dozer	850 hp	3.2327	22	8.37E-01	1.70E-02	5.57E-01	3.15E-01	1.58E-03	4.89E-03	4.49E-03
	Platform	Tractor/crawler/dozer	440 hp	40	20	4.14E+00	1.20E-01	4.52E-01	1.83E+00	8.95E-03	1.65E-02	1.52E-02
		Tractor/crawler/dozer	440 hp	5	20	5.17E-01	1.50E-02	5.65E-02	2.28E-01	1.12E-03	2.06E-03	1.89E-03
		3/4 ton Pickup truck		20	20	4.15E-01	1.72E-03	4.63E-03	2.80E-02	2.71E-04	2.02E-03	8.28E-04
	Drilling	Rotary drill	475 hp	34.0003	126	4.58E+00	1.86E-02	7.54E-02	3.02E-01	1.52E-03	2.71E-03	2.50E-03
		3/4 ton Pickup truck		30.0003	126	6.22E-01	4.09E-04	1.10E-03	6.66E-03	6.45E-05	4.81E-04	1.97E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	126	9.95E-01	6.55E-04	1.76E-03	1.07E-02	1.03E-04	7.70E-04	3.15E-04
		Diamond cutting saw	50 hp	48	126	6.67E-01	1.69E-02	1.27E-01	1.80E-01	3.01E-04	6.05E-04	5.56E-04
	Lift/Load blocks	Crane 260'	375 hp	60.0214	126	3.68E+00	1.48E-02	6.10E-02	2.57E-01	1.26E-03	2.19E-03	2.01E-03
		3/4 ton Pickup truck		60.0214	126	1.24E+00	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Load/Haul	Front end loader	350 hp	4	126	3.01E-01	1.89E-03	5.06E-03	2.11E-02	1.03E-04	1.98E-04	1.82E-04
		Water truck	3000 gal	507	126	1.07E+01	1.17E-01	4.70E-01	2.23E-01	1.88E-03	3.23E-02	1.69E-02
	Landfill	Crane 260'	375 hp	30.0107	126	1.84E+00	7.39E-03	3.05E-02	1.29E-01	6.31E-04	1.09E-03	1.01E-03
	Micro-blast	Crane 260'	375 hp	49	126	3.00E+00	1.21E-02	4.98E-02	2.10E-01	1.03E-03	1.79E-03	1.64E-03
		Horizontal boring drill	10 hp	55	126	1.54E-01	1.72E-03	2.90E-02	5.17E-02	6.83E-05	1.19E-04	1.10E-04
		3/4 ton Pickup truck		60	126	1.24E+00	8.19E-04	2.20E-03	1.33E-02	1.29E-04	9.63E-04	3.94E-04
	Demolish spillway	Crane 260'	375 hp	20	126	1.23E+00	4.93E-03	2.03E-02	8.58E-02	4.20E-04	7.29E-04	6.70E-04
		Air compressor	50 hp	40	126	6.57E-01	6.25E-02	6.50E-02	6.33E+00	2.61E-04	1.65E-03	1.64E-03
		3/4 ton Pickup truck		20	126	4.15E-01	2.73E-04	7.34E-04	4.44E-03	4.30E-05	3.21E-04	1.31E-04
Rindge Dam Concrete Arc Foundation Demolition	*Drilling*	Rotary drill	475 hp	120.7333	40	1.63E+01	2.08E-01	8.44E-01	3.38E+00	1.70E-02	3.03E-02	2.79E-02
		3/4 ton Pickup truck		128.7333	40	2.67E+00	5.53E-03	1.49E-02	9.00E-02	8.72E-04	6.51E-03	2.66E-03
	Load/Haul	Front end loader	350 hp	34	40	2.56E+00	5.05E-02	1.35E-01	5.64E-01	2.77E-03	5.31E-03	4.88E-03
		Water truck	3000 gal	15	40	3.17E-01	1.09E-02	4.38E-02	2.07E-02	1.75E-04	3.01E-03	1.58E-03
	Fracture	Excavator	400 hp	540	40	4.58E+01	6.98E-01	2.48E+00	1.01E+01	4.95E-02	9.13E-02	8.40E-02
		Excavator	300 hp	540	40	3.43E+01	5.24E-01	1.86E+00	7.58E+00	3.71E-02	6.85E-02	6.30E-02
		Excavator	300 hp	270	40	1.72E+01	2.62E-01	9.28E-01	3.79E+00	1.86E-02	3.42E-02	3.15E-02
		Tractor/crawler/dozer	440 hp	270	40	2.79E+01	4.05E-01	1.52E+00	6.16E+00	3.02E-02	5.56E-02	5.11E-02
		3/4 ton Pickup truck		540	40	1.12E+01	2.32E-02	6.25E-02	3.77E-01	3.66E-03	2.73E-02	1.12E-02
Road Improvement Plan	*Asphalt Road*	Asphalt hopper	300 hp	442.5143	20	3.28E+01	1.46E+00	3.32E+00	1.45E+01	7.09E-02	1.36E-01	1.25E-01
		Line Striper	23 hp	92.576	20	5.07E-01	8.82E-02	2.10E-01	3.97E+00	1.07E-03	8.61E-03	8.60E-03
		Roller	70 hp	442.5143	20	6.91E+00	2.08E-01	3.51E+00	1.08E+01	1.78E-02	2.74E-02	2.52E-02
		Vibratory roller	33 hp	442.5143	20	4.02E+00	2.87E-01	4.85E+00	8.65E+00	1.14E-02	2.00E-02	1.84E-02
		Flatbed truck		92.576	20	1.96E+00	1.29E-02	2.65E-02	1.91E-01	1.24E-03	9.30E-03	3.78E-03
		3/4 ton Pickup truck		92.576	20	1.92E+00	7.96E-03	2.14E-02	1.29E-01	1.25E-03	9.36E-03	3.83E-03
						6.09E+02	**9.74E+00**	**4.36E+01**	**1.74E+02**	**6.47E-01**	**1.33E+00**	**1.13E+00**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2066
Birthday of Martin Luther King, Jr.	1/18/2066
Washington's Birthday	2/15/2066
Memorial Day	5/31/2066
Independence Day	7/5/2066
Labor Day	9/6/2066
Columbus Day	10/11/2066
Veterans Day	11/11/2066
Thanksgiving Day	11/25/2066
Christmas Day	12/24/2066
10	

Data from Alt3_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Emission Factors - 2016 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Emission Factors - 2017 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		**3/4 ton pickup truck**		96	22.2	73.8	52	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	210	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
Environmental protection	***WQ Testing***	**3/4 ton pickup truck**		80	0.0	80.0	0	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
measures	***Biologist***	**3/4 ton pickup truck**		1213	0.0	1,213.0	0	210	5.037	3.900	60.209	0.061	0.513	0.238	20,361.282	2.024	1.056	4.535	3.606	54.402	0.061	0.507	0.233	20,361.281	2.024	1.056
Clear & Grub - Sheriff's	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	0	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Overlook (Staging Area)		**Tractor/crawler/dozer**	250 hp	0.7652	0.8	0.0	52	0	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		0.7652	0.8	0.0	52	0	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
	Gravel	**Grader**	135 hp	11.1111	11.1	0.0	52	0	0.068	0.996	1.863	0.004	0.066	0.061	320.918	0.019	0.000	0.073	1.005	1.912	0.004	0.069	0.063	320.926	0.021	0.000
		Vibratory roller	85 hp	16	16.0	0.0	52	0	0.042	1.062	1.354	0.003	0.070	0.065	222.773	0.010	0.000	0.044	1.069	1.378	0.003	0.071	0.066	222.772	0.010	0.000
		Tractor/crawler/dozer	310 hp	3.2593	3.3	0.0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.623	2.678	132.418	0.006	1.877	1.873	223.929	0.205	0.204	3.633	2.686	132.805	0.006	1.883	1.879	224.584	0.205	0.204
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	0.057	1.075	1.282	0.002	0.075	0.069	195.357	0.012	0.000	0.061	1.085	1.315	0.002	0.077	0.071	195.356	0.013	0.000
		Flatbed truck		4	4.0	0.0	52	0	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
Clear & Grub - Sediment	***Clear Brush***	**1 ton pickup truck**		15.1316	0.0	15.1	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Removal Area		**Excavator**	94 hp	15.1316	0.0	15.1	0	42	0.057	1.099	1.937	0.003	0.077	0.070	278.042	0.020	0.000	0.060	1.098	1.968	0.003	0.078	0.071	278.041	0.021	0.000
		Front end loader	210 hp	15.1316	0.0	15.1	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
		Dump truck	10cy	15.1316	0.0	15.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	15.1316	0.0	15.1	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	15.1316	0.0	15.1	0	42	0.058	0.528	0.384	0.002	0.004	0.003	224.564	0.005	0.000	0.061	0.528	0.385	0.002	0.004	0.003	223.246	0.006	0.000
		Front end loader	210 hp	6.9575	0.0	7.0	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	14.375	0.0	14.4	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		14.3753	0.0	14.4	0	42	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	7.245	0.0	7.2	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	7.245	0.0	7.2	0	42	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	7.245	0.0	7.2	0	42	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	7.245	0.0	7.2	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
Clear & Grub - Access Rd &	***Clear Brush***	**1 ton pickup truck**		8.0263	0.0	8.0	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
Cofferdam		**Excavator**	94 hp	8.0263	0.0	8.0	0	42	0.057	1.099	1.937	0.003	0.077	0.070	278.042	0.020	0.000	0.060	1.098	1.968	0.003	0.078	0.071	278.041	0.021	0.000
		Front end loader	210 hp	8.0263	0.0	8.0	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
		Dump truck	10cy	8.0263	0.0	8.0	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Dump truck	10cy	8.0263	0.0	8.0	0	42	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Brush chipper	275 hp	8.0263	0.0	8.0	0	42	0.058	0.528	0.384	0.002	0.004	0.003	224.564	0.005	0.000	0.061	0.528	0.385	0.002	0.004	0.003	223.246	0.006	0.000
		Front end loader	210 hp	3.6905	0.0	3.7	0	42	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	Cutting	**1 ton pickup truck**		4.575	0.0	4.6	0	42	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.625	0.0	7.6	0	42	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Chain saw		7.6252	0.0	7.6	0	42	1.786	0.115	13.187	0.001	0.021	0.021	35.645	0.111	0.039	1.889	0.115	13.187	0.001	0.021	0.021	35.643	0.117	0.039
	Brush Piling	**Front end loader**	540 hp	3.843	0.0	3.8	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
		Tractor/crawler/dozer	310 hp	3.843	0.0	3.8	0	42	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Chipping	**Brush chipper**	250 hp	3.843	0.0	3.8	0	42	0.099	0.904	0.668	0.004	0.006	0.006	384.551	0.009	0.000	0.115	0.993	0.738	0.005	0.007	0.006	419.944	0.010	0.000
		Front end loader	540 hp	3.843	0.0	3.8	0	42	0.053	0.510	0.546	0.003	0.004	0.004	290.880	0.012	0.000	0.058	0.517	0.588	0.003	0.004	0.004	307.067	0.014	0.000
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	190	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
		Front end loader	49 hp	4	0.0	4.0	0	190	0.177	2.105	1.842	0.003	0.083	0.076	231.302	0.016	0.000	0.194	2.138	1.939	0.003	0.086	0.079	231.302	0.018	0.000
		Roller	47 hp	4	0.0	4.0	0	190	0.149	2.081	1.697	0.003	0.078	0.071	235.481	0.013	0.000	0.164	2.111	1.785	0.003	0.081	0.074	235.494	0.015	0.000
		Water truck	3000 gal	4	0.0	4.0	0	190	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Excavator	300 hp	4	0.0	4.0	0	190	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Front end loader	180 hp	4	0.0	4.0	0	190	0.054	0.522	0.530	0.003	0.004	0.004	270.065	0.011	0.000	0.059	0.526	0.543	0.003	0.004	0.004	270.056	0.012	0.000
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	190	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	190	2.544	1.647	93.480	0.004	1.249	1.246	148.934	0.144	0.124	2.544	1.646	93.479	0.004	1.248	1.246	148.931	0.144	0.124
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	190	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	190	0.057	1.075	1.282	0.002	0.075	0.069	195.357	0.012	0.000	0.061	1.085	1.315	0.002	0.077	0.071	195.356	0.013	0.000
		Crane 94'	155 hp	155	0.0	155.0	0	20	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		1 ton pickup truck		155	0.0	155.0	0	20	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	20	0.043	0.578	0.609	0.003	0.004	0.004	301.151	0.014	0.000	0.046	0.583	0.627	0.003	0.004	0.004	301.152	0.015	0.000
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	3.252	2.404	118.854	0.006	1.685	1.682	200.991	0.184	0.193	3.252	2.404	118.884	0.006	1.685	1.682	201.042	0.184	0.193
		Crane 80'	130 hp	16	0.0	16.0	0	171	0.036	0.695	1.211	0.002	0.042	0.038	208.073	0.012	0.000	0.039	0.700	1.245	0.002	0.043	0.039	208.066	0.014	0.000
		Flatbed truck		8	0.0	8.0	0	171	9.236	9.041	130.746	0.061	0.499	0.224	20,361.283	4.604	2.135	7.793	7.877	109.254	0.061	0.491	0.217	20,361.282	4.604	2.135
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	2.020	1.438	103.611	0.005	0.098	0.098	175.214	0.114	0.147
		Generator	80 hp	5856	0.0	5,856.0	0	244	0.094	1.457	1.665	0.003	0.096	0.088	294.378	0.008	0.000	0.099	1.463	1.679	0.003	0.097	0.089	294.371	0.009	0.000
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Push	**Tractor/crawler/dozer**	600 hp	738.4615	0.0	738.5	0	171	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Build road	**Tractor/crawler/dozer**	600 hp	761.5384	0.0	761.5	0	171	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Cut	**Tractor/crawler/dozer**	600 hp	20.4616	0.0	20.5	0	171	0.043	0.585	0.541	0.003	0.004	0.004	281.585	0.013	0.000	0.046	0.589	0.532	0.003	0.004	0.004	270.547	0.014	0.000
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	171	0.068	0.996	1.863	0.004	0.066	0.061	320.918	0.019	0.000	0.073	1.005	1.912	0.004	0.069	0.063	320.926	0.021	0.000
	Graveling	**Asphalt distributor**	3000 gal	10	0.0	10.0	0	171	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
		Vibratory roller	85 hp	30.4607	0.0	30.5	0	171	0.042	1.062	1.354	0.003	0.070	0.065	222.773	0.010	0.000	0.044	1.069	1.378	0.003	0.071	0.066	222.772	0.010	0.000
		Tractor/crawler/dozer	310 hp	12.7423	0.0	12.7	0	171	0.044	0.593	0.451	0.002	0.004	0.004	234.973	0.011	0.000	0.047	0.598	0.462	0.002	0.004	0.004	234.945	0.012	0.000
	Armoring	**1 ton pickup truck**		8	0.0	8.0	0	171	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
		Excavator	430 hp	8	0.0	8.0	0	171	0.041	0.523	0.419	0.002	0.004	0.003	211.852	0.011	0.000	0.044	0.526	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		1 ton pickup truck		8	0.0	8.0	0	171	3.579	3.535	47.996	0.062	0.504	0.230	20,361.283	2.024	1.056	2.978	3.169	39.989	0.062	0.497	0.223	20,361.280	2.024	1.056
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	191	0.048	0.548	0.617	0.004	0.004	0.004	311.994	0.013	0.000	0.052	0.553	0.633	0.004	0.004	0.004	312.019	0.015	0.000
FloodWall		**Crane 50'**	263 hp	992	0.0	992.0	0	171	0.026	0.385	0.309	0.002	0.003	0.003	163.266	0.007	0.000	0.028	0.388	0.316	0.002	0.003	0.003	163.242	0.008	0.000
		Pile hammer driver	325 hp	992	0.0	992.0	0	171	0.047	0.675	0.517	0.003	0.005	0.004	282.190	0.010	0.000	0.049	0.678	0.524	0.003	0.005	0.004	282.223	0.011	0.000
		Generator	7.5 hp	291.8009	0.0	291.8	0	171	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	2.020	1.438	103.611	0.005	0.098	0.098	175.214	0.114	0.147
		Concrete pump		157.0849	0.0	157.1	0	171	7.746	125.318	13.903	0.108	2.768	1.826	21,547.038	0.051	0.048	6.977	114.417	12.738	0.108	2.402	1.489	21,520.018	0.051	0.048
																									Total	

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 1

Construction Start Year 2016
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Annual Emissions - 2016 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr	Annual Emissions - 2017 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
									1		21		310														1		21		310	
Construction Survey		3/4 ton pickup truck		96	22.2	73.8	52	210	1.23E-04	9.52E-05	1.47E-03	1.50E-06	1.25E-05	5.81E-06	4.97E-01	4.94E-05	2.58E-05	5.06E-01	4.59E-01	3.69E-04	2.94E-04	4.43E-03	4.99E-06	4.13E-05	1.89E-05	1.66E+00	1.65E-04	8.60E-05	1.69E+00	1.53E+00
Dust Control		Water truck	5000 gal	2320	535.4	1,784.6	52	210	4.57E-03	7.40E-02	8.21E-03	6.36E-05	1.63E-03	1.08E-03	1.27E+01	3.01E-05	2.83E-05	1.27E+01	1.15E+01	1.37E-02	2.25E-01	2.51E-02	2.12E-04	4.72E-03	2.93E-03	4.23E+01	1.00E-04	9.44E-05	4.24E+01	3.84E+01
Environmental protection measures	***WQ Testing***	3/4 ton pickup truck		80	0.0	80.0	0	210	-	-	-	-	-	-	-	-	-	-	-	4.00E-04	3.18E-04	4.80E-03	5.40E-06	4.47E-05	2.05E-05	1.80E+00	1.78E-04	9.31E-05	1.83E+00	1.66E+00
	Biologist	3/4 ton pickup truck		1213	0.0	1,213.0	0	210	-	-	-	-	-	-	-	-	-	-	-	6.06E-03	4.82E-03	7.27E-02	8.19E-05	6.78E-04	3.11E-04	2.72E+01	2.71E-03	1.41E-03	2.77E+01	2.51E+01
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	1 ton pickup truck		0.4591	0.5	0.0	52	0	1.81E-06	1.79E-06	2.43E-05	3.11E-08	2.55E-07	1.16E-07	1.03E-02	1.02E-06	5.34E-07	1.05E-02	9.52E-03	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	8.98E-06	1.22E-04	1.28E-04	7.15E-07	8.76E-07	8.06E-07	6.35E-02	2.94E-06	-	6.36E-02	5.77E-02	-	-	-	-	-	-	-	-	-	-	-
		Chain saw		0.7652	0.8	0.0	52	0	1.27E-05	8.13E-07	9.34E-05	1.04E-08	1.47E-07	1.47E-07	2.53E-04	7.87E-07	2.77E-07	3.55E-04	3.22E-04	-	-	-	-	-	-	-	-	-	-	-
	Brush Piling	Front end loader	540 hp	0.3857	0.4	0.0	52	0	1.22E-05	1.17E-04	1.25E-04	6.71E-07	9.02E-07	8.30E-07	6.68E-02	2.77E-06	-	6.68E-02	6.06E-02	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	5.76E-06	7.82E-05	5.95E-05	3.04E-07	5.62E-07	5.17E-07	3.10E-02	1.43E-06	-	3.10E-02	2.81E-02	-	-	-	-	-	-	-	-	-	-	-
	Chipping	Brush chipper	250 hp	0.3857	0.4	0.0	52	0	1.05E-05	9.61E-05	7.10E-05	4.60E-07	6.77E-07	6.23E-07	4.09E-02	9.45E-07	-	4.09E-02	3.71E-02	-	-	-	-	-	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	1.22E-05	1.17E-04	1.25E-04	6.71E-07	9.02E-07	8.30E-07	6.68E-02	2.77E-06	-	6.68E-02	6.06E-02	-	-	-	-	-	-	-	-	-	-	-
	Gravel	Grader	135 hp	11.1111	11.1	0.0	52	0	1.12E-04	1.65E-03	3.08E-03	5.97E-06	1.09E-04	1.01E-04	5.31E-01	3.14E-05	-	5.31E-01	4.82E-01	-	-	-	-	-	-	-	-	-	-	-
		Vibratory roller	85 hp	16	16.0	0.0	52	0	6.25E-05	1.59E-03	2.03E-03	3.92E-06	1.05E-04	9.68E-05	3.34E-01	1.43E-05	-	3.34E-01	3.03E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.2593	3.3	0.0	52	0	4.87E-05	6.61E-04	5.03E-04	2.57E-06	4.75E-06	4.37E-06	2.62E-01	1.21E-05	-	2.62E-01	2.38E-01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	1.73E-05	2.34E-04	1.78E-04	9.11E-07	1.68E-06	1.55E-06	9.29E-02	4.30E-06	-	9.29E-02	8.43E-02	-	-	-	-	-	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	6.92E-06	1.12E-04	1.24E-05	9.62E-08	2.47E-06	1.63E-06	1.93E-02	4.56E-08	4.29E-08	1.93E-02	1.75E-02	-	-	-	-	-	-	-	-	-	-	-
	Guard Railing	Flatbed truck		8.75	8.8	0.0	52	0	8.91E-05	8.72E-05	1.26E-03	5.89E-07	4.81E-06	2.16E-06	1.96E-01	4.44E-05	2.06E-05	2.04E-01	1.85E-01	-	-	-	-	-	-	-	-	-	-	-
		Auger drill	10 hp	8.75	8.8	0.0	52	0	3.49E-04	2.58E-04	1.28E-02	6.16E-07	1.81E-04	1.81E-04	2.16E-02	1.98E-05	1.96E-05	2.81E-02	2.55E-02	-	-	-	-	-	-	-	-	-	-	-
	Demo Existing Gate	Loader/backhoe	75 hp	4.2	4.2	0.0	52	0	1.98E-05	3.73E-04	4.45E-04	7.96E-07	2.62E-05	2.41E-05	6.78E-02	4.02E-06	-	6.79E-02	6.16E-02	-	-	-	-	-	-	-	-	-	-	-
		Flatbed truck		4	4.0	0.0	52	0	4.07E-05	3.99E-05	5.76E-04	2.69E-07	2.20E-06	9.87E-07	8.98E-02	2.03E-05	9.41E-06	9.31E-02	8.45E-02	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area	***Clear Brush***	1 ton pickup truck		15.1316	0.0	15.1	0	42	-	-	-	-	-	-	-	-	-	-	-	4.97E-05	5.29E-05	6.67E-04	1.03E-06	8.30E-06	3.73E-06	3.46E-01	3.38E-05	1.76E-05	3.46E-01	3.14E-01
		Excavator	94 hp	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	-	-	-	-	-	9.43E-05	1.72E-03	3.09E-03	5.11E-06	1.22E-04	1.12E-04	4.36E-01	3.33E-05	-	4.37E-01	3.96E-01
		Front end loader	210 hp	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	-	-	-	-	-	2.07E-04	1.84E-03	1.90E-03	1.06E-05	1.44E-05	1.33E-05	9.46E-01	4.31E-05	-	9.47E-01	8.59E-01
		Dump truck	10cy	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.16E-04	1.91E-03	2.12E-04	1.79E-06	4.01E-05	2.48E-05	3.59E-01	8.51E-07	8.01E-07	3.59E-01	3.26E-01
		Dump truck	10cy	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	-	-	-	-	-	1.16E-04	1.91E-03	2.12E-04	1.79E-06	4.01E-05	2.48E-05	3.59E-01	8.51E-07	8.01E-07	3.59E-01	3.26E-01
		Brush chipper	275 hp	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	-	-	-	-	-	2.81E-04	2.42E-03	1.76E-03	1.01E-05	1.72E-05	1.58E-05	1.02E+00	2.53E-05	-	1.02E+00	9.29E-01
		Front end loader	210 hp	6.9575	0.0	7.0	0	42	-	-	-	-	-	-	-	-	-	-	-	9.54E-05	8.47E-04	8.75E-04	4.89E-06	6.64E-06	6.11E-06	4.35E-01	1.98E-05	-	4.35E-01	3.95E-01
	Cutting	1 ton pickup truck		8.625	0.0	8.6	0	42	-	-	-	-	-	-	-	-	-	-	-	2.83E-05	3.01E-05	3.80E-04	5.85E-07	4.73E-06	2.12E-06	1.94E-01	1.92E-05	1.00E-05	1.97E-01	1.79E-01
		Tractor/crawler/dozer	250 hp	14.375	0.0	14.4	0	42	-	-	-	-	-	-	-	-	-	-	-	1.81E-04	2.31E-03	2.48E-03	1.34E-05	1.68E-05	1.54E-05	1.19E+00	6.11E-05	-	1.19E+00	1.08E+00
		Chain saw		14.3753	0.0	14.4	0	42	-	-	-	-	-	-	-	-	-	-	-	2.51E-04	1.53E-05	1.76E-03	1.95E-07	2.76E-06	2.76E-06	4.74E-03	1.56E-05	5.21E-06	6.69E-03	6.07E-03
	Brush Piling	Front end loader	540 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	-	-	-	-	-	2.51E-04	2.23E-03	2.53E-03	1.33E-05	1.75E-05	1.61E-05	1.32E+00	6.03E-05	-	1.33E+00	1.20E+00
		Tractor/crawler/dozer	310 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	-	-	-	-	-	1.16E-04	1.48E-03	1.14E-03	5.71E-06	1.08E-05	9.90E-06	5.82E-01	2.98E-05	-	5.82E-01	5.28E-01
	Chipping	Brush chipper	250 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	-	-	-	-	-	2.30E-04	1.98E-03	1.47E-03	9.43E-06	1.41E-05	1.30E-05	8.38E-01	2.07E-05	-	8.39E-01	7.61E-01
		Front end loader	540 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	-	-	-	-	-	2.51E-04	2.23E-03	2.53E-03	1.33E-05	1.75E-05	1.61E-05	1.32E+00	6.03E-05	-	1.33E+00	1.20E+00
Clear & Grub - Access Rd & Cofferdam	***Clear Brush***	1 ton pickup truck		8.0263	0.0	8.0	0	42	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.80E-05	3.54E-04	5.44E-07	4.40E-06	1.98E-06	1.80E-01	1.79E-05	9.34E-06	1.83E-01	1.66E-01
		Excavator	94 hp	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	-	-	-	-	-	5.00E-05	9.13E-04	1.64E-03	2.71E-06	6.45E-05	5.94E-05	2.31E-01	1.77E-05	-	2.32E-01	2.10E-01
		Front end loader	210 hp	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	-	-	-	-	-	1.10E-04	9.77E-04	1.01E-03	5.65E-06	7.66E-06	7.05E-06	5.02E-01	2.28E-05	-	5.02E-01	4.56E-01
		Dump truck	10cy	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	-	-	-	-	-	6.17E-05	1.01E-03	1.13E-04	9.52E-07	2.12E-05	1.32E-05	1.90E-01	4.51E-07	4.25E-07	1.91E-01	1.73E-01
		Dump truck	10cy	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	-	-	-	-	-	6.17E-05	1.01E-03	1.13E-04	9.52E-07	2.12E-05	1.32E-05	1.90E-01	4.51E-07	4.25E-07	1.91E-01	1.73E-01
		Brush chipper	275 hp	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	-	-	-	-	-	1.49E-04	1.28E-03	9.36E-04	5.33E-06	9.14E-06	8.41E-06	5.43E-01	1.34E-05	-	5.43E-01	4.93E-01
		Front end loader	210 hp	3.6905	0.0	3.7	0	42	-	-	-	-	-	-	-	-	-	-	-	5.06E-05	4.49E-04	4.64E-04	2.60E-06	3.52E-06	3.24E-06	2.31E-01	1.05E-05	-	2.31E-01	2.09E-01
	Cutting	1 ton pickup truck		4.575	0.0	4.6	0	42	-	-	-	-	-	-	-	-	-	-	-	1.50E-05	1.60E-05	2.02E-04	3.10E-07	2.51E-06	1.13E-06	1.03E-01	1.02E-05	5.33E-06	1.05E-01	9.48E-02
		Tractor/crawler/dozer	250 hp	7.625	0.0	7.6	0	42	-	-	-	-	-	-	-	-	-	-	-	9.61E-05	1.22E-03	1.32E-03	7.12E-06	8.90E-06	8.19E-06	6.33E-01	3.24E-05	-	6.33E-01	5.75E-01
		Chain saw		7.6252	0.0	7.6	0	42	-	-	-	-	-	-	-	-	-	-	-	1.33E-04	8.10E-06	9.31E-04	1.04E-07	1.47E-06	1.46E-06	2.52E-03	8.29E-06	2.76E-06	3.55E-03	3.22E-03
	Brush Piling	Front end loader	540 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	-	-	-	-	-	1.33E-04	1.18E-03	1.34E-03	7.06E-06	9.27E-06	8.53E-06	7.02E-01	3.20E-05	-	7.03E-01	6.38E-01
		Tractor/crawler/dozer	310 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	-	-	-	-	-	6.17E-05	7.85E-04	6.07E-04	3.03E-06	5.71E-06	5.25E-06	3.09E-01	1.58E-05	-	3.09E-01	2.80E-01
	Chipping	Brush chipper	250 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	-	-	-	-	-	1.22E-04	1.05E-03	7.82E-04	5.00E-06	7.48E-06	6.88E-06	4.45E-01	1.10E-05	-	4.45E-01	4.04E-01
		Front end loader	540 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	-	-	-	-	-	1.33E-04	1.18E-03	1.34E-03	7.06E-06	9.27E-06	8.53E-06	7.02E-01	3.20E-05	-	7.03E-01	6.38E-01
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	0.0	2.0	0	190	-	-	-	-	-	-	-	-	-	-	-	1.82E-05	2.31E-04	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	6.12E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	-	-	-	-	-	4.19E-05	4.62E-04	4.19E-04	6.46E-07	1.86E-05	1.72E-05	5.00E-02	3.78E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	-	-	-	-	-	3.41E-05	4.38E-04	3.70E-04	6.31E-07	1.68E-05	1.54E-05	4.88E-02	3.07E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	0.0	4.0	0	190	-	-	-	-	-	-	-	-	-	-	-	3.08E-05	5.04E-04	5.62E-05	4.74E-07	1.06E-05	6.56E-06	9.49E-02	2.25E-07	2.12E-07	9.50E-02	8.61E-02
		Excavator	300 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	-	-	-	-	-	5.82E-05	6.95E-04	5.61E-04	2.75E-06	5.11E-06	4.70E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	-	-	-	-	-	4.70E-05	4.17E-04	4.31E-04	2.41E-06	3.27E-06	3.01E-06	2.14E-01	9.76E-06	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	0.0	6.0	0	190	-	-	-	-	-	-	-	-	-	-	-	5.45E-05	6.94E-04	7.47E-04	4.03E-06	5.04E-06	4.64E-06	3.59E-01	1.84E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	16	0.0	16.0	0	190	-	-	-	-	-	-	-	-	-	-	-	7.63E-04	4.94E-04	2.80E-02	1.13E-06	3.74E-04	3.74E-04	4.47E-02	4.31E-05	3.73E-05	5.71E-02	5.18E-02
	36" Diversion Pipe	Crane 80'	130 hp	273	0.0	273.0	0	190	-	-	-	-	-	-	-	-	-	-	-	1.51E-03	2.74E-02	4.87E-02	9.16E-05	1.68E-03	1.54E-03	8.14E+00	5.37E-04	-	8.15E+00	7.39E+00
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	190	-	-	-	-	-	-	-	-	-	-	-	4.68E-07	8.28E-06	1.00E-05	1.75E-08	5.89E-07	5.42E-07	1.49E-03	9.65E-08	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	0.0	155.0	0	20	-	-	-	-	-	-	-	-	-	-	-	1.02E-03	1.85E-02	3.30E-02	6.20E-05	1.14E-03	1.04E-03	5.51E+00	3.64E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	0.0	155.0	0	20	-	-	-	-	-	-	-	-	-	-	-	5.09E-04	5.41E-04	6.83E-03	1.05E-05	8.50E-05	3.82E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	0.0	2.0	0	20	-	-	-	-	-	-	-	-	-	-	-	1.82E-05	2.31E-04	2.49E-04	1.34E-06	1.68E-06	1.55E-06	1.20E-01	6.12E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16	0.0	16.0	0	171	-	-	-	-	-	-	-	-	-	-	-	8.87E-05	1.60E-03	2.86E-03	5.37E-06	9.83E-05	9.04E-05	4.77E-01	3.15E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	6.87E-05	6.95E-05	9.63E-04	5.38E-07	4.33E-06	1.91E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	-	-	-	-	-	-	-	-	-	-	-	2.65E-05	1.89E-05	1.36E-03	6.56E-08	1.28E-06	1.28E-06	2.30E-03	1.50E-06	1.93E-06	2.93E-03	2.66E-03
		Generator	80 hp	5856	0.0	5,856.0	0	244	-	-	-	-	-	-	-	-	-	-	-	5.12E-02	7.56E-01	8.67E-01	1.78E-03	5.02E-02	4.62E-02	1.52E+02	4.62E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	120.7692	120.8	0.0	52	0	3.44E-03	4.68E-02	4.32E-02	2.26E-04	3.36E-04	3.09E-04	2.25E+01	1.04E-03	-	2.25E+01	2.04E+01	-	-	-	-	-	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	-	-	-	-	-	-	-	-	-	-	-	2.26E-02	2.88E-01	2.60E-01	1.33E-03	2.09E-03	1.92E-03	1.32E+02	6.77E-03	-	1.32E+02	1.20E+02
	Push	Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	-	-	-	-	-	-	-	-	-	-	-	2.26E-02	2.88E-01	2.60E-01	1.33E-03	2.09E-03	1.92E-03	1.32E+02	6.77E-03	-	1.32E+02	1.20E+02
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	-	-	-	-	-	-	-	-	-	-	-	2.26E-02	2.88E-01	2.60E-01	1.33E-03	2.09E-03	1.92E-03	1.32E+02	6.77E-03	-	1.32E+02	1.20E+02
	Build road	Tractor/crawler/dozer	600 hp	761.5384	0.0	761.5	0	171	-	-	-	-	-	-	-	-	-	-	-	2.33E-02	2.97E-01	2.68E-01	1.37E-03	2.16E-03	1.99E-03	1.36E+02	6.98E-03	-	1.36E+02	1.24E+02
	Cut	Tractor/crawler/dozer	600 hp	20.4616	0.0	20.5	0	171	-	-	-	-	-	-	-	-	-	-	-	6.26E-04	7.98E-03	7.20E-03	3.68E-05	5.80E-05	5.33E-05	3.66E+00	1.88E-04	-	3.67E+00	3.33E+00
	Fine Grading	Grader	135 hp	8.889	0.0	8.9	0	171	-	-	-	-	-	-	-	-	-	-	-	9.67E-05	1.33E-03	2.53E-03	4.78E-06	9.09E-05	8.37E-05	4.25E-01	2.76E-05	-	4.25E-01	3.86E-01
	Graveling	Asphalt distributor	3000 gal	10	0.0	10.0	0	171	-	-	-	-	-	-	-	-	-	-	-	7.69E-05	1.26E-03	1.40E-04	1.19E-06	2.65E-05	1.64E-05	2.37E-01	5.62E-07	5.29E-07	2.37E-01	2.15E-01
		Vibratory roller	85 hp	30.4607	0.0	30.5	0	171	-	-	-	-	-	-	-	-	-	-	-	1.26E-04	3.05E-03	3.93E-03	7.46E-06	2.03E-04	1.87E-04	6.36E-01	2.96E-05	-	6.36E-01	5.77E-01
		Tractor/crawler/dozer	310 hp	12.7423	0.0	12.7	0	171	-	-	-	-	-	-	-	-	-	-	-	2.04E-04	2.60E-03	2.01E-03	1.00E-05	1.89E-05	1.74E-05	1.02E+00	5.24E-05	-	1.02E+00	9.29E-01
	Armoring	1 ton pickup truck		8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
		Excavator	430 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	1.67E-04	1.99E-03	1.61E-03	7.89E-06	1.47E-05	1.35E-05	8.03E-01	4.44E-05	-	8.04E-01	7.30E-01
		1 ton pickup truck		8	0.0	8.0	0	171	-	-	-	-	-	-	-	-	-	-	-	2.63E-05	2.79E-05	3.53E-04	5.42E-07	4.39E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
	Maintenance	Grader	215 hp	340	0.0	340.0	0	191	-	-	-	-	-	-	-	-	-	-	-	4.21E-03	4.46E-02	5.10E-02	2.83E-04	3.36E-04	3.09E-04	2.51E+01	1.18E-03	-	2.52E+01	2.28E+01
FloodWall		Crane 50'	263 hp	992	0.0	992.0	0	171	-	-	-	-	-	-	-	-	-	-	-	7.94E-03	1.12E-01	9.08E-02	4.61E-04	7.97E-04	7.33E-04	4.69E+01	2.24E-03	-	4.70E+01	4.26E+01
		Pile hammer driver	325 hp	992	0.0	992.0	0	171	-	-	-	-	-	-	-	-	-	-	-	1.74E-02	2.41E-01	1.86E-01	9.84E-04	1.73E-03	1.59E-03	1.00E+02	3.93E-03	-	1.00E+02	9.11E+01
		Generator	7.5 hp	291.8009	0.0	291.8	0	171	-	-	-	-	-	-	-	-	-	-	-	4.87E-03	3.47E-03	2.50E-01	1.21E-05	2.36E-04	2.36E-04	4.23E-01	2.76E-04	3.54E-04	5.38E-01	4.88E-01
		Concrete pump		157.0849	0.0	157.1	0	171	-	-	-	-	-	-	-	-	-	-	-	1.21E-03	1.98E-02	2.21E-03	1.86E-05	4.16E-04	2.58E-04	3.73E+00	8.83E-06	8.31E-06	3.73E+00	3.38E+00
					8.95E-03	**1.26E-01**	**7.44E-02**	**3.10E-04**	**2.42E-03**	**1.81E-03**	**3.76E+01**	**1.28E-03**	**1.05E-04**	**3.77E+01**	**3.42E+01**	**2.08E-01**	**2.67E+00**	**2.79E+00**	**9.60E-03**	**7.22E-02**	**6.45E-02**	**9.75E+02**	**4.52E-02**	**2.38E-03**	**9.77E+02**	**8.86E+02**

Data from Alt4_EnvrAirQualityReport.pdf

Daily Onsite I
Rindge
Surfrider
Topanga
Zuma
Landfill
Floodwall

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 1

Construction Start Year: 2016
Speed of Onsite Trucks: 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Hours per Year 2016	Hours per Year 2017	Days per Year 2016	Days per Year 2017	Peak Daily Emissions - 2016 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions - 2017 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	22.2	73.8	52	210	9.46E-03	7.33E-03	1.13E-01	1.15E-04	9.64E-04	4.47E-04	7.03E-03	5.59E-03	8.43E-02	9.50E-05	7.87E-04	3.61E-04
Dust Control		**Water truck**	5000 gal	2320	535.4	1,784.6	52	210	3.52E-01	5.69E+00	6.31E-01	4.89E-03	1.26E-01	8.29E-02	2.61E-01	4.29E+00	4.77E-01	4.03E-03	9.00E-02	5.58E-02
Environmental protection measures	***WQ Testing***	**3/4 ton pickup truck**		80	0.0	80.0	0	210	-	-	-	-	-	-	7.62E-03	6.06E-03	9.14E-02	1.03E-04	8.52E-04	3.91E-04
	Biologist	**3/4 ton pickup truck**		1213	0.0	1,213.0	0	210	-	-	-	-	-	-	1.16E-01	9.18E-02	1.39E+00	1.56E-03	1.29E-02	5.93E-03
Clear & Grub - Sheriff's Overlook (Staging Area)	***Cutting***	**1 ton pickup truck**		0.4591	0.5	0.0	52	0	1.39E-04	1.38E-04	1.87E-03	2.40E-06	1.96E-05	8.94E-06	-	-	-	-	-	-
		Tractor/crawler/dozer	250 hp	0.7652	0.8	0.0	52	0	6.90E-04	9.38E-03	9.88E-03	5.50E-05	6.74E-05	6.20E-05	-	-	-	-	-	-
		Chain saw		0.7652	0.8	0.0	52	0	9.73E-04	6.25E-05	7.19E-03	8.00E-07	1.13E-05	1.13E-05	-	-	-	-	-	-
	Brush Piling	**Front end loader**	540 hp	0.3857	0.4	0.0	52	0	9.38E-04	9.01E-03	9.64E-03	5.17E-05	6.94E-05	6.38E-05	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	0.3857	0.4	0.0	52	0	4.43E-04	6.01E-03	4.58E-03	2.34E-05	4.32E-05	3.98E-05	-	-	-	-	-	-
	Chipping	**Brush chipper**	250 hp	0.3857	0.4	0.0	52	0	8.06E-04	7.39E-03	5.46E-03	3.54E-05	5.21E-05	4.79E-05	-	-	-	-	-	-
		Front end loader	540 hp	0.3857	0.4	0.0	52	0	9.38E-04	9.01E-03	9.64E-03	5.17E-05	6.94E-05	6.38E-05	-	-	-	-	-	-
	Gravel	**Grader**	135 hp	11.1111	11.1	0.0	52	0	8.59E-03	1.27E-01	2.37E-01	4.59E-04	8.41E-03	7.74E-03	-	-	-	-	-	-
		Vibratory roller	85 hp	16	16.0	0.0	52	0	4.81E-03	1.22E-01	1.56E-01	3.01E-04	8.09E-03	7.44E-03	-	-	-	-	-	-
		Tractor/crawler/dozer	310 hp	3.2593	3.3	0.0	52	0	3.74E-03	5.08E-02	3.87E-02	1.98E-04	3.65E-04	3.36E-04	-	-	-	-	-	-
		Tractor/crawler/dozer	440 hp	0.8148	0.8	0.0	52	0	1.33E-03	1.80E-02	1.37E-02	7.01E-05	1.30E-04	1.19E-04	-	-	-	-	-	-
		Asphalt distributor	3000 gal	0.8106	0.8	0.0	52	0	5.32E-04	8.61E-03	9.56E-04	7.40E-06	1.90E-04	1.25E-04	-	-	-	-	-	-
	Guard Railing	**Flatbed truck**		8.75	8.8	0.0	52	0	6.85E-03	6.71E-03	9.70E-02	4.53E-05	3.70E-04	1.66E-04	-	-	-	-	-	-
		Auger drill	10 hp	8.75	8.8	0.0	52	0	2.69E-02	1.99E-02	9.82E-01	4.74E-05	1.39E-02	1.39E-02	-	-	-	-	-	-
	Demo Existing Gate	**Loader/backhoe**	75 hp	4.2	4.2	0.0	52	0	1.52E-03	2.87E-02	3.43E-02	6.12E-05	2.01E-03	1.85E-03	-	-	-	-	-	-
		Flatbed truck		4	4.0	0.0	52	0	3.13E-03	3.07E-03	4.43E-02	2.07E-05	1.69E-04	7.59E-05	-	-	-	-	-	-
Clear & Grub - Sediment Removal Area	***Clear Brush***	**1 ton pickup truck**		15.1316	0.0	15.1	0	42	-	-	-	-	-	-	4.73E-03	5.03E-03	6.35E-02	9.77E-05	7.90E-04	3.55E-04
		Excavator	94 hp	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	8.98E-03	1.64E-01	2.94E-01	4.87E-04	1.16E-02	1.07E-02
		Front end loader	210 hp	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	1.98E-02	1.75E-01	1.81E-01	1.01E-03	1.38E-03	1.27E-03
		Dump truck	10cy	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	1.11E-02	1.82E-01	2.02E-02	1.71E-04	3.82E-03	2.36E-03
		Dump truck	10cy	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	1.11E-02	1.82E-01	2.02E-02	1.71E-04	3.82E-03	2.36E-03
		Brush chipper	275 hp	15.1316	0.0	15.1	0	42	-	-	-	-	-	-	2.67E-02	2.31E-01	1.68E-01	9.57E-04	1.64E-03	1.51E-03
		Front end loader	210 hp	6.9575	0.0	7.0	0	42	-	-	-	-	-	-	9.08E-03	8.07E-02	8.34E-02	4.66E-04	6.32E-04	5.82E-04
	Cutting	**1 ton pickup truck**		8.625	0.0	8.6	0	42	-	-	-	-	-	-	2.70E-03	2.87E-03	3.62E-02	5.57E-05	4.50E-04	2.02E-04
		Tractor/crawler/dozer	250 hp	14.375	0.0	14.4	0	42	-	-	-	-	-	-	1.73E-02	2.20E-01	2.37E-01	1.28E-03	1.60E-03	1.47E-03
		Chain saw		14.3753	0.0	14.4	0	42	-	-	-	-	-	-	2.40E-02	1.45E-03	1.67E-01	1.86E-05	2.63E-04	2.63E-04
	Brush Piling	**Front end loader**	540 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	2.39E-02	2.12E-01	2.41E-01	1.27E-03	1.66E-03	1.53E-03
		Tractor/crawler/dozer	310 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	1.11E-02	1.41E-01	1.09E-01	5.44E-04	1.02E-03	9.43E-04
	Chipping	**Brush chipper**	250 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	2.19E-02	1.89E-01	1.40E-01	8.98E-04	1.34E-03	1.24E-03
		Front end loader	540 hp	7.245	0.0	7.2	0	42	-	-	-	-	-	-	2.39E-02	2.12E-01	2.41E-01	1.27E-03	1.66E-03	1.53E-03
Clear & Grub - Access Rd & Cofferdam	***Clear Brush***	**1 ton pickup truck**		8.0263	0.0	8.0	0	42	-	-	-	-	-	-	2.51E-03	2.67E-03	3.37E-02	5.18E-05	4.19E-04	1.88E-04
		Excavator	94 hp	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	4.77E-03	8.70E-02	1.56E-01	2.58E-04	6.15E-03	5.65E-03
		Front end loader	210 hp	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	1.05E-02	9.30E-02	9.62E-02	5.38E-04	7.29E-04	6.71E-04
		Dump truck	10cy	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	5.88E-03	9.64E-02	1.07E-02	9.06E-05	2.02E-03	1.25E-03
		Dump truck	10cy	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	5.88E-03	9.64E-02	1.07E-02	9.06E-05	2.02E-03	1.25E-03
		Brush chipper	275 hp	8.0263	0.0	8.0	0	42	-	-	-	-	-	-	1.42E-02	1.22E-01	8.91E-02	5.08E-04	8.70E-04	8.01E-04
		Front end loader	210 hp	3.6905	0.0	3.7	0	42	-	-	-	-	-	-	4.82E-03	4.28E-02	4.42E-02	2.47E-04	3.35E-04	3.09E-04
	Cutting	**1 ton pickup truck**		4.575	0.0	4.6	0	42	-	-	-	-	-	-	1.43E-03	1.52E-03	1.92E-02	2.95E-05	2.39E-04	1.07E-04
		Tractor/crawler/dozer	250 hp	7.625	0.0	7.6	0	42	-	-	-	-	-	-	9.16E-03	1.17E-01	1.25E-01	6.78E-04	8.47E-04	7.80E-04
		Chain saw		7.6252	0.0	7.6	0	42	-	-	-	-	-	-	1.27E-02	7.71E-04	8.87E-02	9.87E-06	1.40E-04	1.39E-04
	Brush Piling	**Front end loader**	540 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	1.27E-02	1.13E-01	1.28E-01	6.73E-04	8.83E-04	8.12E-04
		Tractor/crawler/dozer	310 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	5.87E-03	7.48E-02	5.78E-02	2.88E-04	5.44E-04	5.00E-04
	Chipping	**Brush chipper**	250 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	1.16E-02	1.00E-01	7.45E-02	4.77E-04	7.13E-04	6.56E-04
		Front end loader	540 hp	3.843	0.0	3.8	0	42	-	-	-	-	-	-	1.27E-02	1.13E-01	1.28E-01	6.73E-04	8.83E-04	8.12E-04
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	190	-	-	-	-	-	-	3.82E-04	4.87E-03	5.24E-03	2.83E-05	3.54E-05	3.25E-05
		Front end loader	49 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	8.83E-04	9.72E-03	8.82E-03	1.36E-05	3.93E-04	3.61E-04
		Roller	47 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	7.17E-04	9.21E-03	7.79E-03	1.33E-05	3.53E-04	3.24E-04
		Water truck	3000 gal	4	0.0	4.0	0	190	-	-	-	-	-	-	6.48E-04	1.06E-02	1.18E-03	9.99E-06	2.23E-04	1.38E-04
		Excavator	300 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	1.22E-03	1.46E-02	1.18E-02	5.79E-05	1.08E-04	9.90E-05
		Front end loader	180 hp	4	0.0	4.0	0	190	-	-	-	-	-	-	9.89E-04	8.79E-03	9.08E-03	5.08E-05	6.89E-05	6.34E-05
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	0.0	6.0	0	190	-	-	-	-	-	-	1.15E-03	1.46E-02	1.57E-02	8.49E-05	1.06E-04	9.76E-05
	36" Diversion Pipe - pipe a	**Welder**	17 hp	16	0.0	16.0	0	190	-	-	-	-	-	-	1.61E-02	1.04E-02	5.90E-01	2.38E-05	7.88E-03	7.86E-03
	36" Diversion Pipe	**Crane 80'**	130 hp	273	0.0	273.0	0	190	-	-	-	-	-	-	3.19E-02	5.76E-01	1.03E+00	1.93E-03	3.53E-02	3.25E-02
		Loader/backhoe	75 hp	0.0923	0.0	0.1	0	190	-	-	-	-	-	-	9.85E-06	1.74E-04	2.11E-04	3.68E-07	1.24E-05	1.14E-05
		Crane 94'	155 hp	155	0.0	155.0	0	20	-	-	-	-	-	-	2.05E-01	3.71E+00	6.60E+00	1.24E-02	2.27E-01	2.09E-01
		1 ton pickup truck		155	0.0	155.0	0	20	-	-	-	-	-	-	1.02E-01	1.08E-01	1.37E+00	2.10E-03	1.70E-02	7.64E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	0.0	2.0	0	20	-	-	-	-	-	-	3.63E-03	4.62E-02	4.98E-02	2.69E-04	3.36E-04	3.09E-04
	Dewatering	**Concrete saw**	13 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	8.72E-03	6.45E-03	3.19E-01	1.54E-05	4.52E-03	4.51E-03
		Crane 80'	130 hp	16	0.0	16.0	0	171	-	-	-	-	-	-	2.07E-03	3.75E-02	6.68E-02	1.26E-04	2.30E-03	2.12E-03
		Flatbed truck		8	0.0	8.0	0	171	-	-	-	-	-	-	1.61E-03	1.62E-03	2.25E-02	1.26E-05	1.01E-04	4.47E-05
		Generator	7.5 hp	1.5873	0.0	1.6	0	171	-	-	-	-	-	-	6.20E-04	4.41E-04	3.18E-02	1.53E-06	3.01E-05	3.00E-05
		Generator	80 hp	5856	0.0	5,856.0	0	244	-	-	-	-	-	-	8.39E-01	1.24E+01	1.42E+01	2.92E-02	8.23E-01	7.57E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	120.7692	120.8	0.0	52	0	2.65E-01	3.60E+00	3.32E+00	1.74E-02	2.59E-02	2.38E-02	-	-	-	-	-	-
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	-	-	-	-	-	-	5.29E-01	6.73E+00	6.08E+00	3.11E-02	4.89E-02	4.50E-02
	Push	**Tractor/crawler/dozer**	600 hp	738.4615	0.0	738.5	0	171	-	-	-	-	-	-	5.29E-01	6.73E+00	6.08E+00	3.11E-02	4.89E-02	4.50E-02
		Tractor/crawler/dozer	600 hp	738.4615	0.0	738.5	0	171	-	-	-	-	-	-	5.29E-01	6.73E+00	6.08E+00	3.11E-02	4.89E-02	4.50E-02
	Build road	**Tractor/crawler/dozer**	600 hp	761.5384	0.0	761.5	0	171	-	-	-	-	-	-	5.45E-01	6.94E+00	6.27E+00	3.20E-02	5.05E-02	4.64E-02
	Cut	**Tractor/crawler/dozer**	600 hp	20.4616	0.0	20.5	0	171	-	-	-	-	-	-	1.47E-02	1.87E-01	1.68E-01	8.61E-04	1.36E-03	1.25E-03
	Fine Grading	**Grader**	135 hp	8.889	0.0	8.9	0	171	-	-	-	-	-	-	2.26E-03	3.11E-02	5.92E-02	1.12E-04	2.13E-03	1.96E-03
	Graveling	**Asphalt distributor**	3000 gal	10	0.0	10.0	0	171	-	-	-	-	-	-	1.80E-03	2.95E-02	3.28E-03	2.77E-05	6.19E-04	3.84E-04
		Vibratory roller	85 hp	30.4607	0.0	30.5	0	171	-	-	-	-	-	-	2.94E-03	7.14E-02	9.20E-02	1.74E-04	4.75E-03	4.37E-03
		Tractor/crawler/dozer	310 hp	12.7423	0.0	12.7	0	171	-	-	-	-	-	-	4.78E-03	6.09E-02	4.70E-02	2.35E-04	4.43E-04	4.07E-04
	Armoring	**1 ton pickup truck**		8	0.0	8.0	0	171	-	-	-	-	-	-	6.14E-04	6.54E-04	8.25E-03	1.27E-05	1.03E-04	4.61E-05
		Excavator	430 hp	8	0.0	8.0	0	171	-	-	-	-	-	-	3.90E-03	4.66E-02	3.76E-02	1.84E-04	3.43E-04	3.15E-04
		1 ton pickup truck		8	0.0	8.0	0	171	-	-	-	-	-	-	6.14E-04	6.54E-04	8.25E-03	1.27E-05	1.03E-04	4.61E-05
	Maintenance	**Grader**	215 hp	340	0.0	340.0	0	191	-	-	-	-	-	-	8.81E-02	9.33E-01	1.07E+00	5.92E-03	7.03E-03	6.47E-03
FloodWall		**Crane 50'**	263 hp	992	0.0	992.0	0	171	-	-	-	-	-	-	1.86E-01	2.61E+00	2.12E+00	1.08E-02	1.86E-02	1.71E-02
		Pile hammer driver	325 hp	992	0.0	992.0	0	171	-	-	-	-	-	-	4.07E-01	5.63E+00	4.35E+00	2.30E-02	4.04E-02	3.71E-02
		Generator	7.5 hp	291.8009	0.0	291.8	0	171	-	-	-	-	-	-	1.14E-01	8.11E-02	5.85E+00	2.82E-04	5.53E-03	5.51E-03
		Concrete pump		157.0849	0.0	157.1	0	171	-	-	-	-	-	-	2.83E-02	4.63E-01	5.16E-02	4.36E-04	9.73E-03	6.03E-03
									6.88E-01	**9.72E+00**	**5.72E+00**	**2.38E-02**	**1.86E-01**	**1.39E-01**	**4.93E+00**	**6.17E+01**	**6.78E+01**	**2.33E-01**	**1.56E+00**	**1.39E+00**

Data from Alt4_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
- Data from EMFAC2011 (g/hr)
- Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2016
Birthday of Martin Luther King, Jr.	1/18/2016
Washington's Birthday	2/15/2016
Memorial Day	5/30/2016
Independence Day	7/4/2016
Labor Day	9/5/2016
Columbus Day	10/10/2016
Veterans Day	11/11/2016
Thanksgiving Day	11/24/2016
Christmas Day	12/26/2016
New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/10/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
20	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2016
http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2017

Emissions (lb/day)

1	10	6	0	0	0	4	53	55	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	9	12	0	0	0

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2018 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Dust Control		Water truck	5000 gal	2320	210	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	210	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
		Chain saw		7.3335	19	1.993	0.115	13.187	0.001	0.021	0.021	35.644	0.124	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.063	0.523	0.567	0.003	0.004	0.004	290.956	0.014	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.120	0.977	0.730	0.005	0.007	0.006	410.775	0.011	0.000
		Front end loader	540 hp	3.696	19	0.063	0.523	0.567	0.003	0.004	0.004	290.956	0.014	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
		Front end loader	49 hp	4	19	0.210	2.169	2.030	0.003	0.090	0.082	231.301	0.019	0.000
		Roller	47 hp	4	19	0.179	2.141	1.871	0.003	0.084	0.077	235.555	0.016	0.000
		Water truck	3000 gal	4	19	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	300 hp	4	19	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Front end loader	180 hp	4	19	0.064	0.528	0.556	0.003	0.004	0.004	270.067	0.013	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
		Loader/backhoe	75 hp	0.0923	19	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000
		Crane 94'	155 hp	155	19	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000
		1 ton pickup truck		155	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Crane 94'	155 hp	155	20	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000
		1 ton pickup truck		155	20	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	20	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	22	3.250	2.402	118.784	0.006	1.684	1.681	200.873	0.184	0.193
		Crane 80'	130 hp	16	22	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000
		Flatbed truck		8	22	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
		Generator	80 hp	5856	244	0.104	1.470	1.693	0.003	0.099	0.091	294.397	0.009	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
	Armoring	1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Excavator	430 hp	2	19	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		1 ton pickup truck		2	19	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Maintenance	Grader	215 hp	340	210	0.056	0.558	0.649	0.004	0.004	0.004	312.011	0.016	0.000
Coarse Material (Gravel & Larger) - 167,000 cy after ramp building (4/1-7/21)	*Material Excavation*	1 ton pickup truck		663.5	78	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	663.5	78	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Water truck	3000 gal	663.5	78	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	663.5	78	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
Sand to Surfrider Beach (32,400 cy) (9/3-18)	*Material Excavation*	1 ton pickup truck		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	102	11	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Water truck	3000 gal	102	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	102	11	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
	Beach Crew	1 ton pickup truck		102	11	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	102	11	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Water truck	3000 gal	25	11	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2018 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	48	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Front end loader	350 hp	382.5	48	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
		Water truck	3000 gal	382.5	48	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Excavator	400 hp	382.5	48	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
	Beach Crew	**1 ton pickup truck**		382.5	48	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Tractor/crawler/dozer	600 hp	382.5	48	0.049	0.593	0.520	0.003	0.004	0.004	259.569	0.014	0.000
		Water truck	3000 gal	382.5	30	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Demolition - Concrete Arc & Spillway	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000
		Tractor/crawler/dozer	440 hp	90	22	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000
		3/4 ton pickup truck		360	22	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Drilling	**Rotary drill**	475 hp	88.1333	128	0.051	0.680	0.529	0.003	0.005	0.005	282.235	0.012	0.000
		3/4 ton pickup truck		84.1333	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	376	128	0.122	2.347	1.693	0.004	0.080	0.074	277.541	0.011	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
		3/4 ton pickup truck		454.8767	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Load/Haul	**Front end loader**	350 hp	32	128	0.064	0.528	0.419	0.002	0.004	0.004	214.813	0.011	0.000
	Landfill	**Crane 260'**	375 hp	227.4384	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
	Micro-blast	**Crane 260'**	375 hp	60	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
		Horizontal boring drill	10 hp	55	128	0.092	2.462	1.184	0.004	0.088	0.081	287.564	0.031	0.000
		3/4 ton pickup truck		60	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Demolish spillway	**Crane 260'**	375 hp	100	128	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
		Air compressor	50 hp	200	128	0.569	0.693	49.653	0.004	0.024	0.023	307.213	0.032	0.057
		3/4 ton pickup truck		100	128	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	20	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
		Excavator	430 hp	4.445	20	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	20	0.169	1.250	0.552	0.003	0.037	0.034	275.433	0.015	0.000
	Drilling	**Rotary drill**	475 hp	7.3333	20	0.051	0.680	0.529	0.003	0.005	0.005	282.235	0.012	0.000
		3/4 ton Pickup truck		7.3333	20	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	20	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
		Diamond cutting saw	50 hp	48	20	0.122	2.347	1.693	0.004	0.080	0.074	277.541	0.011	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	20	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
		3/4 ton Pickup truck		60.0214	20	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Landfill	**Crane 260'**	375 hp	30.0107	20	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
														Total

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2018 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	210	4.30E-04	3.53E-04	5.18E-03	6.48E-06	5.31E-05	2.41E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	210	1.78E-02	2.69E-01	3.27E-02	2.75E-04	5.91E-03	3.60E-03	5.50E+01	1.30E-04	1.23E-04	5.50E+01	4.99E+01
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	210	5.51E-03	4.52E-03	6.64E-02	8.30E-05	6.80E-04	3.09E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	**3/4 ton pickup truck**		16	19	7.17E-05	5.88E-05	8.64E-04	1.08E-06	8.86E-06	4.02E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.17E-05	1.38E-05	1.57E-04	2.98E-07	2.38E-06	1.05E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	9.86E-05	1.19E-03	1.30E-03	6.85E-06	8.71E-06	8.01E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	1.35E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	8.41E-06	2.66E-06	3.42E-03	3.10E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	1.39E-04	1.15E-03	1.25E-03	6.44E-06	9.17E-06	8.44E-06	6.40E-01	3.17E-05	-	6.41E-01	5.81E-01
		Tractor/crawler/dozer	310 hp	3.696	19	6.33E-05	7.60E-04	5.94E-04	2.91E-06	5.59E-06	5.14E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	1.22E-04	9.95E-04	7.44E-04	4.71E-06	7.15E-06	6.58E-06	4.18E-01	1.10E-05	-	4.19E-01	3.80E-01
		Front end loader	540 hp	3.696	19	1.39E-04	1.15E-03	1.25E-03	6.44E-06	9.17E-06	8.44E-06	6.40E-01	3.17E-05	-	6.41E-01	5.81E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	1.94E-05	2.33E-04	2.55E-04	1.34E-06	1.71E-06	1.57E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.53E-05	4.69E-04	4.38E-04	6.46E-07	1.94E-05	1.78E-05	5.00E-02	4.09E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	3.72E-05	4.44E-04	3.88E-04	6.31E-07	1.74E-05	1.60E-05	4.88E-02	3.35E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	3.07E-05	4.64E-04	5.64E-05	4.74E-07	1.02E-05	6.20E-06	9.47E-02	2.25E-07	2.12E-07	9.48E-02	8.60E-02
		Excavator	300 hp	4	19	6.20E-05	7.00E-04	5.61E-04	2.75E-06	5.21E-06	4.79E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	5.05E-05	4.19E-04	4.42E-04	2.41E-06	3.34E-06	3.07E-06	2.14E-01	1.06E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	5.81E-05	6.98E-04	7.64E-04	4.03E-06	5.13E-06	4.72E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
		Loader/backhoe	75 hp	0.0923	19	4.98E-07	8.34E-06	1.03E-05	1.75E-08	6.02E-07	5.54E-07	1.49E-03	1.04E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.09E-03	1.87E-02	3.39E-02	6.20E-05	1.17E-03	1.07E-03	5.51E+00	3.98E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	1.09E-03	1.87E-02	3.39E-02	6.20E-05	1.17E-03	1.07E-03	5.51E+00	3.98E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	4.13E-04	4.85E-04	5.51E-03	1.05E-05	8.38E-05	3.71E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	1.94E-05	2.33E-04	2.55E-04	1.34E-06	1.71E-06	1.57E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	22	3.73E-04	2.75E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	22	9.42E-05	1.61E-03	2.93E-03	5.37E-06	1.01E-04	9.29E-05	4.77E-01	3.45E-05	-	4.78E-01	4.34E-01
		Flatbed truck		8	22	5.78E-05	6.04E-05	8.03E-04	5.37E-07	4.27E-06	1.86E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.39E-02	7.59E-01	8.75E-01	1.78E-03	5.09E-02	4.68E-02	1.52E+02	4.87E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01	2.88E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01	2.88E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01	2.88E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	6.02E-03	7.24E-02	6.35E-02	3.19E-04	5.32E-04	4.89E-04	3.17E+01	1.75E-03	-	3.17E+01	2.88E+01
	Armoring	**1 ton pickup truck**		2	19	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	4.45E-05	5.02E-04	4.02E-04	1.97E-06	3.73E-06	3.43E-06	2.01E-01	1.11E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	5.33E-06	6.26E-06	7.12E-05	1.35E-07	1.08E-06	4.79E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	**Grader**	215 hp	340	210	4.52E-03	4.49E-02	5.23E-02	2.83E-04	3.43E-04	3.16E-04	2.51E+01	1.28E-03	-	2.52E+01	2.28E+01
Coarse Material (Gravel & Larger) - 167,000 cy after ramp building (4/1-7/21)	***Material Excavation***	**1 ton pickup truck**		663.5	78	1.77E-03	2.08E-03	2.36E-02	4.49E-05	3.59E-04	1.59E-04	1.49E+01	1.48E-03	7.72E-04	1.52E+01	1.38E+01
		Front end loader	350 hp	663.5	78	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01	4.99E+01
		Front end loader	350 hp	663.5	78	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01	4.99E+01
		Front end loader	350 hp	663.5	78	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01	4.99E+01
		Front end loader	350 hp	663.5	78	1.63E-02	1.35E-01	1.07E-01	5.40E-04	1.08E-03	9.91E-04	5.50E+01	2.72E-03	-	5.50E+01	4.99E+01
		Water truck	3000 gal	663.5	78	5.09E-03	7.70E-02	9.36E-03	7.86E-05	1.69E-03	1.03E-03	1.57E+01	3.73E-05	3.51E-05	1.57E+01	1.43E+01
		Excavator	400 hp	663.5	78	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01	5.63E+01
		Excavator	400 hp	663.5	78	1.37E-02	1.55E-01	1.24E-01	6.08E-04	1.15E-03	1.06E-03	6.20E+01	3.43E-03	-	6.21E+01	5.63E+01
Sand to Surfrider Beach (32,400 cy) (9/3-18)	***Material Excavation***	**1 ton pickup truck**		102	11	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00	2.11E+00
		Front end loader	350 hp	102	11	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00	7.68E+00
		Front end loader	350 hp	102	11	2.50E-03	2.08E-02	1.65E-02	8.30E-05	1.66E-04	1.52E-04	8.45E+00	4.18E-04	-	8.46E+00	7.68E+00
		Water truck	3000 gal	102	11	7.83E-04	1.18E-02	1.44E-03	1.21E-05	2.60E-04	1.58E-04	2.42E+00	5.73E-06	5.40E-06	2.42E+00	2.19E+00
		Excavator	400 hp	102	11	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00	8.65E+00
		Excavator	400 hp	102	11	2.11E-03	2.38E-02	1.91E-02	9.35E-05	1.77E-04	1.63E-04	9.53E+00	5.27E-04	-	9.54E+00	8.65E+00
	Beach Crew	**1 ton pickup truck**		102	11	2.72E-04	3.19E-04	3.63E-03	6.91E-06	5.52E-05	2.44E-05	2.29E+00	2.28E-04	1.19E-04	2.33E+00	2.11E+00
		Tractor/crawler/dozer	600 hp	102	11	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01	1.59E+01
		Tractor/crawler/dozer	600 hp	102	11	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01	1.59E+01
		Tractor/crawler/dozer	600 hp	102	11	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01	1.59E+01
		Tractor/crawler/dozer	600 hp	102	11	3.33E-03	4.00E-02	3.51E-02	1.76E-04	2.94E-04	2.70E-04	1.75E+01	9.68E-04	-	1.75E+01	1.59E+01
		Water truck	3000 gal	25	11	1.92E-04	2.90E-03	3.53E-04	2.96E-06	6.37E-05	3.88E-05	5.92E-01	1.41E-06	1.32E-06	5.93E-01	5.38E-01

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year 2018
Speed of Onsite Trucks 10 mph

GWP 1 21 310

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Annual Emissions - 2018 (tons per year)										Metric Tons
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	48	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00	7.93E+00
		Front end loader	350 hp	382.5	48	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	48	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	48	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01	2.88E+01
		Front end loader	350 hp	382.5	48	9.39E-03	7.79E-02	6.18E-02	3.11E-04	6.21E-04	5.71E-04	3.17E+01	1.57E-03	-	3.17E+01	2.88E+01
		Water truck	3000 gal	382.5	48	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00	8.23E+00
		Excavator	400 hp	382.5	48	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01	3.25E+01
		Excavator	400 hp	382.5	48	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01	3.25E+01
		Excavator	400 hp	382.5	48	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01	3.25E+01
		Excavator	400 hp	382.5	48	7.91E-03	8.93E-02	7.16E-02	3.51E-04	6.64E-04	6.11E-04	3.57E+01	1.98E-03	-	3.58E+01	3.25E+01
	Beach Crew	**1 ton pickup truck**		382.5	48	1.02E-03	1.20E-03	1.36E-02	2.59E-05	2.07E-04	9.17E-05	8.58E+00	8.53E-04	4.45E-04	8.74E+00	7.93E+00
		Tractor/crawler/dozer	600 hp	382.5	48	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01	5.96E+01
		Tractor/crawler/dozer	600 hp	382.5	48	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01	5.96E+01
		Tractor/crawler/dozer	600 hp	382.5	48	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01	5.96E+01
		Tractor/crawler/dozer	600 hp	382.5	48	1.25E-02	1.50E-01	1.32E-01	6.60E-04	1.10E-03	1.01E-03	6.57E+01	3.63E-03	-	6.57E+01	5.96E+01
		Water truck	3000 gal	382.5	30	2.94E-03	4.44E-02	5.40E-03	4.53E-05	9.75E-04	5.93E-04	9.06E+00	2.15E-05	2.02E-05	9.07E+00	8.23E+00
Demolition - Concrete Arc & Spillway	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	1.75E-02	2.10E-01	1.64E-01	8.05E-04	1.54E-03	1.42E-03	8.21E+01	4.54E-03	-	8.21E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	2.19E-03	2.63E-02	2.05E-02	1.01E-04	1.93E-04	1.78E-04	1.03E+01	5.67E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	1.61E-03	1.32E-03	1.94E-02	2.43E-05	1.99E-04	9.05E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	88.1333	128	2.34E-03	3.14E-02	2.44E-02	1.28E-04	2.26E-04	2.08E-04	1.30E+01	5.36E-04	-	1.30E+01	1.18E+01
		3/4 ton pickup truck		84.1333	128	3.77E-04	3.09E-04	4.54E-03	5.68E-06	4.66E-05	2.11E-05	1.89E+00	1.88E-04	9.79E-05	1.92E+00	1.74E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	1.69E-03	1.38E-03	2.03E-02	2.54E-05	2.08E-04	9.45E-05	8.44E+00	8.39E-04	4.38E-04	8.59E+00	7.79E+00
		Diamond cutting saw	50 hp	376	128	2.53E-03	4.86E-02	3.51E-02	7.44E-05	1.66E-03	1.53E-03	5.75E+00	2.29E-04	-	5.76E+00	5.22E+00
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	5.52E-03	7.33E-02	6.06E-02	3.01E-04	5.29E-04	4.87E-04	3.07E+01	1.60E-03	-	3.07E+01	2.79E+01
		3/4 ton pickup truck		454.8767	128	2.04E-03	1.67E-03	2.46E-02	3.07E-05	2.52E-04	1.14E-04	1.02E+01	1.01E-03	5.29E-04	1.04E+01	9.43E+00
	Load/Haul	**Front end loader**	350 hp	32	128	7.86E-04	6.51E-03	5.17E-03	2.60E-05	5.19E-05	4.78E-05	2.65E+00	1.31E-04	-	2.65E+00	2.41E+00
	Landfill	**Crane 260'**	375 hp	227.4384	128	2.76E-03	3.66E-02	3.03E-02	1.51E-04	2.64E-04	2.43E-04	1.53E+01	8.02E-04	-	1.54E+01	1.39E+01
	Micro-blast	**Crane 260'**	375 hp	60	128	7.28E-04	9.67E-03	8.00E-03	3.97E-05	6.98E-05	6.42E-05	4.05E+00	2.12E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	5.55E-05	1.49E-03	7.18E-04	2.21E-06	5.33E-05	4.91E-05	1.74E-01	1.90E-05	-	1.75E-01	1.59E-01
		3/4 ton pickup truck		60	128	2.69E-04	2.20E-04	3.24E-03	4.05E-06	3.32E-05	1.51E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	128	1.21E-03	1.61E-02	1.33E-02	6.62E-05	1.16E-04	1.07E-04	6.75E+00	3.53E-04	-	6.75E+00	6.13E+00
		Air compressor	50 hp	200	128	6.27E-03	7.64E-03	5.47E-01	4.12E-05	2.59E-04	2.59E-04	3.39E+00	3.54E-04	6.25E-04	3.59E+00	3.25E+00
		3/4 ton pickup truck		100	128	4.48E-04	3.67E-04	5.40E-03	6.75E-06	5.53E-05	2.51E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	20	5.21E-05	7.87E-04	9.57E-05	8.03E-07	1.73E-05	1.05E-05	1.61E-01	3.81E-07	3.59E-07	1.61E-01	1.46E-01
		Excavator	430 hp	4.445	20	9.88E-05	1.12E-03	8.94E-04	4.38E-06	8.30E-06	7.63E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	20	5.11E-04	3.79E-03	1.67E-03	8.39E-06	1.13E-04	1.04E-04	8.34E-01	4.61E-05	-	8.35E-01	7.58E-01
	Drilling	**Rotary drill**	475 hp	7.3333	20	1.95E-04	2.61E-03	2.03E-03	1.06E-05	1.88E-05	1.73E-05	1.08E+00	4.46E-05	-	1.08E+00	9.84E-01
		3/4 ton Pickup truck		7.3333	20	3.29E-05	2.69E-05	3.96E-04	4.95E-07	4.06E-06	1.84E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	20	2.15E-04	1.76E-04	2.59E-03	3.24E-06	2.66E-05	1.21E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	20	3.23E-04	6.21E-03	4.48E-03	9.49E-06	2.12E-04	1.95E-04	7.34E-01	2.92E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	20	7.28E-04	9.67E-03	8.00E-03	3.98E-05	6.98E-05	6.42E-05	4.05E+00	2.12E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	20	2.69E-04	2.20E-04	3.24E-03	4.05E-06	3.32E-05	1.51E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
	Landfill	**Crane 260'**	375 hp	30.0107	20	3.64E-04	4.84E-03	4.00E-03	1.99E-05	3.49E-05	3.21E-05	2.02E+00	1.06E-04	-	2.03E+00	1.84E+00
						4.49E-01	**4.87E+00**	**4.75E+00**	**1.74E-02**	**9.51E-02**	**8.32E-02**	**1.85E+03**	**9.60E-02**	**6.51E-03**	**1.85E+03**	**1.68E+03**

Daily Onsite I
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year	2018	
Speed of Onsite Trucks	10	mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2018 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	210	8.20E-03	6.72E-03	9.88E-02	1.23E-04	1.01E-03	4.60E-04
Dust Control		**Water truck**	5000 gal	2320	210	3.39E-01	5.13E+00	6.23E-01	5.23E-03	1.13E-01	6.85E-02
Environmental protection measures	***Biologist***	**3/4 ton pickup truck**		1229.3333	210	1.05E-01	8.60E-02	1.26E+00	1.58E-03	1.30E-02	5.88E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.51E-02	1.24E-02	1.82E-01	2.27E-04	1.86E-03	8.46E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	2.47E-03	2.90E-03	3.30E-02	6.27E-05	5.01E-04	2.22E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	2.08E-02	2.49E-01	2.73E-01	1.44E-03	1.83E-03	1.69E-03
		Chain saw		7.3335	19	2.85E-02	1.64E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	**Front end loader**	540 hp	3.696	19	2.92E-02	2.42E-01	2.63E-01	1.35E-03	1.93E-03	1.78E-03
		Tractor/crawler/dozer	310 hp	3.696	19	1.33E-02	1.60E-01	1.25E-01	6.13E-04	1.18E-03	1.08E-03
	Chipping	**Brush chipper**	250 hp	3.696	19	2.57E-02	2.09E-01	1.57E-01	9.91E-04	1.50E-03	1.38E-03
		Front end loader	540 hp	3.696	19	2.92E-02	2.42E-01	2.63E-01	1.35E-03	1.93E-03	1.78E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	4.08E-03	4.90E-02	5.36E-02	2.83E-04	3.60E-04	3.31E-04
		Front end loader	49 hp	4	19	9.54E-03	9.86E-02	9.23E-02	1.36E-04	4.08E-03	3.75E-03
		Roller	47 hp	4	19	7.83E-03	9.34E-02	8.16E-02	1.33E-04	3.67E-03	3.37E-03
		Water truck	3000 gal	4	19	6.46E-03	9.77E-02	1.19E-02	9.97E-05	2.15E-03	1.31E-03
		Excavator	300 hp	4	19	1.31E-02	1.47E-01	1.18E-01	5.79E-04	1.10E-03	1.01E-03
		Front end loader	180 hp	4	19	1.06E-02	8.82E-02	9.30E-02	5.08E-04	7.03E-04	6.47E-04
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	1.22E-02	1.47E-01	1.61E-01	8.49E-04	1.08E-03	9.93E-04
		Loader/backhoe	75 hp	0.0923	19	1.05E-04	1.76E-03	2.16E-03	3.68E-06	1.27E-04	1.17E-04
		Crane 94'	155 hp	155	19	2.29E-01	3.93E+00	7.14E+00	1.31E-02	2.45E-01	2.26E-01
		1 ton pickup truck		155	19	8.69E-02	1.02E-01	1.16E+00	2.21E-03	1.76E-02	7.82E-03
		Crane 94'	155 hp	155	20	2.18E-01	3.73E+00	6.78E+00	1.24E-02	2.33E-01	2.15E-01
		1 ton pickup truck		155	20	8.26E-02	9.70E-02	1.10E+00	2.10E-03	1.68E-02	7.43E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	3.87E-03	4.65E-02	5.10E-02	2.69E-04	3.42E-04	3.15E-04
	Dewatering	**Concrete saw**	13 hp	8	22	6.77E-02	5.01E-02	2.48E+00	1.19E-04	3.51E-02	3.50E-02
		Crane 80'	130 hp	16	22	1.71E-02	2.94E-01	5.34E-01	9.76E-04	1.84E-02	1.69E-02
		Flatbed truck		8	22	1.05E-02	1.10E-02	1.46E-01	9.76E-05	7.76E-04	3.38E-04
		Generator	80 hp	5856	244	8.84E-01	1.24E+01	1.43E+01	2.92E-02	8.34E-01	7.67E-01
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.27E+00	1.52E+01	1.34E+01	6.71E-02	1.12E-01	1.03E-01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.27E+00	1.52E+01	1.34E+01	6.71E-02	1.12E-01	1.03E-01
		Tractor/crawler/dozer	600 hp	184.6154	19	1.27E+00	1.52E+01	1.34E+01	6.71E-02	1.12E-01	1.03E-01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.27E+00	1.52E+01	1.34E+01	6.71E-02	1.12E-01	1.03E-01
	Armoring	**1 ton pickup truck**		2	19	1.12E-03	1.32E-03	1.50E-02	2.85E-05	2.28E-04	1.01E-04
		Excavator	430 hp	2	19	9.36E-03	1.06E-01	8.47E-02	4.15E-04	7.86E-04	7.23E-04
		1 ton pickup truck		2	19	1.12E-03	1.32E-03	1.50E-02	2.85E-05	2.28E-04	1.01E-04
	Maintenance	**Grader**	215 hp	340	210	8.61E-02	8.56E-01	9.96E-01	5.39E-03	6.54E-03	6.02E-03
Coarse Material (Gravel & Larger) - 167,000 cy after ramp building (4/1-7/21)	***Material Excavation***	**1 ton pickup truck**		663.5	78	9.07E-02	1.06E-01	1.21E+00	2.30E-03	1.84E-02	8.15E-03
		Front end loader	350 hp	663.5	78	8.35E-01	6.93E+00	5.50E+00	2.77E-02	5.52E-02	5.08E-02
		Front end loader	350 hp	663.5	78	8.35E-01	6.93E+00	5.50E+00	2.77E-02	5.52E-02	5.08E-02
		Front end loader	350 hp	663.5	78	8.35E-01	6.93E+00	5.50E+00	2.77E-02	5.52E-02	5.08E-02
		Front end loader	350 hp	663.5	78	8.35E-01	6.93E+00	5.50E+00	2.77E-02	5.52E-02	5.08E-02
		Water truck	3000 gal	663.5	78	2.61E-01	3.95E+00	4.80E-01	4.03E-03	8.67E-02	5.28E-02
		Excavator	400 hp	663.5	78	7.04E-01	7.94E+00	6.37E+00	3.12E-02	5.91E-02	5.43E-02
		Excavator	400 hp	663.5	78	7.04E-01	7.94E+00	6.37E+00	3.12E-02	5.91E-02	5.43E-02
		Excavator	400 hp	663.5	78	7.04E-01	7.94E+00	6.37E+00	3.12E-02	5.91E-02	5.43E-02
		Excavator	400 hp	663.5	78	7.04E-01	7.94E+00	6.37E+00	3.12E-02	5.91E-02	5.43E-02
Sand to Surfrider Beach (32,400 cy) (9/3-18)	***Material Excavation***	**1 ton pickup truck**		102	11	9.88E-02	1.16E-01	1.32E+00	2.51E-03	2.01E-02	8.89E-03
		Front end loader	350 hp	102	11	9.10E-01	7.55E+00	5.99E+00	3.02E-02	6.02E-02	5.54E-02
		Front end loader	350 hp	102	11	9.10E-01	7.55E+00	5.99E+00	3.02E-02	6.02E-02	5.54E-02
		Front end loader	350 hp	102	11	9.10E-01	7.55E+00	5.99E+00	3.02E-02	6.02E-02	5.54E-02
		Front end loader	350 hp	102	11	9.10E-01	7.55E+00	5.99E+00	3.02E-02	6.02E-02	5.54E-02
		Water truck	3000 gal	102	11	2.85E-01	4.30E+00	5.23E-01	4.39E-03	9.46E-02	5.75E-02
		Excavator	400 hp	102	11	7.67E-01	8.66E+00	6.94E+00	3.40E-02	6.44E-02	5.92E-02
		Excavator	400 hp	102	11	7.67E-01	8.66E+00	6.94E+00	3.40E-02	6.44E-02	5.92E-02
		Excavator	400 hp	102	11	7.67E-01	8.66E+00	6.94E+00	3.40E-02	6.44E-02	5.92E-02
		Excavator	400 hp	102	11	7.67E-01	8.66E+00	6.94E+00	3.40E-02	6.44E-02	5.92E-02
	Beach Crew	**1 ton pickup truck**		102	11	9.88E-02	1.16E-01	1.32E+00	2.51E-03	2.01E-02	8.89E-03
		Tractor/crawler/dozer	600 hp	102	11	1.21E+00	1.45E+01	1.28E+01	6.40E-02	1.07E-01	9.83E-02
		Tractor/crawler/dozer	600 hp	102	11	1.21E+00	1.45E+01	1.28E+01	6.40E-02	1.07E-01	9.83E-02
		Tractor/crawler/dozer	600 hp	102	11	1.21E+00	1.45E+01	1.28E+01	6.40E-02	1.07E-01	9.83E-02
		Tractor/crawler/dozer	600 hp	102	11	1.21E+00	1.45E+01	1.28E+01	6.40E-02	1.07E-01	9.83E-02
		Water truck	3000 gal	25	11	6.98E-02	1.05E+00	1.28E-01	1.08E-03	2.32E-02	1.41E-02

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2018
Birthday of Martin Luther King, Jr.	1/15/2018
Washington's Birthday	2/19/2018
Memorial Day	5/28/2018
Independence Day	7/4/2018
Labor Day	9/3/2018
Columbus Day	10/8/2018
Veterans Day	11/12/2018
Thanksgiving Day	11/22/2018
Christmas Day	12/25/2018

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http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 2

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2018 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Sand to Topanga Beach (93,200 cy) (7/22-Labor Day; 9/19-10/15)	***Material Excavation***	**1 ton pickup truck**		382.5	48	8.49E-02	9.97E-02	1.13E+00	2.16E-03	1.72E-02	7.64E-03
		Front end loader	350 hp	382.5	48	7.82E-01	6.49E+00	5.15E+00	2.59E-02	5.17E-02	4.76E-02
		Front end loader	350 hp	382.5	48	7.82E-01	6.49E+00	5.15E+00	2.59E-02	5.17E-02	4.76E-02
		Front end loader	350 hp	382.5	48	7.82E-01	6.49E+00	5.15E+00	2.59E-02	5.17E-02	4.76E-02
		Front end loader	350 hp	382.5	48	7.82E-01	6.49E+00	5.15E+00	2.59E-02	5.17E-02	4.76E-02
		Water truck	3000 gal	382.5	48	2.45E-01	3.70E+00	4.50E-01	3.77E-03	8.13E-02	4.94E-02
		Excavator	400 hp	382.5	48	6.59E-01	7.44E+00	5.96E+00	2.92E-02	5.53E-02	5.09E-02
		Excavator	400 hp	382.5	48	6.59E-01	7.44E+00	5.96E+00	2.92E-02	5.53E-02	5.09E-02
		Excavator	400 hp	382.5	48	6.59E-01	7.44E+00	5.96E+00	2.92E-02	5.53E-02	5.09E-02
		Excavator	400 hp	382.5	48	6.59E-01	7.44E+00	5.96E+00	2.92E-02	5.53E-02	5.09E-02
	Beach Crew	**1 ton pickup truck**		382.5	48	8.49E-02	9.97E-02	1.13E+00	2.16E-03	1.72E-02	7.64E-03
		Tractor/crawler/dozer	600 hp	382.5	48	1.04E+00	1.25E+01	1.10E+01	5.50E-02	9.19E-02	8.45E-02
		Tractor/crawler/dozer	600 hp	382.5	48	1.04E+00	1.25E+01	1.10E+01	5.50E-02	9.19E-02	8.45E-02
		Tractor/crawler/dozer	600 hp	382.5	48	1.04E+00	1.25E+01	1.10E+01	5.50E-02	9.19E-02	8.45E-02
		Tractor/crawler/dozer	600 hp	382.5	48	1.04E+00	1.25E+01	1.10E+01	5.50E-02	9.19E-02	8.45E-02
		Water truck	3000 gal	382.5	30	3.91E-01	5.92E+00	7.19E-01	6.04E-03	1.30E-01	7.91E-02
Demolition - Concrete Arc & Spillway	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	3.18E+00	3.82E+01	2.99E+01	1.46E-01	2.81E-01	2.58E-01
		Tractor/crawler/dozer	440 hp	90	22	3.98E-01	4.78E+00	3.74E+00	1.83E-02	3.51E-02	3.23E-02
		3/4 ton pickup truck		360	22	2.93E-01	2.40E-01	3.53E+00	4.42E-03	3.62E-02	1.64E-02
	Drilling	**Rotary drill**	475 hp	88.1333	128	7.32E-02	9.80E-01	7.63E-01	3.99E-03	7.06E-03	6.50E-03
		3/4 ton pickup truck		84.1333	128	1.18E-02	9.66E-03	1.42E-01	1.77E-04	1.46E-03	6.61E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		376	128	5.27E-02	4.32E-02	6.35E-01	7.93E-04	6.50E-03	2.95E-03
		Diamond cutting saw	50 hp	376	128	7.92E-02	1.52E+00	1.10E+00	2.32E-03	5.19E-02	4.77E-02
	Lift/Load blocks	**Crane 260'**	375 hp	454.8767	128	1.72E-01	2.29E+00	1.89E+00	9.41E-03	1.65E-02	1.52E-02
		3/4 ton pickup truck		454.8767	128	6.37E-02	5.22E-02	7.68E-01	9.60E-04	7.87E-03	3.57E-03
	Load/Haul	**Front end loader**	350 hp	32	128	2.45E-02	2.04E-01	1.62E-01	8.13E-04	1.62E-03	1.49E-03
	Landfill	**Crane 260'**	375 hp	227.4384	128	8.62E-02	1.15E+00	9.47E-01	4.71E-03	8.26E-03	7.60E-03
	Micro-blast	**Crane 260'**	375 hp	60	128	2.27E-02	3.02E-01	2.50E-01	1.24E-03	2.18E-03	2.01E-03
		Horizontal boring drill	10 hp	55	128	1.73E-03	4.67E-02	2.24E-02	6.91E-05	1.67E-03	1.53E-03
		3/4 ton pickup truck		60	128	8.41E-03	6.89E-03	1.01E-01	1.27E-04	1.04E-03	4.71E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	3.79E-02	5.04E-01	4.17E-01	2.07E-03	3.63E-03	3.34E-03
		Air compressor	50 hp	200	128	1.96E-01	2.39E-01	1.71E+01	1.29E-03	8.11E-03	8.09E-03
		3/4 ton pickup truck		100	128	1.40E-02	1.15E-02	1.69E-01	2.11E-04	1.73E-03	7.85E-04
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt distributor**	3000 gal	6.7805	20	1.04E-02	1.57E-01	1.91E-02	1.61E-04	3.46E-03	2.10E-03
		Excavator	430 hp	4.445	20	1.98E-02	2.23E-01	1.79E-01	8.76E-04	1.66E-03	1.53E-03
		Tractor/crawler/dozer	850 hp	3.2327	20	1.02E-01	7.57E-01	3.34E-01	1.68E-03	2.25E-02	2.07E-02
	Drilling	**Rotary drill**	475 hp	7.3333	20	3.90E-02	5.22E-01	4.06E-01	2.13E-03	3.76E-03	3.46E-03
		3/4 ton Pickup truck		7.3333	20	6.58E-03	5.39E-03	7.92E-02	9.90E-05	8.12E-04	3.69E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	20	4.30E-02	3.53E-02	5.18E-01	6.48E-04	5.31E-03	2.41E-03
		Diamond cutting saw	50 hp	48	20	6.47E-02	1.24E+00	8.96E-01	1.90E-03	4.24E-02	3.90E-02
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	20	1.46E-01	1.93E+00	1.60E+00	7.95E-03	1.40E-02	1.28E-02
		3/4 ton Pickup truck		60.0214	20	5.38E-02	4.41E-02	6.48E-01	8.10E-04	6.64E-03	3.02E-03
	Landfill	**Crane 260'**	375 hp	30.0107	20	7.28E-02	9.67E-01	8.00E-01	3.98E-03	6.98E-03	6.42E-03
						4.21E+01	**4.54E+02**	**4.06E+02**	**1.79E+00**	**5.28E+00**	**4.59E+00**
						Emissions (lb/day)					
						32	336	307	1	4	4
						5	59	52	0	0	0
						5	56	46	0	1	0
						0	0	0	0	0	0
						0	2	2	0	0	0

Conversions
2000 pounds per ton

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Construction Survey		3/4 ton pickup truck		96	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Dust Control		Water truck	5000 gal	2320	209	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Fish relocation	3/4 ton pickup truck		16	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	250 hp	7.3333	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
		Chain saw		7.3335	19	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039
	Brush Piling	Front end loader	540 hp	3.696	19	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000
		Tractor/crawler/dozer	310 hp	3.696	19	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000
	Chipping	Brush chipper	250 hp	3.696	19	0.125	0.962	0.724	0.005	0.007	0.006	402.522	0.011	0.000
		Front end loader	540 hp	3.696	19	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
		Front end loader	49 hp	4	19	0.224	2.197	2.112	0.003	0.093	0.085	231.302	0.020	0.000
		Roller	47 hp	4	19	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000
		Water truck	3000 gal	4	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	300 hp	4	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Front end loader	180 hp	4	19	0.068	0.534	0.569	0.003	0.004	0.004	270.062	0.014	0.000
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	2.544	1.646	93.480	0.004	1.249	1.246	148.933	0.144	0.124
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		Loader/backhoe	75 hp	0.0923	19	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
		Crane 94'	155 hp	155	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Crane 94'	155 hp	155	19	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		1 ton pickup truck		155	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Dewatering	Concrete saw	13 hp	8	21	3.249	2.402	118.759	0.006	1.684	1.680	200.831	0.184	0.193
		Crane 80'	130 hp	16	21	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
		Flatbed truck		8	21	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
		Generator	80 hp	5856	244	0.110	1.476	1.708	0.003	0.100	0.092	294.378	0.010	0.000
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
	Armoring	1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Excavator	430 hp	2	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		1 ton pickup truck		2	19	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Maintenance	Grader	215 hp	340	209	0.060	0.562	0.664	0.004	0.004	0.004	311.990	0.017	0.000
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Front end loader	350 hp	59.5	7	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000
		Front end loader	350 hp	59.5	7	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000
		Water truck	3000 gal	59.5	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	400 hp	59.5	7	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
	Beach Crew	1 ton pickup truck		59.5	7	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	600 hp	59.5	7	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
		Tractor/crawler/dozer	600 hp	59.5	7	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
		Water truck	3000 gal	14.875	7	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2019 (g/hp-hr or g/hr)								
						VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	***Material Excavation***	**1 ton pickup truck**		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Front end loader	350 hp	1028.5	131	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000
		Front end loader	350 hp	1028.5	131	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000
		Water truck	3000 gal	1028.5	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	400 hp	1028.5	131	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
	Beach Crew	**1 ton pickup truck**		1028.5	131	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
		Tractor/crawler/dozer	600 hp	1028.5	131	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
		Tractor/crawler/dozer	600 hp	1028.5	131	0.053	0.602	0.598	0.003	0.004	0.004	298.381	0.017	0.000
		Water truck	3000 gal	257.125	131	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000
		Tractor/crawler/dozer	440 hp	90	22	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000
		3/4 ton pickup truck		360	22	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Drilling	**Rotary drill**	475 hp	54.4	128	0.052	0.685	0.532	0.003	0.005	0.005	281.905	0.012	0.000
		3/4 ton pickup truck		50.4	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	148	128	0.130	2.363	1.738	0.004	0.082	0.075	277.553	0.012	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
		3/4 ton pickup truck		179.6356	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Load/Haul	**Front end loader**	350 hp	32	128	0.068	0.534	0.426	0.002	0.004	0.004	214.831	0.011	0.000
		Water truck	3000 gal	521	128	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Landfill	**Crane 260'**	375 hp	89.8178	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
	Micro-blast	**Crane 260'**	375 hp	60	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
		Horizontal boring drill	10 hp	55	128	0.095	2.473	1.183	0.004	0.089	0.082	287.212	0.031	0.000
		3/4 ton pickup truck		60	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Demolish spillway	**Crane 260'**	375 hp	100	128	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
		Air compressor	50 hp	200	128	0.601	0.717	53.729	0.004	0.024	0.023	307.156	0.034	0.058
		3/4 ton pickup truck		100	128	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt Distributor**	3000 gal	6.7805	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
		Excavator	430 hp	4.445	19	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
		Tractor/crawler/dozer	850 hp	3.2327	19	0.194	1.437	0.634	0.003	0.043	0.039	316.617	0.018	0.000
	Drilling	**Rotary drill**	475 hp	7.3333	19	0.052	0.685	0.532	0.003	0.005	0.005	281.905	0.012	0.000
		3/4 ton Pickup truck		7.3333	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Diamond cutting saw	50 hp	48	19	0.130	2.363	1.738	0.004	0.082	0.075	277.553	0.012	0.000
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	19	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
		3/4 ton Pickup truck		60.0214	19	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
		Water truck	3000 gal	507	19	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Landfill	**Crane 260'**	375 hp	30.0107	19	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
														Total

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

						GWP	1	21	310							
						Annual Emissions - 2019 (tons per year)										Metric Tons
Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		3/4 ton pickup truck		96	209	3.71E-04	3.21E-04	4.51E-03	6.44E-06	5.25E-05	2.36E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		Water truck	5000 gal	2320	209	1.75E-02	2.47E-01	3.24E-02	2.73E-04	5.70E-03	3.40E-03	5.49E+01	1.30E-04	1.23E-04	5.49E+01	4.98E+01
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	4.75E-03	4.11E-03	5.77E-02	8.24E-05	6.73E-04	3.02E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	3/4 ton pickup truck		16	19	6.19E-05	5.34E-05	7.52E-04	1.07E-06	8.76E-06	3.93E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	9.54E-06	1.22E-05	1.29E-04	2.96E-07	2.35E-06	1.03E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	1.05E-04	1.19E-03	1.30E-03	6.85E-06	8.85E-06	8.14E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	1.42E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	8.85E-06	2.66E-06	3.43E-03	3.11E-03
	Brush Piling	Front end loader	540 hp	3.696	19	1.49E-04	1.16E-03	1.35E-03	6.84E-06	9.42E-06	8.67E-06	6.80E-01	3.62E-05	-	6.81E-01	6.18E-01
		Tractor/crawler/dozer	310 hp	3.696	19	6.66E-05	7.60E-04	5.94E-04	2.91E-06	5.64E-06	5.19E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	Brush chipper	250 hp	3.696	19	1.27E-04	9.80E-04	7.37E-04	4.61E-06	7.11E-06	6.54E-06	4.10E-01	1.15E-05	-	4.10E-01	3.72E-01
		Front end loader	540 hp	3.696	19	1.49E-04	1.16E-03	1.35E-03	6.84E-06	9.42E-06	8.67E-06	6.80E-01	3.62E-05	-	6.81E-01	6.18E-01
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	2.05E-05	2.34E-04	2.55E-04	1.34E-06	1.74E-06	1.60E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	4.84E-05	4.75E-04	4.56E-04	6.46E-07	2.00E-05	1.84E-05	5.00E-02	4.37E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	4.02E-05	4.50E-04	4.05E-04	6.31E-07	1.80E-05	1.66E-05	4.88E-02	3.63E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	3.02E-05	4.25E-04	5.58E-05	4.72E-07	9.82E-06	5.86E-06	9.46E-02	2.25E-07	2.12E-07	9.47E-02	8.59E-02
		Excavator	300 hp	4	19	6.57E-05	7.06E-04	5.61E-04	2.75E-06	5.30E-06	4.88E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	5.42E-05	4.23E-04	4.52E-04	2.41E-06	3.43E-06	3.16E-06	2.14E-01	1.14E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	6.16E-05	7.03E-04	7.64E-04	4.03E-06	5.21E-06	4.80E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	1.91E-04	1.23E-04	7.01E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.08E-05	9.32E-06	1.43E-02	1.30E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	1.70E-04	2.77E-03	5.10E-03	9.17E-06	1.77E-04	1.63E-04	8.15E-01	6.22E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	5.28E-07	8.42E-06	1.05E-05	1.75E-08	6.15E-07	5.66E-07	1.49E-03	1.11E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	1.15E-03	1.88E-02	3.45E-02	6.20E-05	1.20E-03	1.10E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	1.15E-03	1.88E-02	3.45E-02	6.20E-05	1.20E-03	1.10E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	3.36E-04	4.31E-04	4.55E-03	1.04E-05	8.29E-05	3.63E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	2.05E-05	2.34E-04	2.55E-04	1.34E-06	1.74E-06	1.60E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	Concrete saw	13 hp	8	21	3.72E-04	2.75E-04	1.36E-02	6.56E-07	1.93E-04	1.93E-04	2.30E-02	2.11E-05	2.21E-05	3.03E-02	2.75E-02
		Crane 80'	130 hp	16	21	9.96E-05	1.62E-03	2.99E-03	5.37E-06	1.03E-04	9.52E-05	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	21	4.87E-05	5.25E-05	6.75E-04	5.33E-07	4.22E-06	1.82E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	5.66E-02	7.62E-01	8.82E-01	1.78E-03	5.15E-02	4.74E-02	1.52E+02	5.11E-03	-	1.52E+02	1.38E+02
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	6.44E-03	7.35E-02	7.30E-02	3.66E-04	5.45E-04	5.02E-04	3.64E+01	2.01E-03	-	3.65E+01	3.31E+01
	Armoring	1 ton pickup truck		2	19	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	4.71E-05	5.06E-04	4.02E-04	1.97E-06	3.80E-06	3.50E-06	2.01E-01	1.11E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	4.34E-06	5.56E-06	5.87E-05	1.34E-07	1.07E-06	4.68E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Maintenance	Grader	215 hp	340	209	4.82E-03	4.53E-02	5.35E-02	2.83E-04	3.50E-04	3.22E-04	2.51E+01	1.38E-03	-	2.52E+01	2.28E+01
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
		Front end loader	350 hp	59.5	7	1.57E-03	1.23E-02	9.78E-03	4.84E-05	9.92E-05	9.13E-05	4.93E+00	2.62E-04	-	4.94E+00	4.48E+00
		Front end loader	350 hp	59.5	7	1.57E-03	1.23E-02	9.78E-03	4.84E-05	9.92E-05	9.13E-05	4.93E+00	2.62E-04	-	4.94E+00	4.48E+00
		Water truck	3000 gal	59.5	7	4.49E-04	6.32E-03	8.31E-04	7.01E-06	1.46E-04	8.71E-05	1.41E+00	3.34E-06	3.15E-06	1.41E+00	1.28E+00
		Excavator	400 hp	59.5	7	1.30E-03	1.40E-02	1.11E-02	5.46E-05	1.05E-04	9.67E-05	5.56E+00	3.07E-04	-	5.56E+00	5.05E+00
	Beach Crew	1 ton pickup truck		59.5	7	1.29E-04	1.65E-04	1.75E-03	4.00E-06	3.18E-05	1.39E-05	1.34E+00	1.33E-04	6.93E-05	1.36E+00	1.23E+00
		Tractor/crawler/dozer	600 hp	59.5	7	2.08E-03	2.37E-02	2.35E-02	1.18E-04	1.76E-04	1.62E-04	1.17E+01	6.49E-04	-	1.18E+01	1.07E+01
		Tractor/crawler/dozer	600 hp	59.5	7	2.08E-03	2.37E-02	2.35E-02	1.18E-04	1.76E-04	1.62E-04	1.17E+01	6.49E-04	-	1.18E+01	1.07E+01
		Water truck	3000 gal	14.875	7	1.12E-04	1.58E-03	2.08E-04	1.75E-06	3.65E-05	2.18E-05	3.52E-01	8.36E-07	7.87E-07	3.52E-01	3.19E-01

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

						GWP		1		21		310				
						Annual Emissions - 2019 (tons per year)										Metric Tons
Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	*Material Excavation*	1 ton pickup truck		1028.5	131	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
		Front end loader	350 hp	1028.5	131	2.71E-02	2.12E-01	1.69E-01	8.37E-04	1.72E-03	1.58E-03	8.52E+01	4.54E-03	-	8.53E+01	7.74E+01
		Front end loader	350 hp	1028.5	131	2.71E-02	2.12E-01	1.69E-01	8.37E-04	1.72E-03	1.58E-03	8.52E+01	4.54E-03	-	8.53E+01	7.74E+01
		Water truck	3000 gal	1028.5	131	7.77E-03	1.09E-01	1.44E-02	1.21E-04	2.53E-03	1.51E-03	2.43E+01	5.78E-05	5.44E-05	2.43E+01	2.21E+01
		Excavator	400 hp	1028.5	131	2.25E-02	2.42E-01	1.92E-01	9.43E-04	1.82E-03	1.67E-03	9.61E+01	5.31E-03	-	9.62E+01	8.73E+01
	Beach Crew	1 ton pickup truck		1028.5	131	2.23E-03	2.86E-03	3.02E-02	6.92E-05	5.50E-04	2.41E-04	2.31E+01	2.29E-03	1.20E-03	2.35E+01	2.13E+01
		Tractor/crawler/dozer	600 hp	1028.5	131	3.59E-02	4.09E-01	4.07E-01	2.04E-03	3.04E-03	2.79E-03	2.03E+02	1.12E-02	-	2.03E+02	1.84E+02
		Tractor/crawler/dozer	600 hp	1028.5	131	3.59E-02	4.09E-01	4.07E-01	2.04E-03	3.04E-03	2.79E-03	2.03E+02	1.12E-02	-	2.03E+02	1.84E+02
		Water truck	3000 gal	257.125	131	1.94E-03	2.73E-02	3.59E-03	3.03E-05	6.31E-04	3.77E-04	6.08E+00	1.45E-05	1.36E-05	6.08E+00	5.52E+00
Demolition	*Platform*	Tractor/crawler/dozer	440 hp	720	22	1.84E-02	2.10E-01	1.64E-01	8.05E-04	1.56E-03	1.43E-03	8.21E+01	4.54E-03	-	8.21E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	22	2.30E-03	2.63E-02	2.05E-02	1.01E-04	1.95E-04	1.79E-04	1.03E+01	5.67E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	22	1.39E-03	1.20E-03	1.69E-02	2.41E-05	1.97E-04	8.84E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	Rotary drill	475 hp	54.4	128	1.49E-03	1.95E-02	1.52E-02	7.88E-05	1.41E-04	1.30E-04	8.03E+00	3.43E-04	-	8.04E+00	7.29E+00
		3/4 ton pickup truck		50.4	128	1.95E-04	1.68E-04	2.37E-03	3.38E-06	2.76E-05	1.24E-05	1.13E+00	1.12E-04	5.87E-05	1.15E+00	1.04E+00
	Cut with Diamond wire	3/4 ton pickup truck		148	128	5.72E-04	4.94E-04	6.95E-03	9.92E-06	8.10E-05	3.64E-05	3.32E+00	3.30E-04	1.72E-04	3.38E+00	3.07E+00
		Diamond cutting saw	50 hp	148	128	1.06E-03	1.93E-02	1.42E-02	2.93E-05	6.67E-04	6.14E-04	2.26E+00	9.58E-05	-	2.27E+00	2.06E+00
	Lift/Load blocks	Crane 260'	375 hp	179.6356	128	2.31E-03	2.91E-02	2.43E-02	1.19E-04	2.12E-04	1.95E-04	1.21E+01	6.70E-04	-	1.21E+01	1.10E+01
		3/4 ton pickup truck		179.6356	128	6.95E-04	6.00E-04	8.44E-03	1.20E-05	9.83E-05	4.41E-05	4.03E+00	4.01E-04	2.09E-04	4.10E+00	3.72E+00
	Load/Haul	Front end loader	350 hp	32	128	8.44E-04	6.59E-03	5.26E-03	2.60E-05	5.34E-05	4.91E-05	2.65E+00	1.41E-04	-	2.66E+00	2.41E+00
		Water truck	3000 gal	521	128	3.93E-03	5.54E-02	7.27E-03	6.14E-05	1.28E-03	7.63E-04	1.23E+01	2.93E-05	2.76E-05	1.23E+01	1.12E+01
	Landfill	Crane 260'	375 hp	89.8178	128	1.15E-03	1.46E-02	1.21E-02	5.95E-05	1.06E-04	9.76E-05	6.06E+00	3.35E-04	-	6.07E+00	5.50E+00
	Micro-blast	Crane 260'	375 hp	60	128	7.71E-04	9.73E-03	8.11E-03	3.97E-05	7.08E-05	6.52E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	128	5.74E-05	1.50E-03	7.17E-04	2.21E-06	5.40E-05	4.97E-05	1.74E-01	1.90E-05	-	1.75E-01	1.58E-01
		3/4 ton pickup truck		60	128	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	Crane 260'	375 hp	100	128	1.28E-03	1.62E-02	1.35E-02	6.62E-05	1.18E-04	1.09E-04	6.75E+00	3.73E-04	-	6.75E+00	6.13E+00
		Air compressor	50 hp	200	128	6.63E-03	7.90E-03	5.92E-01	4.12E-05	2.59E-04	2.59E-04	3.39E+00	3.74E-04	6.36E-04	3.59E+00	3.26E+00
		3/4 ton pickup truck		100	128	3.87E-04	3.34E-04	4.70E-03	6.70E-06	5.47E-05	2.46E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Demolition - Notch 5'	*Excavation for Dam Demo*	Asphalt Distributor	3000 gal	6.7805	19	5.12E-05	7.21E-04	9.47E-05	7.99E-07	1.67E-05	9.93E-06	1.60E-01	3.81E-07	3.59E-07	1.60E-01	1.46E-01
		Excavator	430 hp	4.445	19	1.05E-04	1.12E-03	8.94E-04	4.38E-06	8.44E-06	7.77E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	19	5.88E-04	4.35E-03	1.92E-03	9.64E-06	1.29E-04	1.19E-04	9.59E-01	5.30E-05	-	9.60E-01	8.71E-01
	Drilling	Rotary drill	475 hp	7.3333	19	2.01E-04	2.63E-03	2.04E-03	1.06E-05	1.90E-05	1.75E-05	1.08E+00	4.63E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	19	2.84E-05	2.45E-05	3.44E-04	4.92E-07	4.01E-06	1.80E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	3/4 ton Pickup truck		48	19	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	19	3.45E-04	6.25E-03	4.60E-03	9.49E-06	2.16E-04	1.99E-04	7.34E-01	3.11E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	Crane 260'	375 hp	60.0214	19	7.71E-04	9.73E-03	8.11E-03	3.97E-05	7.09E-05	6.52E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	19	2.32E-04	2.00E-04	2.82E-03	4.02E-06	3.28E-05	1.47E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
		Water truck	3000 gal	507	19	3.83E-03	5.39E-02	7.08E-03	5.98E-05	1.25E-03	7.43E-04	1.20E+01	2.85E-05	2.68E-05	1.20E+01	1.09E+01
	Landfill	Crane 260'	375 hp	30.0107	19	3.86E-04	4.87E-03	4.06E-03	1.99E-05	3.54E-05	3.26E-05	2.02E+00	1.12E-04	-	2.03E+00	1.84E+00
						3.37E-01	**3.63E+00**	**3.90E+00**	**1.31E-02**	**8.72E-02**	**7.53E-02**	**1.42E+03**	**7.40E-02**	**6.58E-03**	**1.42E+03**	**1.29E+03**

Daily Onsite E
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year: 2019
Speed of Onsite Trucks: 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	209	7.11E-03	6.14E-03	8.63E-02	1.23E-04	1.01E-03	4.51E-04
Dust Control		Water truck	5000 gal	2320	209	3.35E-01	4.72E+00	6.20E-01	5.23E-03	1.09E-01	6.50E-02
Environmental protection measures	*Biologist*	3/4 ton pickup truck		1229.3333	209	9.10E-02	7.86E-02	1.11E+00	1.58E-03	1.29E-02	5.78E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.30E-02	1.12E-02	1.58E-01	2.26E-04	1.84E-03	8.27E-04
Clear Vegetation	*Cutting*	1 ton pickup truck		4.4	19	2.01E-03	2.57E-03	2.72E-02	6.23E-05	4.95E-04	2.17E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	2.20E-02	2.51E-01	2.73E-01	1.44E-03	1.86E-03	1.71E-03
		Chain saw		7.3335	19	3.00E-02	1.64E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	Front end loader	540 hp	3.696	19	3.14E-02	2.45E-01	2.84E-01	1.44E-03	1.98E-03	1.82E-03
		Tractor/crawler/dozer	310 hp	3.696	19	1.40E-02	1.60E-01	1.25E-01	6.13E-04	1.19E-03	1.09E-03
	Chipping	Brush chipper	250 hp	3.696	19	2.68E-02	2.06E-01	1.55E-01	9.71E-04	1.50E-03	1.38E-03
		Front end loader	540 hp	3.696	19	3.14E-02	2.45E-01	2.84E-01	1.44E-03	1.98E-03	1.82E-03
Dewatering	*Temporary Cofferdam*	Tractor/crawler/dozer	180 hp	2	19	4.32E-03	4.93E-02	5.36E-02	2.83E-04	3.66E-04	3.37E-04
		Front end loader	49 hp	4	19	1.02E-02	9.99E-02	9.61E-02	1.36E-04	4.22E-03	3.88E-03
		Roller	47 hp	4	19	8.46E-03	9.46E-02	8.52E-02	1.33E-04	3.80E-03	3.50E-03
		Water truck	3000 gal	4	19	6.36E-03	8.95E-02	1.18E-02	9.93E-05	2.07E-03	1.23E-03
		Excavator	300 hp	4	19	1.38E-02	1.49E-01	1.18E-01	5.79E-04	1.12E-03	1.03E-03
		Front end loader	180 hp	4	19	1.14E-02	8.92E-02	9.51E-02	5.08E-04	7.22E-04	6.64E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	1.30E-02	1.48E-01	1.61E-01	8.49E-04	1.10E-03	1.01E-03
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	4.02E-02	2.60E-02	1.48E+00	5.96E-05	1.97E-02	1.97E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	3.58E-02	5.84E-01	1.07E+00	1.93E-03	3.72E-02	3.42E-02
		Loader/backhoe	75 hp	0.0923	19	1.11E-04	1.77E-03	2.21E-03	3.68E-06	1.29E-04	1.19E-04
		Crane 94'	155 hp	155	19	2.42E-01	3.95E+00	7.26E+00	1.31E-02	2.52E-01	2.32E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
		Crane 94'	155 hp	155	19	2.42E-01	3.95E+00	7.26E+00	1.31E-02	2.52E-01	2.32E-01
		1 ton pickup truck		155	19	7.08E-02	9.07E-02	9.58E-01	2.19E-03	1.75E-02	7.64E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	4.32E-03	4.93E-02	5.36E-02	2.83E-04	3.66E-04	3.37E-04
	Dewatering	Concrete saw	13 hp	8	21	7.09E-02	5.24E-02	2.59E+00	1.25E-04	3.68E-02	3.67E-02
		Crane 80'	130 hp	16	21	1.90E-02	3.09E-01	5.69E-01	1.02E-03	1.97E-02	1.81E-02
		Flatbed truck		8	21	9.27E-03	1.00E-02	1.29E-01	1.01E-04	8.04E-04	3.47E-04
		Generator	80 hp	5856	244	9.29E-01	1.25E+01	1.45E+01	2.92E-02	8.45E-01	7.77E-01
Temporary Access Road	*Excavate*	Tractor/crawler/dozer	600 hp	184.6154	19	1.36E+00	1.55E+01	1.54E+01	7.71E-02	1.15E-01	1.06E-01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.36E+00	1.55E+01	1.54E+01	7.71E-02	1.15E-01	1.06E-01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.36E+00	1.55E+01	1.54E+01	7.71E-02	1.15E-01	1.06E-01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.36E+00	1.55E+01	1.54E+01	7.71E-02	1.15E-01	1.06E-01
	Armoring	1 ton pickup truck		2	19	9.13E-04	1.17E-03	1.24E-02	2.83E-05	2.25E-04	9.86E-05
		Excavator	430 hp	2	19	9.92E-03	1.06E-01	8.47E-02	4.15E-04	8.00E-04	7.36E-04
		1 ton pickup truck		2	19	9.13E-04	1.17E-03	1.24E-02	2.83E-05	2.25E-04	9.86E-05
	Maintenance	Grader	215 hp	340	209	9.22E-02	8.67E-01	1.02E+00	5.41E-03	6.71E-03	6.17E-03
Sand to Topanga Beach (7,200 cy) (4/1-9)	*Material Excavation*	1 ton pickup truck		59.5	7	7.37E-02	9.45E-02	9.98E-01	2.29E-03	1.82E-02	7.96E-03
		Front end loader	350 hp	59.5	7	8.97E-01	7.00E+00	5.59E+00	2.77E-02	5.67E-02	5.22E-02
		Front end loader	350 hp	59.5	7	8.97E-01	7.00E+00	5.59E+00	2.77E-02	5.67E-02	5.22E-02
		Water truck	3000 gal	59.5	7	2.57E-01	3.61E+00	4.75E-01	4.01E-03	8.35E-02	4.98E-02
		Excavator	400 hp	59.5	7	7.45E-01	8.00E+00	6.36E+00	3.12E-02	6.01E-02	5.53E-02
	Beach Crew	1 ton pickup truck		59.5	7	7.37E-02	9.45E-02	9.98E-01	2.29E-03	1.82E-02	7.96E-03
		Tractor/crawler/dozer	600 hp	59.5	7	1.19E+00	1.35E+01	1.34E+01	6.75E-02	1.00E-01	9.24E-02
		Tractor/crawler/dozer	600 hp	59.5	7	1.19E+00	1.35E+01	1.34E+01	6.75E-02	1.00E-01	9.24E-02
		Water truck	3000 gal	14.875	7	6.42E-02	9.03E-01	1.19E-01	1.00E-03	2.09E-02	1.24E-02

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
- Data from EMFAC2011 (g/hr)
- Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2019

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 3

Construction Start Year 2019
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2019 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Sand to Zuma Beach (124,200 cy) (4/10-10/15)	***Material Excavation***	**1 ton pickup truck**		1028.5	131	6.81E-02	8.73E-02	9.22E-01	2.11E-03	1.68E-02	7.35E-03
		Front end loader	350 hp	1028.5	131	8.28E-01	6.47E+00	5.16E+00	2.55E-02	5.24E-02	4.82E-02
		Front end loader	350 hp	1028.5	131	8.28E-01	6.47E+00	5.16E+00	2.55E-02	5.24E-02	4.82E-02
		Water truck	3000 gal	1028.5	131	2.37E-01	3.34E+00	4.38E-01	3.70E-03	7.71E-02	4.60E-02
		Excavator	400 hp	1028.5	131	6.88E-01	7.39E+00	5.88E+00	2.88E-02	5.55E-02	5.11E-02
	Beach Crew	**1 ton pickup truck**		1028.5	131	6.81E-02	8.73E-02	9.22E-01	2.11E-03	1.68E-02	7.35E-03
		Tractor/crawler/dozer	600 hp	1028.5	131	1.10E+00	1.25E+01	1.24E+01	6.23E-02	9.27E-02	8.53E-02
		Tractor/crawler/dozer	600 hp	1028.5	131	1.10E+00	1.25E+01	1.24E+01	6.23E-02	9.27E-02	8.53E-02
		Water truck	3000 gal	257.125	131	5.93E-02	8.34E-01	1.10E-01	9.25E-04	1.93E-02	1.15E-02
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	22	3.35E+00	3.82E+01	2.99E+01	1.46E-01	2.84E-01	2.61E-01
		Tractor/crawler/dozer	440 hp	90	22	4.19E-01	4.77E+00	3.74E+00	1.83E-02	3.54E-02	3.26E-02
		3/4 ton pickup truck		360	22	2.53E-01	2.19E-01	3.07E+00	4.39E-03	3.58E-02	1.61E-02
	Drilling	**Rotary drill**	475 hp	54.4	128	4.67E-02	6.10E-01	4.74E-01	2.46E-03	4.41E-03	4.06E-03
		3/4 ton pickup truck		50.4	128	6.09E-03	5.26E-03	7.40E-02	1.06E-04	8.62E-04	3.87E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		148	128	1.79E-02	1.54E-02	2.17E-01	3.10E-04	2.53E-03	1.14E-03
		Diamond cutting saw	50 hp	148	128	3.32E-02	6.02E-01	4.43E-01	9.15E-04	2.08E-02	1.92E-02
	Lift/Load blocks	**Crane 260'**	375 hp	179.6356	128	7.21E-02	9.10E-01	7.59E-01	3.72E-03	6.63E-03	6.10E-03
		3/4 ton pickup truck		179.6356	128	2.17E-02	1.87E-02	2.64E-01	3.76E-04	3.07E-03	1.38E-03
	Load/Haul	**Front end loader**	350 hp	32	128	2.64E-02	2.06E-01	1.64E-01	8.14E-04	1.67E-03	1.53E-03
		Water truck	3000 gal	521	128	1.23E-01	1.73E+00	2.27E-01	1.92E-03	4.00E-02	2.38E-02
	Landfill	**Crane 260'**	375 hp	89.8178	128	3.61E-02	4.55E-01	3.79E-01	1.86E-03	3.31E-03	3.05E-03
	Micro-blast	**Crane 260'**	375 hp	60	128	2.41E-02	3.04E-01	2.53E-01	1.24E-03	2.21E-03	2.04E-03
		Horizontal boring drill	10 hp	55	128	1.79E-03	4.69E-02	2.24E-02	6.90E-05	1.69E-03	1.55E-03
		3/4 ton pickup truck		60	128	7.25E-03	6.26E-03	8.81E-02	1.26E-04	1.03E-03	4.61E-04
	Demolish spillway	**Crane 260'**	375 hp	100	128	4.02E-02	5.07E-01	4.22E-01	2.07E-03	3.69E-03	3.39E-03
		Air compressor	50 hp	200	128	2.07E-01	2.47E-01	1.85E+01	1.29E-03	8.10E-03	8.09E-03
		3/4 ton pickup truck		100	128	1.21E-02	1.04E-02	1.47E-01	2.10E-04	1.71E-03	7.68E-04
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt Distributor**	3000 gal	6.7805	19	1.08E-02	1.52E-01	1.99E-02	1.68E-04	3.51E-03	2.09E-03
		Excavator	430 hp	4.445	19	2.20E-02	2.37E-01	1.88E-01	9.22E-04	1.78E-03	1.64E-03
		Tractor/crawler/dozer	850 hp	3.2327	19	1.24E-01	9.16E-01	4.04E-01	2.03E-03	2.72E-02	2.51E-02
	Drilling	**Rotary drill**	475 hp	7.3333	19	4.24E-02	5.54E-01	4.30E-01	2.24E-03	4.01E-03	3.69E-03
		3/4 ton Pickup truck		7.3333	19	5.97E-03	5.16E-03	7.25E-02	1.04E-04	8.45E-04	3.79E-04
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	19	3.91E-02	3.37E-02	4.75E-01	6.77E-04	5.53E-03	2.48E-03
		Diamond cutting saw	50 hp	48	19	7.25E-02	1.32E+00	9.68E-01	2.00E-03	4.55E-02	4.19E-02
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	19	1.62E-01	2.05E+00	1.71E+00	8.37E-03	1.49E-02	1.37E-02
		3/4 ton Pickup truck		60.0214	19	4.89E-02	4.22E-02	5.94E-01	8.47E-04	6.92E-03	3.10E-03
		Water truck	3000 gal	507	19	8.06E-01	1.13E+01	1.49E+00	1.26E-02	2.62E-01	1.56E-01
	Landfill	**Crane 260'**	375 hp	30.0107	19	8.12E-02	1.02E+00	8.54E-01	4.18E-03	7.46E-03	6.86E-03
						2.44E+01	**2.61E+02**	**2.60E+02**	**1.06E+00**	**3.94E+00**	**3.34E+00**
						Emissions (lb/day)					
Data from Alt4_EnvrAirQualityReport.pdf						19	206	205	1	3	3
						0	0	0	0	0	0
						3	28	28	0	0	0
						2	26	26	0	0	0
						0	1	1	0	0	0

Conversions
2000 pounds per ton

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year	2020
Speed of Onsite Trucks	10 mph

																				GWP	1	21	310		
		Equipment	Equipment	Total	Days per	Emission Factors - 2020 (g/hp-hr or g/hr)									Annual Emissions - 2020 (tons per year)										Metric Tons
Activity		**Type**	**Size**	**Hours**	**Year**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**	**CO2e/yr**
Construction Survey		**3/4 ton pickup truck**		96	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	3.29E-04	2.97E-04	4.01E-03	6.43E-06	5.21E-05	2.31E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	209	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	1.70E-02	1.99E-01	3.17E-02	2.73E-04	5.18E-03	2.93E-03	5.47E+01	1.30E-04	1.23E-04	5.48E+01	4.97E+01
Environmental protection	***Biologist***	**3/4 ton pickup truck**		1229.3333	209	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	4.22E-03	3.80E-03	5.14E-02	8.24E-05	6.67E-04	2.96E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
measures	***Fish relocation***	**3/4 ton pickup truck**		16	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	5.49E-05	4.95E-05	6.69E-04	1.07E-06	8.68E-06	3.86E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	8.02E-06	1.11E-05	1.10E-04	2.96E-07	2.33E-06	1.01E-06	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000	1.10E-04	1.20E-03	1.30E-03	6.85E-06	8.97E-06	8.25E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	2.199	0.115	13.188	0.001	0.021	0.021	35.645	0.137	0.039	1.49E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	9.28E-06	2.66E-06	3.44E-03	3.12E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	0.072	0.534	0.583	0.003	0.004	0.004	291.179	0.016	0.000	1.59E-04	1.18E-03	1.28E-03	6.44E-06	9.66E-06	8.89E-06	6.41E-01	3.54E-05	-	6.41E-01	5.82E-01
		Tractor/crawler/dozer	310 hp	3.696	19	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000	7.00E-05	7.62E-04	5.94E-04	2.91E-06	5.71E-06	5.25E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	0.130	0.950	0.718	0.004	0.007	0.006	395.187	0.012	0.000	1.32E-04	9.68E-04	7.32E-04	4.53E-06	7.09E-06	6.52E-06	4.03E-01	1.19E-05	-	4.03E-01	3.65E-01
		Front end loader	540 hp	3.696	19	0.072	0.534	0.583	0.003	0.004	0.004	291.179	0.016	0.000	1.59E-04	1.18E-03	1.28E-03	6.44E-06	9.66E-06	8.89E-06	6.41E-01	3.54E-05	-	6.41E-01	5.82E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000	2.16E-05	2.35E-04	2.55E-04	1.34E-06	1.76E-06	1.62E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	0.237	2.223	2.188	0.003	0.096	0.088	231.302	0.021	0.000	5.13E-05	4.80E-04	4.73E-04	6.46E-07	2.06E-05	1.90E-05	5.00E-02	4.63E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	0.208	2.198	2.035	0.003	0.090	0.083	235.495	0.019	0.000	4.31E-05	4.55E-04	4.22E-04	6.31E-07	1.87E-05	1.72E-05	4.88E-02	3.89E-06	-	4.89E-02	4.43E-02
		Water truck	3000 gal	4	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	2.92E-05	3.43E-04	5.47E-05	4.70E-07	8.94E-06	5.04E-06	9.43E-02	2.25E-07	2.12E-07	9.44E-02	8.56E-02
		Excavator	300 hp	4	19	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000	6.86E-05	7.04E-04	5.61E-04	2.75E-06	5.34E-06	4.91E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	0.073	0.539	0.576	0.003	0.004	0.004	270.055	0.015	0.000	5.78E-05	4.28E-04	4.57E-04	2.41E-06	3.52E-06	3.24E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000	6.48E-05	7.05E-04	7.64E-04	4.03E-06	5.29E-06	4.86E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	2.544	1.646	93.478	0.004	1.248	1.246	148.930	0.144	0.124	1.91E-04	1.23E-04	7.01E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.08E-05	9.32E-06	1.43E-02	1.30E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000	1.79E-04	2.79E-03	5.10E-03	9.17E-06	1.81E-04	1.67E-04	8.15E-01	6.23E-05	-	8.16E-01	7.41E-01
		Loader/backhoe	75 hp	0.0923	19	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000	5.53E-07	8.47E-06	1.05E-05	1.75E-08	6.25E-07	5.75E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000	1.21E-03	1.89E-02	3.45E-02	6.20E-05	1.22E-03	1.13E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	19	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000	1.21E-03	1.89E-02	3.45E-02	6.20E-05	1.22E-03	1.13E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	2.82E-04	3.90E-04	3.86E-03	1.04E-05	8.21E-05	3.56E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000	2.16E-05	2.35E-04	2.55E-04	1.34E-06	1.76E-06	1.62E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	22	3.254	2.405	118.948	0.006	1.686	1.683	201.151	0.184	0.193	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.22E-05	3.04E-02	2.76E-02
		Crane 80'	130 hp	16	22	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000	1.05E-04	1.63E-03	2.99E-03	5.37E-06	1.06E-04	9.75E-05	4.77E-01	3.64E-05	-	4.78E-01	4.34E-01
		Flatbed truck		8	22	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135	4.12E-05	4.58E-05	5.67E-04	5.32E-07	4.18E-06	1.78E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	0.115	1.482	1.722	0.003	0.101	0.093	294.370	0.010	0.000	5.94E-02	7.65E-01	8.89E-01	1.78E-03	5.22E-02	4.80E-02	1.52E+02	5.36E-03	-	1.52E+02	1.38E+02
Temporary Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	6.78E-03	7.38E-02	6.98E-02	3.50E-04	5.53E-04	5.08E-04	3.48E+01	1.93E-03	-	3.49E+01	3.16E+01
	Armoring	**1 ton pickup truck**		2	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	3.64E-06	5.03E-06	4.98E-05	1.34E-07	1.06E-06	4.59E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000	4.92E-05	5.04E-04	4.02E-04	1.97E-06	3.83E-06	3.52E-06	2.01E-01	1.11E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	3.64E-06	5.03E-06	4.98E-05	1.34E-07	1.06E-06	4.59E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Compaction	**Vibratory roller**	50 hp	7.38	19	0.208	2.198	2.035	0.003	0.090	0.083	235.495	0.019	0.000	8.47E-05	8.94E-04	8.28E-04	1.24E-06	3.67E-05	3.37E-05	9.58E-02	7.64E-06	-	9.59E-02	8.70E-02
		Tractor/crawler/dozer	250 hp	7.38	19	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000	1.11E-04	1.21E-03	1.31E-03	6.89E-06	9.03E-06	8.31E-06	6.12E-01	3.39E-05	-	6.13E-01	5.56E-01
		Water truck	5000 gal	9.225	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	6.74E-05	7.90E-04	1.26E-04	1.08E-06	2.06E-05	1.16E-05	2.18E-01	5.19E-07	4.88E-07	2.18E-01	1.98E-01
	Maintenance	**Grader**	215 hp	340	209	0.063	0.567	0.665	0.004	0.004	0.004	311.995	0.017	0.000	5.10E-03	4.57E-02	5.36E-02	2.83E-04	3.57E-04	3.29E-04	2.51E+01	1.39E-03	-	2.52E+01	2.28E+01
Sand to Zuma Beach (19,500	***Material Excavation***	**1 ton pickup truck**		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
cy) (4/1-26)		**Front end loader**	350 hp	161.5	18	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000	4.55E-03	3.37E-02	2.68E-02	1.31E-04	2.77E-04	2.54E-04	1.34E+01	7.40E-04	-	1.34E+01	1.22E+01
		Front end loader	350 hp	161.5	18	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000	4.55E-03	3.37E-02	2.68E-02	1.31E-04	2.77E-04	2.54E-04	1.34E+01	7.40E-04	-	1.34E+01	1.22E+01
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
		Excavator	400 hp	161.5	18	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000	3.69E-03	3.79E-02	3.02E-02	1.48E-04	2.87E-04	2.64E-04	1.51E+01	8.34E-04	-	1.51E+01	1.37E+01
	Beach Crew	**1 ton pickup truck**		161.5	18	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	2.94E-04	4.06E-04	4.02E-03	1.09E-05	8.56E-05	3.71E-05	3.62E+00	3.60E-04	1.88E-04	3.69E+00	3.35E+00
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		Tractor/crawler/dozer	600 hp	161.5	18	0.056	0.604	0.572	0.003	0.005	0.004	285.342	0.016	0.000	5.93E-03	6.45E-02	6.11E-02	3.06E-04	4.83E-04	4.45E-04	3.05E+01	1.69E-03	-	3.05E+01	2.77E+01
		Water truck	3000 gal	161.5	18	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	1.18E-03	1.38E-02	2.21E-03	1.90E-05	3.61E-04	2.04E-04	3.81E+00	9.08E-06	8.54E-06	3.81E+00	3.46E+00
Fines to landfill (147,700 cy)	***Material Excavation***	**1 ton pickup truck**		1066	120	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056	1.94E-03	2.68E-03	2.65E-02	7.16E-05	5.65E-04	2.45E-04	2.39E+01	2.38E-03	1.24E-03	2.44E+01	2.21E+01
(4/27-10/15)		**Front end loader**	350 hp	1066	120	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000	3.00E-02	2.22E-01	1.77E-01	8.67E-04	1.83E-03	1.68E-03	8.84E+01	4.89E-03	-	8.85E+01	8.02E+01
		Front end loader	350 hp	1066	120	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000	3.00E-02	2.22E-01	1.77E-01	8.67E-04	1.83E-03	1.68E-03	8.84E+01	4.89E-03	-	8.85E+01	8.02E+01
		Water truck	3000 gal	1066	120	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	7.79E-03	9.13E-02	1.46E-02	1.25E-04	2.38E-03	1.34E-03	2.51E+01	5.99E-05	5.64E-05	2.52E+01	2.28E+01
		Excavator	400 hp	1066	120	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000	2.44E-02	2.50E-01	1.99E-01	9.77E-04	1.90E-03	1.75E-03	9.96E+01	5.51E-03	-	9.97E+01	9.04E+01
Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000	1.94E-02	2.11E-01	1.64E-01	8.05E-04	1.58E-03	1.45E-03	8.20E+01	4.54E-03	-	8.21E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000	2.42E-03	2.63E-02	2.05E-02	1.01E-04	1.97E-04	1.82E-04	1.03E+01	5.67E-04	-	1.03E+01	9.32E+00
		3/4 ton pickup truck		360	20	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	1.24E-03	1.11E-03	1.50E-02	2.41E-05	1.95E-04	8.68E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	61.7333	127	0.053	0.683	0.535	0.003	0.005	0.005	282.073	0.012	0.000	1.72E-03	2.21E-02	1.73E-02	8.95E-05	1.60E-04	1.47E-04	9.12E+00	4.00E-04	-	9.13E+00	8.28E+00
		3/4 ton pickup truck		57.7333	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	1.98E-04	1.79E-04	2.41E-03	3.87E-06	3.13E-05	1.39E-05	1.30E+00	1.29E-04	6.72E-05	1.32E+00	1.20E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		196	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	6.73E-04	6.06E-04	8.19E-03	1.31E-05	1.06E-04	4.73E-05	4.40E+00	4.37E-04	2.28E-04	4.48E+00	4.06E+00
		Diamond cutting saw	50 hp	196	127	0.138	2.379	1.784	0.004	0.083	0.077	277.554	0.012	0.000	1.49E-03	2.57E-02	1.93E-02	3.88E-05	9.02E-04	8.29E-04	3.00E+00	1.35E-04	-	3.00E+00	2.72E+00
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000	3.24E-03	3.90E-02	3.23E-02	1.58E-04	2.87E-04	2.64E-04	1.61E+01	8.93E-04	-	1.62E+01	1.47E+01
		3/4 ton pickup truck		239.2283	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	8.21E-04	7.40E-04	1.00E-02	1.60E-05	1.30E-04	5.77E-05	5.37E+00	5.34E-04	2.78E-04	5.47E+00	4.96E+00
	Load/Haul	**Front end loader**	350 hp	32	127	0.073	0.540	0.430	0.002	0.004	0.004	214.829	0.012	0.000	9.01E-04	6.67E-03	5.31E-03	2.60E-05	5.48E-05	5.04E-05	2.65E+00	1.47E-04	-	2.66E+00	2.41E+00
		Water truck	3000 gal	521	127	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	3.81E-03	4.46E-02	7.13E-03	6.12E-05	1.16E-03	6.57E-04	1.23E+01	2.93E-05	2.76E-05	1.23E+01	1.12E+01
	Landfill	**Crane 260'**	375 hp	119.6141	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000	1.62E-03	1.95E-02	1.62E-02	7.92E-05	1.43E-04	1.32E-04	8.07E+00	4.46E-04	-	8.08E+00	7.33E+00
	Micro-blast	**Crane 260'**	375 hp	60	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000	8.14E-04	9.79E-03	8.11E-03	3.97E-05	7.19E-05	6.62E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	127	0.097	2.482	1.175	0.004	0.090	0.083	285.402	0.031	0.000	5.88E-05	1.50E-03	7.12E-04	2.20E-06	5.45E-05	5.02E-05	1.73E-01	1.88E-05	-	1.73E-01	1.57E-01
		3/4 ton pickup truck		60	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	2.06E-04	1.86E-04	2.51E-03	4.02E-06	3.25E-05	1.45E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	127	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000	1.36E-03	1.63E-02	1.35E-02	6.62E-05	1.20E-04	1.10E-04	6.75E+00	3.73E-04	-	6.75E+00	6.13E+00
		Air compressor	50 hp	200	127	0.634	0.740	57.796	0.004	0.024	0.023	307.061	0.036	0.059	6.98E-03	8.16E-03	6.37E-01	4.12E-05	2.59E-04	2.59E-04	3.38E+00	3.94E-04	6.47E-04	3.59E+00	3.26E+00
		3/4 ton pickup truck		100	127	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	3.43E-04	3.09E-04	4.18E-03	6.70E-06	5.42E-05	2.41E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Demolition - Notch 5'	***Excavation for Dam Demo***	**Asphalt Distributor**	3000 gal	6.7805	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	4.96E-05	5.81E-04	9.28E-05	7.97E-07	1.52E-05	8.55E-06	1.60E-01	3.81E-07	3.59E-07	1.60E-01	1.45E-01
		Excavator	430 hp	4.445	19	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000	1.09E-04	1.12E-03	8.94E-04	4.38E-06	8.50E-06	7.82E-06	4.46E-01	2.47E-05	-	4.47E-01	4.05E-01
		Tractor/crawler/dozer	850 hp	3.2327	19	0.186	1.374	0.607	0.003	0.041	0.038	302.781	0.017	0.000	5.62E-04	4.16E-03	1.84E-03	9.22E-06	1.24E-04	1.14E-04	9.17E-01	5.07E-05	-	9.18E-01	8.33E-01
	Drilling	**Rotary drill**	475 hp	7.3333	19	0.053	0.683	0.535	0.003	0.005	0.005	282.073	0.012	0.000	2.04E-04	2.62E-03	2.06E-03	1.06E-05	1.90E-05	1.75E-05	1.08E+00	4.75E-05	-	1.08E+00	9.83E-01
		3/4 ton Pickup truck		7.3333	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	2.52E-05	2.27E-05	3.06E-04	4.91E-07	3.98E-06	1.77E-06	1.65E-01	1.64E-05	8.54E-06	1.68E-01	1.52E-01
	Cut with Diamond wire	**3/4 ton Pickup truck**		48	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	1.65E-04	1.49E-04	2.01E-03	3.22E-06	2.60E-05	1.16E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
		Diamond cutting saw	50 hp	48	19	0.138	2.379	1.784	0.004	0.083	0.077	277.554	0.012	0.000	3.66E-04	6.29E-03	4.72E-03	9.49E-06	2.21E-04	2.03E-04	7.34E-01	3.30E-05	-	7.35E-01	6.67E-01
	Lift/Load blocks	**Crane 260'**	375 hp	60.0214	19	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000	8.14E-04	9.79E-03	8.11E-03	3.97E-05	7.19E-05	6.62E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		3/4 ton Pickup truck		60.0214	19	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056	2.06E-04	1.86E-04	2.51E-03	4.02E-06	3.26E-05	1.45E-05	1.35E+00	1.34E-04	6.99E-05	1.37E+00	1.24E+00
		Water truck	3000 gal	507	19	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048	3.71E-03	4.34E-02	6.94E-03	5.96E-05	1.13E-03	6.39E-04	1.20E+01	2.85E-05	2.68E-05	1.20E+01	1.09E+01
	Landfill	**Crane 260'**	375 hp	30.0107	19	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000	4.07E-04	4.90E-03	4.06E-03	1.99E-05	3.60E-05	3.31E-05	2.02E+00	1.12E-04	-	2.03E+00	1.84E+00
														Total	**3.06E-01**	**3.05E+00**	**3.38E+00**	**1.04E-02**	**8.34E-02**	**7.19E-02**	**1.13E+03**	**5.83E-02**	**5.81E-03**	**1.14E+03**	**1.03E+03**

Daily Onsite E
Rindge
Surfrider
Topanga
Zuma
Landfill

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 4

Construction Start Year	2020
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2020 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		3/4 ton pickup truck		96	209	6.30E-03	5.69E-03	7.68E-02	1.23E-04	9.96E-04	4.43E-04
Dust Control		Water truck	5000 gal	2320	209	3.25E-01	3.80E+00	6.08E-01	5.22E-03	9.92E-02	5.60E-02
Environmental protection measures	***Biologist***	3/4 ton pickup truck		1229.3333	209	8.07E-02	7.28E-02	9.83E-01	1.58E-03	1.28E-02	5.67E-03
	Fish relocation	3/4 ton pickup truck		16	19	1.16E-02	1.04E-02	1.41E-01	2.26E-04	1.83E-03	8.12E-04
Clear Vegetation	***Cutting***	1 ton pickup truck		4.4	19	1.69E-03	2.33E-03	2.31E-02	6.23E-05	4.91E-04	2.13E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	2.32E-02	2.52E-01	2.73E-01	1.44E-03	1.89E-03	1.74E-03
		Chain saw		7.3335	19	3.14E-02	1.64E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	Front end loader	540 hp	3.696	19	3.34E-02	2.48E-01	2.70E-01	1.36E-03	2.03E-03	1.87E-03
		Tractor/crawler/dozer	310 hp	3.696	19	1.47E-02	1.60E-01	1.25E-01	6.13E-04	1.20E-03	1.11E-03
	Chipping	Brush chipper	250 hp	3.696	19	2.78E-02	2.04E-01	1.54E-01	9.53E-04	1.49E-03	1.37E-03
		Front end loader	540 hp	3.696	19	3.34E-02	2.48E-01	2.70E-01	1.36E-03	2.03E-03	1.87E-03
Dewatering	***Temporary Cofferdam***	Tractor/crawler/dozer	180 hp	2	19	4.55E-03	4.95E-02	5.36E-02	2.83E-04	3.71E-04	3.41E-04
		Front end loader	49 hp	4	19	1.08E-02	1.01E-01	9.95E-02	1.36E-04	4.34E-03	4.00E-03
		Roller	47 hp	4	19	9.08E-03	9.59E-02	8.88E-02	1.33E-04	3.93E-03	3.62E-03
		Water truck	3000 gal	4	19	6.16E-03	7.22E-02	1.15E-02	9.90E-05	1.88E-03	1.06E-03
		Excavator	300 hp	4	19	1.44E-02	1.48E-01	1.18E-01	5.79E-04	1.12E-03	1.03E-03
		Front end loader	180 hp	4	19	1.22E-02	9.01E-02	9.62E-02	5.08E-04	7.40E-04	6.81E-04
	36" Diversion Pipe - gradi	Tractor/crawler/dozer	180 hp	6	19	1.36E-02	1.49E-01	1.61E-01	8.49E-04	1.11E-03	1.02E-03
	36" Diversion Pipe - pipe a	Welder	17 hp	4	19	4.02E-02	2.60E-02	1.48E+00	5.96E-05	1.97E-02	1.97E-02
	36" Diversion Pipe	Crane 80'	130 hp	27.3333	19	3.77E-02	5.87E-01	1.07E+00	1.93E-03	3.81E-02	3.51E-02
		Loader/backhoe	75 hp	0.0923	19	1.17E-04	1.78E-03	2.22E-03	3.68E-06	1.32E-04	1.21E-04
		Crane 94'	155 hp	155	19	2.55E-01	3.97E+00	7.26E+00	1.31E-02	2.58E-01	2.37E-01
		1 ton pickup truck		155	19	5.95E-02	8.21E-02	8.12E-01	2.19E-03	1.73E-02	7.49E-03
		Crane 94'	155 hp	155	19	2.55E-01	3.97E+00	7.26E+00	1.31E-02	2.58E-01	2.37E-01
		1 ton pickup truck		155	19	5.95E-02	8.21E-02	8.12E-01	2.19E-03	1.73E-02	7.49E-03
	Demolish cofferdam	Tractor/crawler/dozer	180 hp	2	19	4.55E-03	4.95E-02	5.36E-02	2.83E-04	3.71E-04	3.41E-04
	Dewatering	Concrete saw	13 hp	8	22	6.78E-02	5.01E-02	2.48E+00	1.20E-04	3.51E-02	3.51E-02
		Crane 80'	130 hp	16	22	1.91E-02	2.97E-01	5.43E-01	9.76E-04	1.93E-02	1.77E-02
		Flatbed truck		8	22	7.49E-03	8.32E-03	1.03E-01	9.67E-05	7.61E-04	3.25E-04
		Generator	80 hp	5856	244	9.73E-01	1.25E+01	1.46E+01	2.92E-02	8.56E-01	7.87E-01
Temporary Access Road	***Excavate***	Tractor/crawler/dozer	600 hp	184.6154	19	1.43E+00	1.55E+01	1.47E+01	7.37E-02	1.16E-01	1.07E-01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.43E+00	1.55E+01	1.47E+01	7.37E-02	1.16E-01	1.07E-01
	Push	Tractor/crawler/dozer	600 hp	184.6154	19	1.43E+00	1.55E+01	1.47E+01	7.37E-02	1.16E-01	1.07E-01
	Build road	Tractor/crawler/dozer	600 hp	184.6154	19	1.43E+00	1.55E+01	1.47E+01	7.37E-02	1.16E-01	1.07E-01
	Armoring	1 ton pickup truck		2	19	7.67E-04	1.06E-03	1.05E-02	2.83E-05	2.23E-04	9.66E-05
		Excavator	430 hp	2	19	1.04E-02	1.06E-01	8.47E-02	4.15E-04	8.06E-04	7.41E-04
		1 ton pickup truck		2	19	7.67E-04	1.06E-03	1.05E-02	2.83E-05	2.23E-04	9.66E-05
	Compaction	Vibratory roller	50 hp	7.38	19	1.78E-02	1.88E-01	1.74E-01	2.61E-04	7.72E-03	7.10E-03
		Tractor/crawler/dozer	250 hp	7.38	19	2.33E-02	2.54E-01	2.75E-01	1.45E-03	1.90E-03	1.75E-03
		Water truck	5000 gal	9.225	19	1.42E-02	1.66E-01	2.66E-02	2.28E-04	4.34E-03	2.45E-03
	Maintenance	Grader	215 hp	340	209	9.76E-02	8.74E-01	1.03E+00	5.41E-03	6.84E-03	6.29E-03
Sand to Zuma Beach (19,500 cy) (4/1-26)	***Material Excavation***	1 ton pickup truck		161.5	18	6.54E-02	9.03E-02	8.94E-01	2.41E-03	1.90E-02	8.24E-03
		Front end loader	350 hp	161.5	18	1.01E+00	7.48E+00	5.96E+00	2.92E-02	6.14E-02	5.65E-02
		Front end loader	350 hp	161.5	18	1.01E+00	7.48E+00	5.96E+00	2.92E-02	6.14E-02	5.65E-02
		Water truck	3000 gal	161.5	18	2.62E-01	3.08E+00	4.91E-01	4.22E-03	8.02E-02	4.53E-02
		Excavator	400 hp	161.5	18	8.21E-01	8.42E+00	6.72E+00	3.29E-02	6.39E-02	5.88E-02
	Beach Crew	1 ton pickup truck		161.5	18	6.54E-02	9.03E-02	8.94E-01	2.41E-03	1.90E-02	8.24E-03
		Tractor/crawler/dozer	600 hp	161.5	18	1.32E+00	1.43E+01	1.36E+01	6.81E-02	1.07E-01	9.88E-02
		Tractor/crawler/dozer	600 hp	161.5	18	1.32E+00	1.43E+01	1.36E+01	6.81E-02	1.07E-01	9.88E-02
		Tractor/crawler/dozer	600 hp	161.5	18	1.32E+00	1.43E+01	1.36E+01	6.81E-02	1.07E-01	9.88E-02
		Tractor/crawler/dozer	600 hp	161.5	18	1.32E+00	1.43E+01	1.36E+01	6.81E-02	1.07E-01	9.88E-02
		Water truck	3000 gal	161.5	18	2.62E-01	3.08E+00	4.91E-01	4.22E-03	8.02E-02	4.53E-02
Fines to landfill (147,700 cy) (4/27-10/15)	***Material Excavation***	1 ton pickup truck		1066	120	6.47E-02	8.94E-02	8.85E-01	2.39E-03	1.88E-02	8.16E-03
		Front end loader	350 hp	1066	120	1.00E+00	7.40E+00	5.90E+00	2.89E-02	6.08E-02	5.60E-02
		Front end loader	350 hp	1066	120	1.00E+00	7.40E+00	5.90E+00	2.89E-02	6.08E-02	5.60E-02
		Water truck	3000 gal	1066	120	2.60E-01	3.04E+00	4.86E-01	4.18E-03	7.94E-02	4.48E-02
		Excavator	400 hp	1066	120	8.13E-01	8.34E+00	6.65E+00	3.26E-02	6.32E-02	5.82E-02
Demolition	***Platform***	Tractor/crawler/dozer	440 hp	720	20	3.87E+00	4.22E+01	3.29E+01	1.61E-01	3.16E-01	2.91E-01
		Tractor/crawler/dozer	440 hp	90	20	4.84E-01	5.27E+00	4.11E+00	2.01E-02	3.95E-02	3.63E-02
		3/4 ton pickup truck		360	20	2.47E-01	2.23E-01	3.01E+00	4.82E-03	3.90E-02	1.74E-02
	Drilling	Rotary drill	475 hp	61.7333	127	5.42E-02	6.95E-01	5.45E-01	2.82E-03	5.05E-03	4.64E-03
		3/4 ton pickup truck		57.7333	127	6.24E-03	5.63E-03	7.60E-02	1.22E-04	9.86E-04	4.38E-04
	Cut with Diamond wire	3/4 ton pickup truck		196	127	2.12E-02	1.91E-02	2.58E-01	4.14E-04	3.35E-03	1.49E-03
		Diamond cutting saw	50 hp	196	127	4.70E-02	8.09E-01	6.07E-01	1.22E-03	2.84E-02	2.61E-02
	Lift/Load blocks	Crane 260'	375 hp	239.2283	127	1.02E-01	1.23E+00	1.02E+00	4.99E-03	9.03E-03	8.31E-03
		3/4 ton pickup truck		239.2283	127	2.59E-02	2.33E-02	3.15E-01	5.05E-04	4.09E-03	1.82E-03
	Load/Haul	Front end loader	350 hp	32	127	2.84E-02	2.10E-01	1.67E-01	8.20E-04	1.73E-03	1.59E-03
		Water truck	3000 gal	521	127	1.20E-01	1.41E+00	2.25E-01	1.93E-03	3.67E-02	2.07E-02
	Landfill	Crane 260'	375 hp	119.6141	127	5.11E-02	6.15E-01	5.09E-01	2.49E-03	4.52E-03	4.15E-03
	Micro-blast	Crane 260'	375 hp	60	127	2.56E-02	3.08E-01	2.55E-01	1.25E-03	2.27E-03	2.08E-03
		Horizontal boring drill	10 hp	55	127	1.85E-03	4.74E-02	2.24E-02	6.91E-05	1.72E-03	1.58E-03
		3/4 ton pickup truck		60	127	6.48E-03	5.85E-03	7.90E-02	1.27E-04	1.02E-03	4.56E-04
	Demolish spillway	Crane 260'	375 hp	100	127	4.27E-02	5.14E-01	4.26E-01	2.09E-03	3.78E-03	3.47E-03
		Air compressor	50 hp	200	127	2.20E-01	2.57E-01	2.01E+01	1.30E-03	8.17E-03	8.15E-03
		3/4 ton pickup truck		100	127	1.08E-02	9.75E-03	1.32E-01	2.11E-04	1.71E-03	7.59E-04
Demolition - Notch 5'	***Excavation for Dam Demo***	Asphalt Distributor	3000 gal	6.7805	19	1.04E-02	1.22E-01	1.95E-02	1.68E-04	3.19E-03	1.80E-03
		Excavator	430 hp	4.445	19	2.30E-02	2.36E-01	1.88E-01	9.22E-04	1.79E-03	1.65E-03
		Tractor/crawler/dozer	850 hp	3.2327	19	1.18E-01	8.76E-01	3.87E-01	1.94E-03	2.61E-02	2.40E-02
	Drilling	Rotary drill	475 hp	7.3333	19	4.30E-02	5.52E-01	4.33E-01	2.24E-03	4.01E-03	3.69E-03
		3/4 ton Pickup truck		7.3333	19	5.30E-03	4.78E-03	6.45E-02	1.03E-04	8.37E-04	3.72E-04
	Cut with Diamond wire	3/4 ton Pickup truck		48	19	3.47E-02	3.13E-02	4.22E-01	6.77E-04	5.48E-03	2.44E-03
		Diamond cutting saw	50 hp	48	19	7.70E-02	1.32E+00	9.94E-01	2.00E-03	4.65E-02	4.28E-02
	Lift/Load blocks	Crane 260'	375 hp	60.0214	19	1.71E-01	2.06E+00	1.71E+00	8.37E-03	1.51E-02	1.39E-02
		3/4 ton Pickup truck		60.0214	19	4.34E-02	3.91E-02	5.28E-01	8.47E-04	6.85E-03	3.05E-03
		Water truck	3000 gal	507	19	7.80E-01	9.15E+00	1.46E+00	1.25E-02	2.39E-01	1.35E-01
	Landfill	Crane 260'	375 hp	30.0107	19	8.57E-02	1.03E+00	8.54E-01	4.18E-03	7.57E-03	6.97E-03
						2.70E+01	**2.74E+02**	**2.68E+02**	**1.10E+00**	**4.11E+00**	**3.48E+00**
						Emissions (lb/day)					
						21	211	211	1	4	3
						0	0	0	0	0	0
						0	0	0	0	0	0
						6	61	56	0	1	0
						0	2	1	0	0	0

Data from Alt4_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2020
Birthday of Martin Luther King, Jr.	1/20/2020
Washington's Birthday	2/17/2020
Memorial Day	5/25/2020
Independence Day	7/3/2020
Labor Day	9/7/2020
Columbus Day	10/12/2020
Veterans Day	11/11/2020
Thanksgiving Day	11/26/2020
Christmas Day	12/25/2020
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2020

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year 2021
Speed of Onsite Trucks 10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Emission Factors - 2021 (g/hp-hr or g/hr)									Annual Emissions - 2021 (tons per year)										Metric Tons
																				GWP	1	21	310		
Activity		Type	Size	Hours	Year	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Construction Survey		**3/4 ton pickup truck**		96	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	2.89E-04	2.75E-04	3.55E-03	6.45E-06	5.16E-05	2.27E-05	2.15E+00	2.14E-04	1.12E-04	2.19E+00	1.99E+00
Dust Control		**Water truck**	5000 gal	2320	210	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.79E-02	1.28E-01	3.40E-02	2.72E-04	4.72E-03	2.50E-03	5.45E+01	1.30E-04	1.23E-04	5.45E+01	4.94E+01
Environmental protection measures	**Biologist**	**3/4 ton pickup truck**		1229.3333	210	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	3.70E-03	3.52E-03	4.54E-02	8.26E-05	6.61E-04	2.91E-04	2.76E+01	2.74E-03	1.43E-03	2.81E+01	2.55E+01
	Fish relocation	**3/4 ton pickup truck**		16	19	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	4.82E-05	4.58E-05	5.91E-04	1.07E-06	8.60E-06	3.79E-06	3.59E-01	3.57E-05	1.86E-05	3.66E-01	3.32E-01
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	6.69E-06	1.00E-05	9.27E-05	2.97E-07	2.31E-06	9.92E-07	9.88E-02	9.82E-06	5.12E-06	1.01E-01	9.12E-02
		Tractor/crawler/dozer	250 hp	7.3333	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	1.16E-04	1.21E-03	1.30E-03	6.85E-06	9.13E-06	8.40E-06	6.09E-01	3.37E-05	-	6.09E-01	5.53E-01
		Chain saw		7.3335	19	2.303	0.115	13.188	0.001	0.021	0.021	35.645	0.143	0.039	1.56E-04	7.79E-06	8.95E-04	9.97E-08	1.41E-06	1.41E-06	2.42E-03	9.72E-06	2.66E-06	3.45E-03	3.13E-03
	Brush Piling	**Front end loader**	540 hp	3.696	19	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000	1.66E-04	1.18E-03	1.38E-03	6.91E-06	9.83E-06	9.05E-06	6.88E-01	3.80E-05	-	6.88E-01	6.25E-01
		Tractor/crawler/dozer	310 hp	3.696	19	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	7.35E-05	7.67E-04	5.94E-04	2.91E-06	5.80E-06	5.33E-06	2.97E-01	1.64E-05	-	2.97E-01	2.70E-01
	Chipping	**Brush chipper**	250 hp	3.696	19	0.134	0.936	0.711	0.004	0.007	0.006	386.935	0.012	0.000	1.36E-04	9.53E-04	7.24E-04	4.43E-06	7.04E-06	6.48E-06	3.94E-01	1.23E-05	-	3.94E-01	3.58E-01
		Front end loader	540 hp	3.696	19	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000	1.66E-04	1.18E-03	1.38E-03	6.91E-06	9.83E-06	9.05E-06	6.88E-01	3.80E-05	-	6.88E-01	6.25E-01
Landscaping	***Rock from Landfill***	**Loader/backhoe**	75 hp	24	20	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	1.50E-04	2.22E-03	2.74E-03	4.55E-06	1.65E-04	1.52E-04	3.88E-01	2.96E-05	-	3.88E-01	3.52E-01
		Front end loader	350 hp	20	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.86E-04	4.18E-03	3.32E-03	1.63E-05	3.47E-05	3.19E-05	1.66E+00	9.17E-05	-	1.66E+00	1.51E+00
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
		Dump truck	20cy/24 ton	20	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.54E-04	1.10E-03	2.93E-04	2.34E-06	4.07E-05	2.16E-05	4.70E-01	1.12E-06	1.06E-06	4.70E-01	4.26E-01
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.27E-05	2.37E-04	2.55E-04	1.34E-06	1.79E-06	1.65E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
		Front end loader	49 hp	4	19	0.249	2.247	2.257	0.003	0.098	0.090	231.303	0.022	0.000	5.39E-05	4.85E-04	4.88E-04	6.46E-07	2.12E-05	1.95E-05	5.00E-02	4.86E-06	-	5.01E-02	4.54E-02
		Roller	47 hp	4	19	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	4.60E-05	4.61E-04	4.38E-04	6.31E-07	1.93E-05	1.77E-05	4.88E-02	4.15E-06	-	4.89E-02	4.44E-02
		Water truck	3000 gal	4	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	3.08E-05	2.20E-04	5.86E-05	4.69E-07	8.14E-06	4.31E-06	9.39E-02	2.25E-07	2.12E-07	9.40E-02	8.53E-02
		Excavator	300 hp	4	19	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	7.17E-05	7.07E-04	5.61E-04	2.75E-06	5.41E-06	4.98E-06	2.80E-01	1.55E-05	-	2.81E-01	2.55E-01
		Front end loader	180 hp	4	19	0.076	0.543	0.576	0.003	0.005	0.004	270.060	0.015	0.000	6.04E-05	4.31E-04	4.57E-04	2.41E-06	3.58E-06	3.29E-06	2.14E-01	1.19E-05	-	2.15E-01	1.95E-01
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	6.82E-05	7.11E-04	7.64E-04	4.03E-06	5.38E-06	4.95E-06	3.59E-01	1.98E-05	-	3.59E-01	3.26E-01
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	2.545	1.647	93.482	0.004	1.249	1.246	148.937	0.144	0.124	1.91E-04	1.23E-04	7.01E-03	2.83E-07	9.36E-05	9.34E-05	1.12E-02	1.08E-05	9.32E-06	1.43E-02	1.30E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.88E-04	2.80E-03	5.10E-03	9.17E-06	1.85E-04	1.70E-04	8.15E-01	6.22E-05	-	8.16E-01	7.40E-01
		Loader/backhoe	75 hp	0.0923	19	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	5.78E-07	8.53E-06	1.05E-05	1.75E-08	6.36E-07	5.85E-07	1.49E-03	1.14E-07	-	1.49E-03	1.35E-03
		Crane 94'	155 hp	155	19	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.27E-03	1.89E-02	3.45E-02	6.20E-05	1.25E-03	1.15E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
		Crane 94'	155 hp	155	20	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.27E-03	1.89E-02	3.45E-02	6.20E-05	1.25E-03	1.15E-03	5.51E+00	4.21E-04	-	5.52E+00	5.01E+00
		1 ton pickup truck		155	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.36E-04	3.54E-04	3.26E-03	1.04E-05	8.14E-05	3.49E-05	3.48E+00	3.46E-04	1.80E-04	3.54E+00	3.21E+00
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.27E-05	2.37E-04	2.55E-04	1.34E-06	1.79E-06	1.65E-06	1.20E-01	6.61E-06	-	1.20E-01	1.09E-01
	Dewatering	**Concrete saw**	13 hp	8	23	3.253	2.405	118.912	0.006	1.686	1.682	201.089	0.184	0.193	3.73E-04	2.76E-04	1.36E-02	6.57E-07	1.93E-04	1.93E-04	2.31E-02	2.11E-05	2.21E-05	3.04E-02	2.75E-02
		Crane 80'	130 hp	16	23	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.10E-04	1.64E-03	2.99E-03	5.37E-06	1.08E-04	9.96E-05	4.77E-01	3.64E-05	-	4.78E-01	4.33E-01
		Flatbed truck		8	23	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	3.47E-05	3.98E-05	4.78E-04	5.33E-07	4.15E-06	1.76E-06	1.80E-01	4.06E-05	1.88E-05	1.86E-01	1.69E-01
		Generator	80 hp	5856	244	0.120	1.489	1.736	0.003	0.102	0.094	294.380	0.011	0.000	6.21E-02	7.69E-01	8.96E-01	1.78E-03	5.29E-02	4.86E-02	1.52E+02	5.60E-03	-	1.52E+02	1.38E+02
Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
		Tractor/crawler/dozer	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	0.058	0.606	0.546	0.003	0.005	0.004	272.368	0.015	0.000	7.10E-03	7.40E-02	6.66E-02	3.34E-04	5.59E-04	5.15E-04	3.33E+01	1.84E-03	-	3.33E+01	3.02E+01
	Armoring	**1 ton pickup truck**		2	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	3.04E-06	4.56E-06	4.21E-05	1.35E-07	1.05E-06	4.51E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
		Excavator	430 hp	2	19	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	5.14E-05	5.07E-04	4.02E-04	1.97E-06	3.88E-06	3.57E-06	2.01E-01	1.11E-05	-	2.01E-01	1.82E-01
		1 ton pickup truck		2	19	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	3.04E-06	4.56E-06	4.21E-05	1.35E-07	1.05E-06	4.51E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
	Compaction	**Vibratory roller**	50 hp	17.28	19	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	2.11E-04	2.12E-03	2.01E-03	2.90E-06	8.87E-05	8.16E-05	2.24E-01	1.91E-05	-	2.25E-01	2.04E-01
		Tractor/crawler/dozer	250 hp	17.28	19	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.73E-04	2.84E-03	3.06E-03	1.61E-05	2.15E-05	1.98E-05	1.43E+00	7.93E-05	-	1.44E+00	1.30E+00
		Water truck	5000 gal	21.6	19	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.67E-04	1.19E-03	3.16E-04	2.53E-06	4.40E-05	2.33E-05	5.07E-01	1.21E-06	1.14E-06	5.07E-01	4.60E-01
	Maintenance	**Grader**	215 hp	340	210	0.067	0.571	0.665	0.004	0.005	0.004	312.023	0.017	0.000	5.37E-03	4.60E-02	5.36E-02	2.83E-04	3.64E-04	3.35E-04	2.51E+01	1.39E-03	-	2.52E+01	2.28E+01
Fines to landfill (82,300 cy) (4/1-7/10)	***Material Excavation***	**1 ton pickup truck**		597	70	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	9.08E-04	1.36E-03	1.26E-02	4.02E-05	3.14E-04	1.35E-04	1.34E+01	1.33E-03	6.95E-04	1.36E+01	1.24E+01
		Front end loader	350 hp	597	70	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.75E-02	1.25E-01	9.91E-02	4.86E-04	1.04E-03	9.53E-04	4.95E+01	2.74E-03	-	4.95E+01	4.49E+01
		Front end loader	350 hp	597	70	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.75E-02	1.25E-01	9.91E-02	4.86E-04	1.04E-03	9.53E-04	4.95E+01	2.74E-03	-	4.95E+01	4.49E+01
		Water truck	3000 gal	597	70	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.60E-03	3.29E-02	8.74E-03	6.99E-05	1.22E-03	6.44E-04	1.40E+01	3.36E-05	3.16E-05	1.40E+01	1.27E+01
		Excavator	400 hp	597	70	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	1.43E-02	1.41E-01	1.12E-01	5.47E-04	1.08E-03	9.91E-04	5.58E+01	3.08E-03	-	5.58E+01	5.07E+01
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	***Material Excavation***	**1 ton pickup truck**		195.5	20	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.97E-04	4.46E-04	4.12E-03	1.32E-05	1.03E-04	4.41E-05	4.39E+00	4.36E-04	2.28E-04	4.47E+00	4.05E+00
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Front end loader	350 hp	195.5	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	5.72E-03	4.09E-02	3.25E-02	1.59E-04	3.39E-04	3.12E-04	1.62E+01	8.96E-04	-	1.62E+01	1.47E+01
		Water truck	3000 gal	195.5	20	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.51E-03	1.08E-02	2.86E-03	2.29E-05	3.98E-04	2.11E-04	4.59E+00	1.10E-05	1.03E-05	4.59E+00	4.17E+00
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
		Excavator	400 hp	195.5	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.68E-03	4.61E-02	3.66E-02	1.79E-04	3.53E-04	3.24E-04	1.83E+01	1.01E-03	-	1.83E+01	1.66E+01
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	***Material Excavation***	**1 ton pickup truck**		585	72	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	8.89E-04	1.33E-03	1.23E-02	3.94E-05	3.07E-04	1.32E-04	1.31E+01	1.31E-03	6.81E-04	1.34E+01	1.21E+01
		Front end loader	350 hp	585	72	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.71E-02	1.22E-01	9.71E-02	4.76E-04	1.01E-03	9.34E-04	4.85E+01	2.68E-03	-	4.85E+01	4.40E+01
		Front end loader	350 hp	585	72	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	1.71E-02	1.22E-01	9.71E-02	4.76E-04	1.01E-03	9.34E-04	4.85E+01	2.68E-03	-	4.85E+01	4.40E+01
		Water truck	3000 gal	585	72	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.51E-03	3.22E-02	8.56E-03	6.85E-05	1.19E-03	6.31E-04	1.37E+01	3.29E-05	3.10E-05	1.37E+01	1.25E+01
		Excavator	400 hp	585	72	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	1.40E-02	1.38E-01	1.09E-01	5.36E-04	1.06E-03	9.71E-04	5.46E+01	3.02E-03	-	5.47E+01	4.96E+01
Rindge Dam & Spillway Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	2.03E-02	2.12E-01	1.64E-01	8.05E-04	1.60E-03	1.47E-03	8.20E+01	4.54E-03	-	8.21E+01	7.45E+01
		Tractor/crawler/dozer	440 hp	90	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	2.54E-03	2.65E-02	2.05E-02	1.01E-04	2.00E-04	1.84E-04	1.03E+01	5.67E-04	-	1.03E+01	9.31E+00
		3/4 ton pickup truck		360	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.08E-03	1.03E-03	1.33E-02	2.42E-05	1.94E-04	8.53E-05	8.08E+00	8.03E-04	4.19E-04	8.23E+00	7.46E+00
	Drilling	**Rotary drill**	475 hp	61.733	126	0.054	0.684	0.537	0.003	0.005	0.005	282.173	0.013	0.000	1.74E-03	2.21E-02	1.74E-02	8.95E-05	1.61E-04	1.48E-04	9.12E+00	4.06E-04	-	9.13E+00	8.28E+00
		3/4 ton pickup truck		57.733	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.74E-04	1.65E-04	2.13E-03	3.88E-06	3.10E-05	1.37E-05	1.30E+00	1.29E-04	6.72E-05	1.32E+00	1.20E+00
	Cut with Diamond wire	**3/4 ton pickup truck**		204	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	6.14E-04	5.84E-04	7.54E-03	1.37E-05	1.10E-04	4.83E-05	4.58E+00	4.55E-04	2.37E-04	4.66E+00	4.23E+00
		Diamond cutting saw	50 hp	204	126	0.146	2.395	1.830	0.004	0.085	0.078	277.566	0.013	0.000	1.64E-03	2.69E-02	2.06E-02	4.03E-05	9.57E-04	8.81E-04	3.12E+00	1.48E-04	-	3.12E+00	2.83E+00
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	3.41E-03	3.93E-02	3.23E-02	1.59E-04	2.91E-04	2.68E-04	1.61E+01	8.93E-04	-	1.62E+01	1.47E+01
		3/4 ton pickup truck		239.2283	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	7.20E-04	6.85E-04	8.84E-03	1.61E-05	1.29E-04	5.67E-05	5.37E+00	5.34E-04	2.78E-04	5.47E+00	4.96E+00
	Load/Haul	**Front end loader**	350 hp	32	126	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	9.37E-04	6.69E-03	5.31E-03	2.60E-05	5.55E-05	5.11E-05	2.65E+00	1.47E-04	-	2.66E+00	2.41E+00
		Water truck	3000 gal	14	126	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.08E-04	7.71E-04	2.05E-04	1.64E-06	2.85E-05	1.51E-05	3.29E-01	7.87E-07	7.41E-07	3.29E-01	2.98E-01
	Landfill	**Crane 260'**	375 hp	119.6141	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	1.71E-03	1.96E-02	1.62E-02	7.93E-05	1.46E-04	1.34E-04	8.07E+00	4.47E-04	-	8.08E+00	7.33E+00
	Micro-blast	**Crane 260'**	375 hp	60	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	8.55E-04	9.85E-03	8.11E-03	3.98E-05	7.30E-05	6.72E-05	4.05E+00	2.24E-04	-	4.05E+00	3.68E+00
		Horizontal boring drill	10 hp	55	126	0.098	2.489	1.168	0.004	0.091	0.083	283.780	0.031	0.000	5.97E-05	1.51E-03	7.08E-04	2.18E-06	5.49E-05	5.05E-05	1.72E-01	1.87E-05	-	1.72E-01	1.56E-01
		3/4 ton pickup truck		60	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.81E-04	1.72E-04	2.22E-03	4.03E-06	3.23E-05	1.42E-05	1.35E+00	1.34E-04	6.98E-05	1.37E+00	1.24E+00
	Demolish spillway	**Crane 260'**	375 hp	100	126	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	1.43E-03	1.64E-02	1.35E-02	6.63E-05	1.22E-04	1.12E-04	6.75E+00	3.73E-04	-	6.76E+00	6.13E+00
		Air compressor	50 hp	200	126	0.666	0.763	61.867	0.004	0.024	0.023	306.998	0.038	0.060	7.34E-03	8.41E-03	6.82E-01	4.11E-05	2.59E-04	2.59E-04	3.38E+00	4.14E-04	6.58E-04	3.60E+00	3.26E+00
		3/4 ton pickup truck		100	126	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	3.01E-04	2.86E-04	3.70E-03	6.72E-06	5.38E-05	2.37E-05	2.24E+00	2.23E-04	1.16E-04	2.29E+00	2.07E+00
Rindge Dam Concrete Arc Foundation Demolition	***Drilling***	**Rotary drill**	475 hp	120.7333	20	0.054	0.684	0.537	0.003	0.005	0.005	282.173	0.013	0.000	3.40E-03	4.32E-02	3.40E-02	1.75E-04	3.14E-04	2.89E-04	1.78E+01	7.95E-04	-	1.79E+01	1.62E+01
		3/4 ton Pickup truck		128.7333	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	3.88E-04	3.68E-04	4.76E-03	8.65E-06	6.92E-05	3.05E-05	2.89E+00	2.87E-04	1.50E-04	2.94E+00	2.67E+00
	Load/Haul	**Front end loader**	350 hp	34	20	0.076	0.542	0.430	0.002	0.004	0.004	214.819	0.012	0.000	9.96E-04	7.11E-03	5.64E-03	2.77E-05	5.90E-05	5.43E-05	2.82E+00	1.56E-04	-	2.82E+00	2.56E+00
	Fracture	**Excavator**	400 hp	540	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	1.29E-02	1.27E-01	1.01E-01	4.95E-04	9.74E-04	8.96E-04	5.04E+01	2.79E-03	-	5.05E+01	4.58E+01
		Excavator	300 hp	540	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	9.69E-03	9.54E-02	7.58E-02	3.71E-04	7.30E-04	6.72E-04	3.78E+01	2.09E-03	-	3.79E+01	3.44E+01
		Excavator	300 hp	270	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.84E-03	4.77E-02	3.79E-02	1.86E-04	3.65E-04	3.36E-04	1.89E+01	1.05E-03	-	1.89E+01	1.72E+01
		Tractor/crawler/dozer	440 hp	270	20	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	7.63E-03	7.95E-02	6.16E-02	3.02E-04	6.01E-04	5.53E-04	3.08E+01	1.70E-03	-	3.08E+01	2.79E+01
		3/4 ton Pickup truck		540	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.63E-03	1.55E-03	2.00E-02	3.63E-05	2.90E-04	1.28E-04	1.21E+01	1.20E-03	6.29E-04	1.23E+01	1.12E+01
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	0.095	1.057	2.009	0.004	0.080	0.073	320.916	0.025	0.000	4.29E-04	4.78E-03	9.09E-03	1.63E-05	3.60E-04	3.31E-04	1.45E+00	1.11E-04	-	1.45E+00	1.32E+00
		Tractor/crawler/dozer	250 hp	30.4	20	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	4.80E-04	5.00E-03	5.38E-03	2.84E-05	3.78E-05	3.48E-05	2.52E+00	1.40E-04	-	2.53E+00	2.29E+00
		Excavator	400 hp	30.4	20	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	7.27E-04	7.16E-03	5.69E-03	2.79E-05	5.48E-05	5.04E-05	2.84E+00	1.57E-04	-	2.84E+00	2.58E+00
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	0.081	0.581	0.494	0.002	0.005	0.004	246.845	0.014	0.000	1.19E-02	8.50E-02	7.24E-02	3.55E-04	7.06E-04	6.49E-04	3.61E+01	2.00E-03	-	3.62E+01	3.28E+01
		Line Striper	23 hp	92.576	20	0.196	0.474	9.240	0.003	0.020	0.020	254.963	0.011	0.026	4.59E-04	1.11E-03	2.17E-02	5.94E-06	4.77E-05	4.76E-05	5.98E-01	2.59E-05	6.00E-05	6.18E-01	5.60E-01
		Roller	70 hp	442.5143	20	0.052	1.076	1.470	0.003	0.074	0.068	222.785	0.013	0.000	1.77E-03	3.67E-02	5.02E-02	8.92E-05	2.52E-03	2.32E-03	7.61E+00	4.59E-04	-	7.62E+00	6.91E+00
		Vibratory roller	33 hp	442.5143	20	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	3.57E-03	3.58E-02	3.40E-02	4.90E-05	1.50E-03	1.38E-03	3.79E+00	3.22E-04	-	3.80E+00	3.45E+00
		Flatbed truck		92.576	20	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	4.02E-04	4.61E-04	5.53E-03	6.16E-06	4.81E-05	2.03E-05	2.08E+00	4.70E-04	2.18E-04	2.16E+00	1.96E+00
		3/4 ton pickup truck		92.576	20	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	2.79E-04	2.65E-04	3.42E-03	6.22E-06	4.98E-05	2.19E-05	2.08E+00	2.07E-04	1.08E-04	2.12E+00	1.92E+00
														Total	**3.83E-01**	**3.48E+00**	**3.93E+00**	**1.23E-02**	**9.05E-02**	**7.90E-02**	**1.33E+03**	**7.18E-02**	**6.80E-03**	**1.34E+03**	**1.21E+03**

Daily Onsite I
Rindge
Surfrider
Topanga
Zuma
Landfill

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt4_EnvrAirQualityReport.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Alternative 4 - Year 5

Construction Start Year	2021
Speed of Onsite Trucks	10 mph

Activity		Equipment Type	Equipment Size	Total Hours	Days per Year	Peak Daily Emissions - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Construction Survey		**3/4 ton pickup truck**		96	210	5.50E-03	5.23E-03	6.76E-02	1.23E-04	9.83E-04	4.33E-04
Dust Control		**Water truck**	5000 gal	2320	210	3.41E-01	2.43E+00	6.47E-01	5.18E-03	9.00E-02	4.76E-02
Environmental protection measures	**Biologist**	**3/4 ton pickup truck**		1229.3333	210	7.05E-02	6.70E-02	8.65E-01	1.57E-03	1.26E-02	5.55E-03
	Fish relocation	**3/4 ton pickup truck**		16	19	1.01E-02	9.64E-03	1.24E-01	2.26E-04	1.81E-03	7.98E-04
Clear Vegetation	***Cutting***	**1 ton pickup truck**		4.4	19	1.41E-03	2.11E-03	1.95E-02	6.24E-05	4.87E-04	2.09E-04
		Tractor/crawler/dozer	250 hp	7.3333	19	2.44E-02	2.54E-01	2.73E-01	1.44E-03	1.92E-03	1.77E-03
		Chain saw		7.3335	19	3.29E-02	1.64E-03	1.89E-01	2.10E-05	2.97E-04	2.96E-04
	Brush Piling	**Front end loader**	540 hp	3.696	19	3.49E-02	2.49E-01	2.90E-01	1.46E-03	2.07E-03	1.90E-03
		Tractor/crawler/dozer	310 hp	3.696	19	1.55E-02	1.61E-01	1.25E-01	6.13E-04	1.22E-03	1.12E-03
	Chipping	**Brush chipper**	250 hp	3.696	19	2.87E-02	2.01E-01	1.52E-01	9.34E-04	1.48E-03	1.36E-03
		Front end loader	540 hp	3.696	19	3.49E-02	2.49E-01	2.90E-01	1.46E-03	2.07E-03	1.90E-03
Landscaping	***Rock from Landfill***	**Loader/backhoe**	75 hp	24	20	3.01E-02	4.44E-01	5.49E-01	9.09E-04	3.31E-02	3.04E-02
		Front end loader	350 hp	20	20	1.17E-01	8.36E-01	6.64E-01	3.25E-03	6.94E-03	6.38E-03
		Dump truck	20cy/24 ton	20	20	3.08E-02	2.20E-01	5.86E-02	4.69E-04	8.14E-03	4.31E-03
		Dump truck	20cy/24 ton	20	20	3.08E-02	2.20E-01	5.86E-02	4.69E-04	8.14E-03	4.31E-03
Dewatering	***Temporary Cofferdam***	**Tractor/crawler/dozer**	180 hp	2	19	4.79E-03	4.99E-02	5.36E-02	2.83E-04	3.77E-04	3.47E-04
		Front end loader	49 hp	4	19	1.13E-02	1.02E-01	1.03E-01	1.36E-04	4.46E-03	4.10E-03
		Roller	47 hp	4	19	9.69E-03	9.71E-02	9.23E-02	1.33E-04	4.06E-03	3.74E-03
		Water truck	3000 gal	4	19	6.49E-03	4.64E-02	1.23E-02	9.87E-05	1.71E-03	9.08E-04
		Excavator	300 hp	4	19	1.51E-02	1.49E-01	1.18E-01	5.79E-04	1.14E-03	1.05E-03
		Front end loader	180 hp	4	19	1.27E-02	9.08E-02	9.62E-02	5.08E-04	7.54E-04	6.93E-04
	36" Diversion Pipe - gradi	**Tractor/crawler/dozer**	180 hp	6	19	1.44E-02	1.50E-01	1.61E-01	8.49E-04	1.13E-03	1.04E-03
	36" Diversion Pipe - pipe a	**Welder**	17 hp	4	19	4.02E-02	2.60E-02	1.48E+00	5.96E-05	1.97E-02	1.97E-02
	36" Diversion Pipe	**Crane 80'**	130 hp	27.3333	19	3.95E-02	5.90E-01	1.07E+00	1.93E-03	3.89E-02	3.58E-02
		Loader/backhoe	75 hp	0.0923	19	1.22E-04	1.80E-03	2.22E-03	3.68E-06	1.34E-04	1.23E-04
		Crane 94'	155 hp	155	19	2.67E-01	3.99E+00	7.26E+00	1.30E-02	2.63E-01	2.42E-01
		1 ton pickup truck		155	19	4.96E-02	7.44E-02	6.87E-01	2.20E-03	1.71E-02	7.36E-03
		Crane 94'	155 hp	155	20	2.54E-01	3.79E+00	6.90E+00	1.24E-02	2.50E-01	2.30E-01
		1 ton pickup truck		155	20	4.71E-02	7.07E-02	6.53E-01	2.09E-03	1.63E-02	6.99E-03
	Demolish cofferdam	**Tractor/crawler/dozer**	180 hp	2	20	4.55E-03	4.74E-02	5.10E-02	2.69E-04	3.58E-04	3.30E-04
	Dewatering	**Concrete saw**	13 hp	8	23	6.49E-02	4.79E-02	2.37E+00	1.14E-04	3.36E-02	3.35E-02
		Crane 80'	130 hp	16	23	1.91E-02	2.85E-01	5.19E-01	9.33E-04	1.88E-02	1.73E-02
		Flatbed truck		8	23	6.03E-03	6.93E-03	8.32E-02	9.26E-05	7.22E-04	3.06E-04
		Generator	80 hp	5856	244	1.02E+00	1.26E+01	1.47E+01	2.92E-02	8.66E-01	7.97E-01
Access Road	***Excavate***	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.49E+00	1.56E+01	1.40E+01	7.04E-02	1.18E-01	1.08E-01
	Push	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.49E+00	1.56E+01	1.40E+01	7.04E-02	1.18E-01	1.08E-01
		Tractor/crawler/dozer	600 hp	184.6154	19	1.49E+00	1.56E+01	1.40E+01	7.04E-02	1.18E-01	1.08E-01
	Build road	**Tractor/crawler/dozer**	600 hp	184.6154	19	1.49E+00	1.56E+01	1.40E+01	7.04E-02	1.18E-01	1.08E-01
	Armoring	**1 ton pickup truck**		2	19	6.40E-04	9.61E-04	8.87E-03	2.84E-05	2.21E-04	9.49E-05
		Excavator	430 hp	2	19	1.08E-02	1.07E-01	8.47E-02	4.15E-04	8.16E-04	7.51E-04
		1 ton pickup truck		2	19	6.40E-04	9.61E-04	8.87E-03	2.84E-05	2.21E-04	9.49E-05
	Compaction	**Vibratory roller**	50 hp	17.28	19	4.45E-02	4.46E-01	4.24E-01	6.10E-04	1.87E-02	1.72E-02
		Tractor/crawler/dozer	250 hp	17.28	19	5.74E-02	5.99E-01	6.44E-01	3.40E-03	4.53E-03	4.17E-03
		Water truck	5000 gal	21.6	19	3.51E-02	2.50E-01	6.66E-02	5.33E-04	9.26E-03	4.90E-03
	Maintenance	**Grader**	215 hp	340	210	1.02E-01	8.76E-01	1.02E+00	5.39E-03	6.93E-03	6.38E-03
Fines to landfill (82,300 cy) (4/1-7/10)	***Material Excavation***	**1 ton pickup truck**		597	70	5.19E-02	7.78E-02	7.18E-01	2.30E-03	1.79E-02	7.69E-03
		Front end loader	350 hp	597	70	9.99E-01	7.13E+00	5.66E+00	2.78E-02	5.92E-02	5.44E-02
		Front end loader	350 hp	597	70	9.99E-01	7.13E+00	5.66E+00	2.78E-02	5.92E-02	5.44E-02
		Water truck	3000 gal	597	70	2.63E-01	1.88E+00	4.99E-01	4.00E-03	6.94E-02	3.68E-02
		Excavator	400 hp	597	70	8.16E-01	8.04E+00	6.38E+00	3.13E-02	6.15E-02	5.66E-02
Material from South Ramp (to landfill) (60,500 cy) (7/11-8/6)	***Material Excavation***	**1 ton pickup truck**		195.5	20	5.94E-02	8.92E-02	8.23E-01	2.64E-03	2.05E-02	8.82E-03
		Front end loader	350 hp	195.5	20	1.14E+00	8.17E+00	6.49E+00	3.18E-02	6.78E-02	6.24E-02
		Front end loader	350 hp	195.5	20	1.14E+00	8.17E+00	6.49E+00	3.18E-02	6.78E-02	6.24E-02
		Front end loader	350 hp	195.5	20	1.14E+00	8.17E+00	6.49E+00	3.18E-02	6.78E-02	6.24E-02
		Front end loader	350 hp	195.5	20	1.14E+00	8.17E+00	6.49E+00	3.18E-02	6.78E-02	6.24E-02
		Water truck	3000 gal	195.5	20	3.01E-01	2.15E+00	5.72E-01	4.58E-03	7.96E-02	4.22E-02
		Excavator	400 hp	195.5	20	9.35E-01	9.21E+00	7.32E+00	3.58E-02	7.05E-02	6.49E-02
		Excavator	400 hp	195.5	20	9.35E-01	9.21E+00	7.32E+00	3.58E-02	7.05E-02	6.49E-02
		Excavator	400 hp	195.5	20	9.35E-01	9.21E+00	7.32E+00	3.58E-02	7.05E-02	6.49E-02
		Excavator	400 hp	195.5	20	9.35E-01	9.21E+00	7.32E+00	3.58E-02	7.05E-02	6.49E-02
Material from North Ramp (to landfill) (45,100 cy) (8/7-11/19)	***Material Excavation***	**1 ton pickup truck**		585	72	4.94E-02	7.41E-02	6.84E-01	2.19E-03	1.71E-02	7.33E-03
		Front end loader	350 hp	585	72	9.52E-01	6.79E+00	5.40E+00	2.64E-02	5.64E-02	5.19E-02
		Front end loader	350 hp	585	72	9.52E-01	6.79E+00	5.40E+00	2.64E-02	5.64E-02	5.19E-02
		Water truck	3000 gal	585	72	2.51E-01	1.79E+00	4.76E-01	3.81E-03	6.62E-02	3.50E-02
		Excavator	400 hp	585	72	7.77E-01	7.66E+00	6.08E+00	2.98E-02	5.86E-02	5.39E-02
Rindge Dam & Spillway Demolition	***Platform***	**Tractor/crawler/dozer**	440 hp	720	20	4.07E+00	4.24E+01	3.29E+01	1.61E-01	3.21E-01	2.95E-01
		Tractor/crawler/dozer	440 hp	90	20	5.08E-01	5.30E+00	4.11E+00	2.01E-02	4.01E-02	3.69E-02
		3/4 ton pickup truck		360	20	2.17E-01	2.06E-01	2.66E+00	4.84E-03	3.87E-02	1.71E-02
	Drilling	**Rotary drill**	475 hp	61.733	126	5.53E-02	7.02E-01	5.51E-01	2.84E-03	5.10E-03	4.69E-03
		3/4 ton pickup truck		57.733	126	5.52E-03	5.25E-03	6.77E-02	1.23E-04	9.86E-04	4.34E-04
	Cut with Diamond wire	**3/4 ton pickup truck**		204	126	1.95E-02	1.85E-02	2.39E-01	4.35E-04	3.48E-03	1.53E-03
		Diamond cutting saw	50 hp	204	126	5.22E-02	8.55E-01	6.53E-01	1.28E-03	3.04E-02	2.80E-02
	Lift/Load blocks	**Crane 260'**	375 hp	239.2283	126	1.08E-01	1.25E+00	1.03E+00	5.03E-03	9.24E-03	8.50E-03
		3/4 ton pickup truck		239.2283	126	2.29E-02	2.17E-02	2.81E-01	5.10E-04	4.08E-03	1.80E-03
	Load/Haul	**Front end loader**	350 hp	32	126	2.97E-02	2.12E-01	1.69E-01	8.26E-04	1.76E-03	1.62E-03
		Water truck	3000 gal	14	126	3.43E-03	2.45E-02	6.51E-03	5.21E-05	9.05E-04	4.79E-04
	Landfill	**Crane 260'**	375 hp	119.6141	126	5.41E-02	6.24E-01	5.13E-01	2.52E-03	4.62E-03	4.25E-03
	Micro-blast	**Crane 260'**	375 hp	60	126	2.72E-02	3.13E-01	2.58E-01	1.26E-03	2.32E-03	2.13E-03
		Horizontal boring drill	10 hp	55	126	1.89E-03	4.79E-02	2.25E-02	6.93E-05	1.74E-03	1.60E-03
		3/4 ton pickup truck		60	126	5.73E-03	5.45E-03	7.04E-02	1.28E-04	1.02E-03	4.51E-04
	Demolish spillway	**Crane 260'**	375 hp	100	126	4.53E-02	5.21E-01	4.29E-01	2.10E-03	3.86E-03	3.55E-03
		Air compressor	50 hp	200	126	2.33E-01	2.67E-01	2.16E+01	1.31E-03	8.23E-03	8.21E-03
		3/4 ton pickup truck		100	126	9.56E-03	9.09E-03	1.17E-01	2.13E-04	1.71E-03	7.52E-04
Rindge Dam Concrete Arc Foundation Demolition	***Drilling***	**Rotary drill**	475 hp	120.7333	20	6.81E-01	8.65E+00	6.79E+00	3.50E-02	6.29E-02	5.78E-02
		3/4 ton Pickup truck		128.7333	20	7.75E-02	7.37E-02	9.52E-01	1.73E-03	1.38E-02	6.10E-03
	Load/Haul	**Front end loader**	350 hp	34	20	1.99E-01	1.42E+00	1.13E+00	5.53E-03	1.18E-02	1.09E-02
	Fracture	**Excavator**	400 hp	540	20	2.58E+00	2.54E+01	2.02E+01	9.90E-02	1.95E-01	1.79E-01
		Excavator	300 hp	540	20	1.94E+00	1.91E+01	1.52E+01	7.43E-02	1.46E-01	1.34E-01
		Excavator	300 hp	270	20	9.69E-01	9.54E+00	7.58E+00	3.71E-02	7.30E-02	6.72E-02
		Tractor/crawler/dozer	440 hp	270	20	1.53E+00	1.59E+01	1.23E+01	6.04E-02	1.20E-01	1.11E-01
		3/4 ton Pickup truck		540	20	3.25E-01	3.09E-01	3.99E+00	7.26E-03	5.81E-02	2.56E-02
Road Improvement Plan	***Stabilize***	**Grader**	135 hp	30.4	20	8.57E-02	9.56E-01	1.82E+00	3.27E-03	7.20E-02	6.62E-02
		Tractor/crawler/dozer	250 hp	30.4	20	9.60E-02	1.00E+00	1.08E+00	5.68E-03	7.57E-03	6.96E-03
		Excavator	400 hp	30.4	20	1.45E-01	1.43E+00	1.14E+00	5.57E-03	1.10E-02	1.01E-02
	Asphalt Road	**Asphalt hopper**	300 hp	442.5143	20	2.38E+00	1.70E+01	1.45E+01	7.09E-02	1.41E-01	1.30E-01
		Line Striper	23 hp	92.576	20	9.18E-02	2.22E-01	4.34E+00	1.19E-03	9.53E-03	9.51E-03
		Roller	70 hp	442.5143	20	3.55E-01	7.35E+00	1.00E+01	1.78E-02	5.05E-01	4.65E-01
		Vibratory roller	33 hp	442.5143	20	7.15E-01	7.16E+00	6.81E+00	9.80E-03	3.00E-01	2.76E-01
		Flatbed truck		92.576	20	8.03E-02	9.22E-02	1.11E+00	1.23E-03	9.61E-03	4.07E-03
		3/4 ton pickup truck		92.576	20	5.57E-02	5.30E-02	6.84E-01	1.24E-03	9.96E-03	4.39E-03
						4.15E+01	**3.80E+02**	**3.68E+02**	**1.48E+00**	**5.62E+00**	**4.93E+00**
						Emissions (lb/day)					
						41	379	368	1	6	5
						0	0	0	0	0	0
						0	0	0	0	0	0
						0	0	0	0	0	0
						0	1	1	0	0	0

Note: Road improvements would begin after sediment excavation/disposal and concrete removal is completed

Data from Alt4_EnvrAirQualityReport.pdf

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

	Data from EMFAC2011 (g/hr)
	Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2021
Birthday of Martin Luther King, Jr.	1/18/2021
Washington's Birthday	2/15/2021
Memorial Day	5/31/2021
Independence Day	7/5/2021
Labor Day	9/6/2021
Columbus Day	10/11/2021
Veterans Day	11/11/2021
Thanksgiving Day	11/25/2021
Christmas Day	12/24/2021
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2020

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

			15	15	15		days per construction period (5 days per week)								
			CC1 & CC4	CC1 & CC5	LV2										
	Equipment	Equipment	Hours of Operation			Annual	Emission Factors - 2018 (g/hp-hr or g/hr)								
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck		4	12		16	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.041	0.827	1.317	0.002	0.057	0.053	189.421	0.014	0.000
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Truck		0.3077		2.7692	3.0769	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Water pump	3.5 hp		4		4	4.754	2.132	56.300	0.006	0.058	0.058	177.786	0.269	0.302
Water Control - Removal	Flatbed Truck		4	12		16	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.041	0.827	1.317	0.002	0.057	0.053	189.421	0.014	0.000
	Loader/Backhoe	75 hp				0	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Truck		0.3077			0.3077	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	0.139	1.462	1.780	0.004	0.091	0.083	341.058	0.013	0.000
	Crane 50'	200 hp	9.4118	18.8236		28.2354	0.029	0.391	0.426	0.002	0.003	0.003	203.313	0.011	0.000
	Man lift	210 hp				0	0.052	0.455	0.331	0.002	0.003	0.003	192.958	0.005	0.000
	Loader	190 hp	28.2353	37.6471		65.8824	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Chainsaw		56.7647	75.2941	0.2941	132.3529	1.993	0.115	13.187	0.001	0.021	0.021	35.644	0.124	0.039
	1 ton pickup		0.1765		0.1765	0.353	2.417	2.837	32.274	0.061	0.491	0.217	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Front end loader	540 hp	0.2964		0.2964	0.5928	0.063	0.523	0.567	0.003	0.004	0.004	290.956	0.014	0.000
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	0.050	0.602	0.471	0.002	0.004	0.004	234.968	0.013	0.000
	Dump truck	20cy/24 ton			1.4866	1.4866	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	0.095	0.585	0.451	0.003	0.004	0.004	237.902	0.009	0.000
	Air Compressor	50 hp		32		32	0.569	0.693	49.653	0.004	0.024	0.023	307.213	0.032	0.057
	Crane 126'	350 hp	5.1111	5.1111		10.2222	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
	Crane 50'	263 hp	44.4571	44.4571		88.9142	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
	Crane 210'	230 hp	16	16		32	0.029	0.391	0.426	0.002	0.003	0.003	203.313	0.011	0.000
	Excavator	115 hp	32	16	24	72	0.063	1.095	1.968	0.003	0.078	0.072	278.045	0.021	0.000
	Excavator	430 hp	8	8	12	28	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
	Loader	190 hp	72	64	12	148	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Front end loader	180 hp	4.6667	4.6667		9.3334	0.064	0.528	0.556	0.003	0.004	0.004	270.067	0.013	0.000
	Loader/Backhoe	75 hp	11.1	11.1		22.2	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000
	Tractor/crawler/dozer	250 hp	4	4		8	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	3/4 ton pickup		72	80	12	164	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Chainsaw		44.4571	44.4571		88.9142	1.993	0.115	13.187	0.001	0.021	0.021	35.644	0.124	0.039
Road Realignment	Vibratory roller	145 hp				0	0.046	0.902	1.559	0.003	0.054	0.049	280.080	0.014	0.000
	Vibrating compactor	5.5 hp	4	4		8	2.038	1.506	74.492	0.004	1.056	1.054	125.971	0.115	0.151
	Vibratory compactor	7.5 hp				0	0.057	1.817	0.996	0.003	0.062	0.057	241.998	0.026	0.000
	Truck		16	16		32	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Asphalt distributor	3000 gal	4	4		8	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Suburban	3/4 ton	4	4		8	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Disposal	Truck	35 ton	40	40		80	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	Truck	75 ton	11.2	11.2		22.4	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
Bridge Installation	Suburban	3/4 ton	12	12		24	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Crane 210'	230 hp	24	24		48	0.029	0.391	0.426	0.002	0.003	0.003	203.313	0.011	0.000
	Crane 270'	430 hp	24	24		48	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
	3/4 ton pickup		24	24		48	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp	8	8		16	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Excavator	430 hp	0.6137	0.6137		1.2274	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
	Truck		2.9609	2.9609		5.9218	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Generator	7.5 hp	15.8865	15.8865		31.773	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	2.038	1.506	74.492	0.004	1.056	1.054	125.971	0.115	0.151
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Truck		4.3678	4.3678		8.7356	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Asphalt paver	120 hp	0.208	0.208		0.416	0.053	1.154	1.712	0.003	0.078	0.072	261.293	0.015	0.000
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	0.179	2.141	1.871	0.003	0.084	0.077	235.555	0.016	0.000
	Chip spreader truck		0.64	0.64		1.28	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	Line striper	23 hp	0.0713	0.0713		0.1426	0.162	0.420	9.087	0.003	0.021	0.021	260.534	0.009	0.024
	Flatbed Truck		0.0713	0.0713		0.1426	6.554	6.847	91.006	0.061	0.484	0.211	20,361.282	4.604	2.135
	3/4 ton pickup		0.0713	0.0713		0.1426	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp				0	0.162	0.420	9.087	0.003	0.021	0.021	260.534	0.009	0.024
	Crane 80'	130 hp				0	0.041	0.704	1.280	0.002	0.044	0.041	208.102	0.015	0.000
	Crane 114'	430 hp				0	0.029	0.390	0.322	0.002	0.003	0.003	163.235	0.009	0.000
	Auger drill	100 hp				0	0.074	1.505	1.894	0.003	0.104	0.096	291.325	0.017	0.000
	Water pump	80 hp				0	0.113	1.479	1.715	0.003	0.100	0.092	294.389	0.010	0.000
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	0.047	0.529	0.424	0.002	0.004	0.004	211.860	0.012	0.000
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	0.065	1.094	1.345	0.002	0.079	0.073	195.356	0.014	0.000
	Vibratory roller	44 hp				0	0.179	2.141	1.871	0.003	0.084	0.077	235.555	0.016	0.000
	Tractor/crawler/dozer	250 hp				0	0.049	0.586	0.642	0.003	0.004	0.004	301.159	0.017	0.000
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.964	105.274	12.798	0.107	2.313	1.407	21,487.863	0.051	0.048
	3/4 ton pickup					0	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
	3/4 ton pickup		4	4	2	10	4.067	3.333	48.994	0.061	0.502	0.228	20,361.282	2.024	1.056
															Total

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

			15	15	15	days per const							GWP	1	21	310		
			CC1 & CC4	CC1 & CC5	LV2													
	Equipment	Equipment	Hours of Operation			Annual	Annual Emissions - 2018 (tons per year)											Metric Tons
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e		CO2e/yr
Water Control - Installation	Flatbed Truck		4	12		16	1.16E-04	1.21E-04	1.61E-03	1.07E-06	8.53E-06	3.72E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01		3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.28E-05	2.59E-04	4.13E-04	6.97E-07	1.79E-05	1.65E-05	5.94E-02	4.29E-06	-	5.95E-02		5.40E-02
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	3.23E-05	5.40E-04	6.64E-04	1.13E-06	3.90E-05	3.59E-05	9.65E-02	6.75E-06	-	9.66E-02		8.77E-02
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	1.68E-04	2.02E-03	2.21E-03	1.17E-05	1.48E-05	1.36E-05	1.04E+00	5.73E-05	-	1.04E+00		9.41E-01
	Truck		0.3077		2.7692	3.0769	2.36E-05	3.57E-04	4.34E-05	3.64E-07	7.84E-06	4.77E-06	7.29E-02	1.73E-07	1.63E-07	7.29E-02		6.62E-02
	Water pump	3.5 hp		4		4	7.34E-05	3.29E-05	8.69E-04	9.47E-08	8.94E-07	8.93E-07	2.74E-03	4.15E-06	4.67E-06	4.28E-03		3.88E-03
Water Control - Removal	Flatbed Truck		4	12		16	1.16E-04	1.21E-04	1.61E-03	1.07E-06	8.53E-06	3.72E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01		3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.28E-05	2.59E-04	4.13E-04	6.97E-07	1.79E-05	1.65E-05	5.94E-02	4.29E-06	-	5.95E-02		5.40E-02
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	1.43E-04	1.72E-03	1.89E-03	9.96E-06	1.27E-05	1.17E-05	8.85E-01	4.90E-05	-	8.86E-01		8.04E-01
	Truck		0.3077			0.3077	2.36E-06	3.57E-05	4.34E-06	3.64E-08	7.84E-07	4.77E-07	7.29E-03	1.73E-08	1.63E-08	7.29E-03		6.62E-03
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	1.73E-03	1.81E-02	2.21E-02	4.76E-05	1.12E-03	1.03E-03	4.23E+00	1.56E-04	-	4.23E+00		3.84E+00
	Crane 50'	200 hp	9.4118	18.8236		28.2354	1.83E-04	2.44E-03	2.65E-03	1.42E-05	1.76E-05	1.62E-05	1.27E+00	6.62E-05	-	1.27E+00		1.15E+00
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Loader	190 hp	28.2353	37.6471		65.8824	6.73E-04	8.09E-03	8.86E-03	4.68E-05	5.94E-05	5.47E-05	4.16E+00	2.30E-04	-	4.16E+00		3.77E+00
	Chainsaw		56.7647	75.2941	0.2941	132.3529	2.44E-03	1.41E-04	1.62E-02	1.80E-06	2.54E-05	2.54E-05	4.37E-02	1.52E-04	4.80E-05	6.17E-02		5.60E-02
	1 ton pickup		0.1765		0.1765	0.353	9.40E-07	1.10E-06	1.26E-05	2.39E-08	1.91E-07	8.46E-08	7.92E-03	7.88E-07	4.11E-07	8.07E-03		7.32E-03
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	7.91E-06	9.51E-05	1.04E-04	5.49E-07	6.98E-07	6.43E-07	4.88E-02	2.70E-06	-	4.89E-02		4.43E-02
	Front end loader	540 hp	0.2964		0.2964	0.5928	2.23E-05	1.85E-04	2.00E-04	1.03E-06	1.47E-06	1.35E-06	1.03E-01	5.08E-06	-	1.03E-01		9.32E-02
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	5.07E-06	6.10E-05	4.77E-05	2.34E-07	4.48E-07	4.12E-07	2.38E-02	1.32E-06	-	2.38E-02		2.16E-02
	Dump truck	20cy/24 ton			1.4866	1.4866	1.14E-05	1.73E-04	2.10E-05	1.76E-07	3.79E-06	2.31E-06	3.52E-02	8.36E-08	7.87E-08	3.52E-02		3.20E-02
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	2.34E-03	1.43E-02	1.11E-02	6.56E-05	1.09E-04	1.00E-04	5.83E+00	2.11E-04	-	5.83E+00		5.29E+00
	Air Compressor	50 hp		32		32	1.00E-03	1.22E-03	8.76E-02	6.59E-06	4.15E-05	4.14E-05	5.42E-01	5.67E-05	1.00E-04	5.74E-01		5.21E-01
	Crane 126'	350 hp	5.1111	5.1111		10.2222	1.16E-04	1.54E-03	1.27E-03	6.32E-06	1.11E-05	1.02E-05	6.44E-01	3.37E-05	-	6.44E-01		5.85E-01
	Crane 50'	263 hp	44.4571	44.4571		88.9142	7.56E-04	1.00E-02	8.31E-03	4.13E-05	7.25E-05	6.67E-05	4.21E+00	2.20E-04	-	4.21E+00		3.82E+00
	Crane 210'	230 hp	16	16		32	2.39E-04	3.17E-03	3.46E-03	1.86E-05	2.29E-05	2.11E-05	1.65E+00	8.62E-05	-	1.65E+00		1.50E+00
	Excavator	115 hp	32	16	24	72	5.79E-04	9.99E-03	1.80E-02	2.98E-05	7.15E-04	6.58E-04	2.54E+00	1.94E-04	-	2.54E+00		2.31E+00
	Excavator	430 hp	8	8	12	28	6.22E-04	7.03E-03	5.63E-03	2.76E-05	5.23E-05	4.81E-05	2.81E+00	1.55E-04	-	2.81E+00		2.55E+00
	Loader	190 hp	72	64	12	148	1.51E-03	1.82E-02	1.99E-02	1.05E-04	1.34E-04	1.23E-04	9.33E+00	5.16E-04	-	9.35E+00		8.48E+00
	Front end loader	180 hp	4.6667	4.6667		9.3334	1.18E-04	9.77E-04	1.03E-03	5.63E-06	7.79E-06	7.17E-06	5.00E-01	2.47E-05	-	5.01E-01		4.54E-01
	Loader/Backhoe	75 hp	11.1	11.1		22.2	1.20E-04	2.01E-03	2.47E-03	4.21E-06	1.45E-04	1.33E-04	3.59E-01	2.51E-05	-	3.59E-01		3.26E-01
	Tractor/crawler/dozer	250 hp	4	4		8	1.08E-04	1.29E-03	1.42E-03	7.47E-06	9.50E-06	8.74E-06	6.64E-01	3.67E-05	-	6.65E-01		6.03E-01
	3/4 ton pickup		72	80	12	164	7.35E-04	6.02E-04	8.86E-03	1.11E-05	9.08E-05	4.12E-05	3.68E+00	3.66E-04	1.91E-04	3.75E+00		3.40E+00
	Chainsaw		44.4571	44.4571		88.9142	1.64E-03	9.44E-05	1.09E-02	1.21E-06	1.71E-05	1.70E-05	2.93E-02	1.02E-04	3.22E-05	4.15E-02		3.76E-02
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Vibrating compactor	5.5 hp	4	4		8	9.88E-05	7.31E-05	3.61E-03	1.74E-07	5.12E-05	5.11E-05	6.11E-03	5.59E-06	7.30E-06	8.49E-03		7.70E-03
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Truck		16	16		32	2.46E-04	3.71E-03	4.51E-04	3.79E-06	8.16E-05	4.96E-05	7.58E-01	1.80E-06	1.69E-06	7.59E-01		6.88E-01
	Asphalt distributor	3000 gal	4	4		8	6.14E-05	9.28E-04	1.13E-04	9.47E-07	2.04E-05	1.24E-05	1.89E-01	4.50E-07	4.23E-07	1.90E-01		1.72E-01
	Suburban	3/4 ton	4	4		8	3.59E-05	2.94E-05	4.32E-04	5.40E-07	4.43E-06	2.01E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01		1.66E-01
Disposal	Truck	35 ton	40	40		80	5.78E-04	6.04E-04	8.03E-03	5.37E-06	4.27E-05	1.86E-05	1.80E+00	4.06E-04	1.88E-04	1.86E+00		1.69E+00
	Truck	75 ton	11.2	11.2		22.4	1.72E-04	2.60E-03	3.16E-04	2.65E-06	5.71E-05	3.47E-05	5.31E-01	1.26E-06	1.19E-06	5.31E-01		4.82E-01
Bridge Installation	Suburban	3/4 ton	12	12		24	1.08E-04	8.82E-05	1.30E-03	1.62E-06	1.33E-05	6.03E-06	5.39E-01	5.35E-05	2.79E-05	5.48E-01		4.98E-01
	Crane 210'	230 hp	24	24		48	3.59E-04	4.76E-03	5.18E-03	2.78E-05	3.44E-05	3.16E-05	2.47E+00	1.29E-04	-	2.48E+00		2.25E+00
	Crane 270'	430 hp	24	24		48	6.68E-04	8.87E-03	7.34E-03	3.65E-05	6.40E-05	5.89E-05	3.71E+00	1.94E-04	-	3.72E+00		3.37E+00
	3/4 ton pickup		24	24		48	2.15E-04	1.76E-04	2.59E-03	3.24E-06	2.66E-05	1.21E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00		9.95E-01
	Tractor/crawler/dozer	250 hp	8	8		16	2.15E-04	2.59E-03	2.83E-03	1.49E-05	1.90E-05	1.75E-05	1.33E+00	7.34E-05	-	1.33E+00		1.21E+00
	Excavator	430 hp	0.6137	0.6137		1.2274	2.73E-05	3.08E-04	2.47E-04	1.21E-06	2.29E-06	2.11E-06	1.23E-01	6.82E-06	-	1.23E-01		1.12E-01
	Truck		2.9609	2.9609		5.9218	4.55E-05	6.87E-04	8.35E-05	7.01E-07	1.51E-05	9.18E-06	1.40E-01	3.33E-07	3.13E-07	1.40E-01		1.27E-01
	Generator	7.5 hp	15.8865	15.8865		31.773	5.31E-04	3.78E-04	2.72E-02	1.31E-06	2.57E-05	2.57E-05	4.60E-02	3.00E-05	3.86E-05	5.86E-02		5.32E-02
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	9.01E-05	6.66E-05	3.29E-03	1.59E-07	4.67E-05	4.66E-05	5.57E-03	5.10E-06	6.66E-06	7.74E-03		7.02E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	5.44E-05	6.53E-04	7.15E-04	3.78E-06	4.80E-06	4.42E-06	3.36E-01	1.86E-05	-	3.36E-01		3.05E-01
	Truck		4.3678	4.3678		8.7356	6.71E-05	1.01E-03	1.23E-04	1.03E-06	2.23E-05	1.35E-05	2.07E-01	4.91E-07	4.62E-07	2.07E-01		1.88E-01
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	7.60E-05	1.15E-03	1.40E-04	1.17E-06	2.52E-05	1.53E-05	2.34E-01	5.56E-07	5.24E-07	2.35E-01		2.13E-01
	Asphalt paver	120 hp	0.208	0.208		0.416	2.91E-06	6.35E-05	9.42E-05	1.69E-07	4.32E-06	3.97E-06	1.44E-02	8.45E-07	-	1.44E-02		1.31E-02
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	1.11E-05	1.32E-04	1.15E-04	1.88E-07	5.18E-06	4.77E-06	1.45E-02	9.99E-07	-	1.46E-02		1.32E-02
	Chip spreader truck		0.64	0.64		1.28	9.83E-06	1.49E-04	1.81E-05	1.52E-07	3.26E-06	1.98E-06	3.03E-02	7.20E-08	6.77E-08	3.03E-02		2.75E-02
	Line striper	23 hp	0.0713	0.0713		0.1426	5.86E-07	1.52E-06	3.29E-05	9.36E-09	7.50E-08	7.49E-08	9.42E-04	3.31E-08	8.75E-08	9.70E-04		8.80E-04
	Flatbed Truck		0.0713	0.0713		0.1426	1.03E-06	1.08E-06	1.43E-05	9.57E-09	7.61E-08	3.31E-08	3.20E-03	7.24E-07	3.36E-07	3.32E-03		3.01E-03
	3/4 ton pickup		0.0713	0.0713		0.1426	6.39E-07	5.24E-07	7.70E-06	9.63E-09	7.89E-08	3.58E-08	3.20E-03	3.18E-07	1.66E-07	3.26E-03		2.96E-03
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-		-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	4.18E-04	4.72E-03	3.79E-03	1.86E-05	3.51E-05	3.23E-05	1.89E+00	1.05E-04	-	1.89E+00		1.72E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.54E-04	4.25E-03	5.23E-03	8.92E-06	3.07E-04	2.82E-04	7.60E-01	5.31E-05	-	7.61E-01		6.91E-01
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	1.56E-04	2.61E-03	3.21E-03	5.47E-06	1.88E-04	1.73E-04	4.66E-01	3.26E-05	-	4.67E-01		4.24E-01
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-		-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.61E-04	5.46E-03	6.64E-04	5.57E-06	1.20E-04	7.30E-05	1.11E+00	2.65E-06	2.49E-06	1.12E+00		1.01E+00
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-		-
	3/4 ton pickup		4	4	2	10	4.48E-05	3.67E-05	5.40E-04	6.75E-07	5.53E-06	2.51E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01		2.07E-01
							2.06E-02	**1.51E-01**	**3.17E-01**	**6.16E-04**	**4.02E-03**	**3.50E-03**	**6.38E+01**	**4.20E-03**	**8.05E-04**	**6.42E+01**		**5.82E+01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2018
Speed of Onsite Trucks	10 mph

			15	15	15	days per const												
			CC1 & CC4	CC1 & CC5	LV2													
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC1 & CC4) - 2018 (pounds per day)						Peak Daily Emissions (CC5) - 2018 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	7.71E-03	8.05E-03	1.07E-01	7.16E-05	5.69E-04	2.48E-04	2.31E-02	2.42E-02	3.21E-01	2.15E-04	1.71E-03	7.43E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.71E-03	3.46E-02	5.51E-02	9.29E-05	2.39E-03	2.20E-03	1.28E-03	2.59E-02	4.13E-02	6.97E-05	1.79E-03	1.65E-03
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	3.78E-03	6.33E-02	7.78E-02	1.33E-04	4.56E-03	4.20E-03	4.82E-03	8.08E-02	9.94E-02	1.69E-04	5.83E-03	5.36E-03
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	1.98E-02	2.38E-01	2.60E-01	1.37E-03	1.75E-03	1.61E-03	-	-	-	-	-	-
	Truck		0.3077		2.7692	3.0769	6.30E-04	9.52E-03	1.16E-03	9.71E-06	2.09E-04	1.27E-04	-	-	-	-	-	-
	Water pump	3.5 hp		4		4	-	-	-	-	-	-	1.96E-02	8.77E-03	2.32E-01	2.53E-05	2.39E-04	2.38E-04
Water Control - Removal	Flatbed Truck		4	12		16	7.71E-03	8.05E-03	1.07E-01	7.16E-05	5.69E-04	2.48E-04	2.31E-02	2.42E-02	3.21E-01	2.15E-04	1.71E-03	7.43E-04
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.71E-03	3.46E-02	5.51E-02	9.29E-05	2.39E-03	2.20E-03	1.28E-03	2.59E-02	4.13E-02	6.97E-05	1.79E-03	1.65E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	1.91E-02	2.30E-01	2.52E-01	1.33E-03	1.69E-03	1.55E-03	-	-	-	-	-	-
	Truck		0.3077			0.3077	6.30E-04	9.52E-03	1.16E-03	9.71E-06	2.09E-04	1.27E-04	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	1.98E-01	2.07E+00	2.52E+00	5.44E-03	1.29E-01	1.18E-01	2.62E-01	2.75E+00	3.35E+00	7.22E-03	1.70E-01	1.57E-01
	Crane 50'	200 hp	9.4118	18.8236		28.2354	1.63E-02	2.17E-01	2.36E-01	1.27E-03	1.56E-03	1.44E-03	3.26E-02	4.33E-01	4.71E-01	2.53E-03	3.12E-03	2.87E-03
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	7.69E-02	9.25E-01	1.01E+00	5.34E-03	6.79E-03	6.25E-03	1.03E-01	1.23E+00	1.35E+00	7.12E-03	9.06E-03	8.33E-03
	Chainsaw		56.7647	75.2941	0.2941	132.3529	2.79E-01	1.61E-02	1.85E+00	2.06E-04	2.91E-03	2.90E-03	3.70E-01	2.13E-02	2.45E+00	2.73E-04	3.86E-03	3.85E-03
	1 ton pickup		0.1765		0.1765	0.353	1.25E-04	1.47E-04	1.67E-03	3.19E-06	2.55E-05	1.13E-05	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	1.05E-03	1.27E-02	1.39E-02	7.32E-05	9.31E-05	8.57E-05	-	-	-	-	-	-
	Front end loader	540 hp	0.2964		0.2964	0.5928	2.97E-03	2.46E-02	2.67E-02	1.38E-04	1.96E-04	1.80E-04	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	6.77E-04	8.13E-03	6.36E-03	3.11E-05	5.97E-05	5.50E-05	-	-	-	-	-	-
	Dump truck	20cy/24 ton			1.4866	1.4866	-	-	-	-	-	-	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	3.11E-01	1.91E+00	1.47E+00	8.75E-03	1.45E-02	1.33E-02	3.11E-01	1.91E+00	1.47E+00	8.75E-03	1.45E-02	1.33E-02
	Air Compressor	50 hp		32		32	-	-	-	-	-	-	2.68E-01	3.26E-01	2.34E+01	1.76E-03	1.11E-02	1.10E-02
	Crane 126'	350 hp	5.1111	5.1111		10.2222	1.54E-02	2.05E-01	1.70E-01	8.42E-04	1.48E-03	1.36E-03	1.54E-02	2.05E-01	1.70E-01	8.42E-04	1.48E-03	1.36E-03
	Crane 50'	263 hp	44.4571	44.4571		88.9142	1.01E-01	1.34E+00	1.11E+00	5.51E-03	9.67E-03	8.89E-03	1.01E-01	1.34E+00	1.11E+00	5.51E-03	9.67E-03	8.89E-03
	Crane 210'	230 hp	16	16		32	3.19E-02	4.23E-01	4.61E-01	2.47E-03	3.05E-03	2.81E-03	3.19E-02	4.23E-01	4.61E-01	2.47E-03	3.05E-03	2.81E-03
	Excavator	115 hp	32	16	24	72	6.86E-02	1.18E+00	2.13E+00	3.53E-03	8.48E-02	7.80E-02	3.43E-02	5.92E-01	1.06E+00	1.76E-03	4.24E-02	3.90E-02
	Excavator	430 hp	8	8	12	28	4.74E-02	5.35E-01	4.29E-01	2.10E-03	3.98E-03	3.66E-03	4.74E-02	5.35E-01	4.29E-01	2.10E-03	3.98E-03	3.66E-03
	Loader	190 hp	72	64	12	148	1.96E-01	2.36E+00	2.58E+00	1.36E-02	1.73E-02	1.59E-02	1.74E-01	2.10E+00	2.29E+00	1.21E-02	1.54E-02	1.42E-02
	Front end loader	180 hp	4.6667	4.6667		9.3334	1.57E-02	1.30E-01	1.37E-01	7.50E-04	1.04E-03	9.56E-04	1.57E-02	1.30E-01	1.37E-01	7.50E-04	1.04E-03	9.56E-04
	Loader/Backhoe	75 hp	11.1	11.1		22.2	1.60E-02	2.68E-01	3.29E-01	5.61E-04	1.93E-02	1.78E-02	1.60E-02	2.68E-01	3.29E-01	5.61E-04	1.93E-02	1.78E-02
	Tractor/crawler/dozer	250 hp	4	4		8	1.43E-02	1.72E-01	1.89E-01	9.96E-04	1.27E-03	1.17E-03	1.43E-02	1.72E-01	1.89E-01	9.96E-04	1.27E-03	1.17E-03
	3/4 ton pickup		72	80	12	164	8.61E-02	7.05E-02	1.04E+00	1.30E-03	1.06E-02	4.82E-03	9.56E-02	7.84E-02	1.15E+00	1.44E-03	1.18E-02	5.36E-03
	Chainsaw		44.4571	44.4571		88.9142	2.19E-01	1.26E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03	2.19E-01	1.26E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	1.32E-02	9.74E-03	4.82E-01	2.32E-05	6.83E-03	6.82E-03	1.32E-02	9.74E-03	4.82E-01	2.32E-05	6.83E-03	6.82E-03
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	3.28E-02	4.95E-01	6.02E-02	5.05E-04	1.09E-02	6.62E-03	3.28E-02	4.95E-01	6.02E-02	5.05E-04	1.09E-02	6.62E-03
	Asphalt distributor	3000 gal	4	4		8	8.19E-03	1.24E-01	1.50E-02	1.26E-04	2.72E-03	1.65E-03	8.19E-03	1.24E-01	1.50E-02	1.26E-04	2.72E-03	1.65E-03
	Suburban	3/4 ton	4	4		8	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04
Disposal	Truck	35 ton	40	40		80	7.71E-02	8.05E-02	1.07E+00	7.16E-04	5.69E-03	2.48E-03	7.71E-02	8.05E-02	1.07E+00	7.16E-04	5.69E-03	2.48E-03
	Truck	75 ton	11.2	11.2		22.4	2.29E-02	3.47E-01	4.21E-02	3.54E-04	7.61E-03	4.63E-03	2.29E-02	3.47E-01	4.21E-02	3.54E-04	7.61E-03	4.63E-03
Bridge Installation	Suburban	3/4 ton	12	12		24	1.43E-02	1.18E-02	1.73E-01	2.16E-04	1.77E-03	8.04E-04	1.43E-02	1.18E-02	1.73E-01	2.16E-04	1.77E-03	8.04E-04
	Crane 210'	230 hp	24	24		48	4.78E-02	6.35E-01	6.91E-01	3.71E-03	4.58E-03	4.21E-03	4.78E-02	6.35E-01	6.91E-01	3.71E-03	4.58E-03	4.21E-03
	Crane 270'	430 hp	24	24		48	8.90E-02	1.18E+00	9.78E-01	4.86E-03	8.53E-03	7.85E-03	8.90E-02	1.18E+00	9.78E-01	4.86E-03	8.53E-03	7.85E-03
	3/4 ton pickup		24	24		48	2.87E-02	2.35E-02	3.46E-01	4.32E-04	3.54E-03	1.61E-03	2.87E-02	2.35E-02	3.46E-01	4.32E-04	3.54E-03	1.61E-03
	Tractor/crawler/dozer	250 hp	8	8		16	2.87E-02	3.45E-01	3.77E-01	1.99E-03	2.53E-03	2.33E-03	2.87E-02	3.45E-01	3.77E-01	1.99E-03	2.53E-03	2.33E-03
	Excavator	430 hp	0.6137	0.6137		1.2274	3.64E-03	4.11E-02	3.29E-02	1.61E-04	3.05E-04	2.81E-04	3.64E-03	4.11E-02	3.29E-02	1.61E-04	3.05E-04	2.81E-04
	Truck		2.9609	2.9609		5.9218	6.06E-03	9.16E-02	1.11E-02	9.35E-05	2.01E-03	1.22E-03	6.06E-03	9.16E-02	1.11E-02	9.35E-05	2.01E-03	1.22E-03
	Generator	7.5 hp	15.8865	15.8865		31.773	7.07E-02	5.03E-02	3.63E+00	1.75E-04	3.43E-03	3.42E-03	7.07E-02	5.03E-02	3.63E+00	1.75E-04	3.43E-03	3.42E-03
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	1.20E-02	8.88E-03	4.39E-01	2.12E-05	6.23E-03	6.22E-03	1.20E-02	8.88E-03	4.39E-01	2.12E-05	6.23E-03	6.22E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	7.25E-03	8.71E-02	9.54E-02	5.03E-04	6.40E-04	5.89E-04	7.25E-03	8.71E-02	9.54E-02	5.03E-04	6.40E-04	5.89E-04
	Truck		4.3678	4.3678		8.7356	8.94E-03	1.35E-01	1.64E-02	1.38E-04	2.97E-03	1.81E-03	8.94E-03	1.35E-01	1.64E-02	1.38E-04	2.97E-03	1.81E-03
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	1.01E-02	1.53E-01	1.86E-02	1.56E-04	3.36E-03	2.05E-03	1.01E-02	1.53E-01	1.86E-02	1.56E-04	3.36E-03	2.05E-03
	Asphalt paver	120 hp	0.208	0.208		0.416	3.88E-04	8.47E-03	1.26E-02	2.25E-05	5.76E-04	5.30E-04	3.88E-04	8.47E-03	1.26E-02	2.25E-05	5.76E-04	5.30E-04
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	1.48E-03	1.76E-02	1.54E-02	2.50E-05	6.91E-04	6.36E-04	1.48E-03	1.76E-02	1.54E-02	2.50E-05	6.91E-04	6.36E-04
	Chip spreader truck		0.64	0.64		1.28	1.31E-03	1.98E-02	2.41E-03	2.02E-05	4.35E-04	2.65E-04	1.31E-03	1.98E-02	2.41E-03	2.02E-05	4.35E-04	2.65E-04
	Line striper	23 hp	0.0713	0.0713		0.1426	7.82E-05	2.02E-04	4.38E-03	1.25E-06	1.00E-05	9.98E-06	7.82E-05	2.02E-04	4.38E-03	1.25E-06	1.00E-05	9.98E-06
	Flatbed Truck		0.0713	0.0713		0.1426	1.37E-04	1.44E-04	1.91E-03	1.28E-06	1.01E-05	4.42E-06	1.37E-04	1.44E-04	1.91E-03	1.28E-06	1.01E-05	4.42E-06
	3/4 ton pickup		0.0713	0.0713		0.1426	8.52E-05	6.98E-05	1.03E-03	1.28E-06	1.05E-05	4.78E-06	8.52E-05	6.98E-05	1.03E-03	1.28E-06	1.05E-05	4.78E-06
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	5.58E-02	6.30E-01	5.05E-01	2.47E-03	4.68E-03	4.31E-03	5.58E-02	6.30E-01	5.05E-01	2.47E-03	4.68E-03	4.31E-03
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.71E-02	4.54E-01	5.58E-01	9.51E-04	3.27E-02	3.01E-02	2.71E-02	4.54E-01	5.58E-01	9.51E-04	3.27E-02	3.01E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	8.31E-03	1.39E-01	1.71E-01	2.92E-04	1.00E-02	9.24E-03	1.66E-02	2.78E-01	3.42E-01	5.83E-04	2.01E-02	1.85E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.85E-02	5.82E-01	7.08E-02	5.94E-04	1.28E-02	7.78E-03	3.85E-02	5.82E-01	7.08E-02	5.94E-04	1.28E-02	7.78E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04	4.78E-03	3.92E-03	5.76E-02	7.20E-05	5.90E-04	2.68E-04
							2.38E+00	**1.82E+01**	**2.80E+01**	**7.50E-02**	**4.61E-01**	**4.01E-01**	**2.82E+00**	**1.85E+01**	**5.24E+01**	**7.61E-02**	**4.84E-01**	**4.21E-01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 1
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2018	
Speed of Onsite Trucks	10	mph

			15	15	15	days per const						
			CC1 & CC4	CC1 & CC5	LV2							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (LV2) - 2018 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	4.27E-04	8.64E-03	1.38E-02	2.32E-05	5.97E-04	5.49E-04
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	2.49E-02	3.00E-01	3.28E-01	1.73E-03	2.20E-03	2.03E-03
	Truck		0.3077		2.7692	3.0769	5.67E-03	8.57E-02	1.04E-02	8.74E-05	1.88E-03	1.15E-03
	Water pump	3.5 hp		4		4	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	12		16	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	4.27E-04	8.64E-03	1.38E-02	2.32E-05	5.97E-04	5.49E-04
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	1.91E-02	2.30E-01	2.52E-01	1.33E-03	1.69E-03	1.55E-03
	Truck		0.3077			0.3077	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	1.03E-03	1.08E-02	1.32E-02	2.84E-05	6.71E-04	6.17E-04
	Crane 50'	200 hp	9.4118	18.8236		28.2354	-	-	-	-	-	-
	Man lift	210 hp				0	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	-	-	-	-	-	-
	Chainsaw		56.7647	75.2941	0.2941	132.3529	1.45E-03	8.33E-05	9.58E-03	1.07E-06	1.51E-05	1.50E-05
	1 ton pickup		0.1765		0.1765	0.353	1.25E-04	1.47E-04	1.67E-03	3.19E-06	2.55E-05	1.13E-05
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	1.05E-03	1.27E-02	1.39E-02	7.32E-05	9.31E-05	8.57E-05
	Front end loader	540 hp	0.2964		0.2964	0.5928	2.97E-03	2.46E-02	2.67E-02	1.38E-04	1.96E-04	1.80E-04
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	6.77E-04	8.13E-03	6.36E-03	3.11E-05	5.97E-05	5.50E-05
	Dump truck	20cy/24 ton			1.4866	1.4866	3.04E-03	4.60E-02	5.59E-03	4.69E-05	1.01E-03	6.15E-04
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Air Compressor	50 hp		32		32	-	-	-	-	-	-
	Crane 126'	350 hp	5.1111	5.1111		10.2222	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	5.15E-02	8.88E-01	1.60E+00	2.65E-03	6.36E-02	5.85E-02
	Excavator	430 hp	8	8	12	28	7.11E-02	8.03E-01	6.44E-01	3.15E-03	5.97E-03	5.49E-03
	Loader	190 hp	72	64	12	148	3.27E-02	3.93E-01	4.30E-01	2.27E-03	2.89E-03	2.66E-03
	Front end loader	180 hp	4.6667	4.6667		9.3334	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	1.43E-02	1.18E-02	1.73E-01	2.16E-04	1.77E-03	8.04E-04
	Chainsaw		44.4571	44.4571		88.9142	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-
	Truck		16	16		32	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	1.35E-02	2.27E-01	2.79E-01	4.75E-04	1.64E-02	1.51E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	1.66E-02	2.78E-01	3.42E-01	5.83E-04	2.01E-02	1.85E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.93E-02	2.91E-01	3.54E-02	2.97E-04	6.40E-03	3.89E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	2.39E-03	1.96E-03	2.88E-02	3.60E-05	2.95E-04	1.34E-04
							2.82E-01	**3.63E+00**	**4.22E+00**	**1.32E-02**	**1.26E-01**	**1.12E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

	Data from EMFAC2011 (g/hr)
	Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	11/11/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV2 Equipment Report.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

			15	15	15		days per construction period (5 days per week)								
			CC2 & LV1	CC2 & LV2	CC3										
	Equipment	Equipment	Hours of Operation			Annual	Emission Factors - 2019 (g/hp-hr or g/hr)								
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck		4	4	4	12	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.043	0.834	1.340	0.002	0.058	0.054	189.378	0.014	0.000
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Truck		2.7692	2.7692		5.5384	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Water pump	3.5 hp				0	4.754	2.132	56.301	0.006	0.058	0.058	177.788	0.269	0.302
Water Control - Removal	Flatbed Truck		4	4	4	12	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.043	0.834	1.340	0.002	0.058	0.054	189.378	0.014	0.000
	Loader/Backhoe	75 hp				0	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
	Tractor/crawler/dozer	250 hp	4	4		8	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Truck		2.7692			2.7692	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	0.149	1.478	1.810	0.004	0.094	0.086	343.002	0.013	0.000
	Crane 50'	200 hp	9.4118			9.4118	0.031	0.393	0.433	0.002	0.003	0.003	203.332	0.011	0.000
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	0.054	0.457	0.333	0.002	0.003	0.003	192.823	0.005	0.000
	Loader	190 hp	28.2352	14.2656		42.5008	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Chainsaw		56.4706	28.2353	28.2353	112.9412	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039
	1 ton pickup			0.0176		0.0176	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056
	Tractor/crawler/dozer	250 hp				0	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Front end loader	540 hp		0.0148		0.0148	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000
	Dump truck	20cy/24 ton		0.1487		0.1487	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	0.103	0.590	0.460	0.003	0.005	0.004	237.822	0.009	0.000
	Air Compressor	50 hp				0	0.601	0.717	53.729	0.004	0.024	0.023	307.156	0.034	0.058
	Crane 126'	350 hp				0	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
	Crane 50'	263 hp	3.3028	3.3028		6.6056	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
	Crane 210'	230 hp				0	0.031	0.393	0.433	0.002	0.003	0.003	203.332	0.011	0.000
	Excavator	115 hp	128	32	48	208	0.066	1.092	1.968	0.003	0.079	0.073	278.045	0.021	0.000
	Excavator	430 hp	80	32	48	160	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
	Loader	190 hp	112	64	48	224	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Front end loader	180 hp				0	0.068	0.534	0.569	0.003	0.004	0.004	270.062	0.014	0.000
	Loader/Backhoe	75 hp				0	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	3/4 ton pickup		112	64	48	224	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Chainsaw		3.3028	3.3028		6.6056	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039
Road Realignment	Vibratory roller	145 hp				0	0.048	0.908	1.585	0.003	0.055	0.050	280.051	0.015	0.000
	Vibrating compactor	5.5 hp				0	2.038	1.506	74.477	0.004	1.056	1.054	125.946	0.115	0.150
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	0.061	1.825	0.996	0.003	0.063	0.058	241.833	0.026	0.000
	Truck		39.6577	6.1748	6.1748	52.0073	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Suburban	3/4 ton				0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Disposal	Truck	35 ton	4	4	4	12	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	Truck	75 ton				0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Crane 210'	230 hp	18.8235			18.8235	0.031	0.393	0.433	0.002	0.003	0.003	203.332	0.011	0.000
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	Tractor/crawler/dozer	250 hp				0	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Excavator	430 hp				0	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
	Truck					0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Generator	7.5 hp				0	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147
Highway Replacement	Vibrating compactor	5.5 hp				0	2.038	1.506	74.477	0.004	1.056	1.054	125.946	0.115	0.150
	Tractor/crawler/dozer	250 hp				0	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Truck					0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Asphalt distributor	3000 gal				0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Asphalt paver	120 hp				0	0.056	1.162	1.747	0.003	0.080	0.073	261.288	0.017	0.000
	Vibrating roller/compactor	33 hp				0	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000
	Chip spreader truck					0	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	Line striper	23 hp				0	0.172	0.435	9.082	0.003	0.020	0.020	257.050	0.010	0.025
	Flatbed Truck					0	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135
	3/4 ton pickup					0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	0.172	0.435	9.082	0.003	0.020	0.020	257.050	0.010	0.025
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	0.075	1.502	1.911	0.003	0.104	0.096	291.139	0.017	0.000
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	0.119	1.487	1.732	0.003	0.102	0.094	294.396	0.011	0.000
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
	Loader/Backhoe	92 hp		9.4118		9.4118	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000
	Vibratory roller	44 hp				0	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000
	Tractor/crawler/dozer	250 hp				0	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048
	3/4 ton pickup					0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
	3/4 ton pickup			2		2	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056
															Total

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

			15	15	15	days per const											
			CC2 & LV1	CC2 & LV2	CC3							GWP	1	21	310		
	Equipment	Equipment	Hours of Operation			Annual	Annual Emissions - 2019 (tons per year)										Metric Tons
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	CO2e/yr
Water Control - Installation	Flatbed Truck		4	4	4	12	7.30E-05	7.88E-05	1.01E-03	7.99E-07	6.33E-06	2.73E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	2.04E-05	3.92E-04	6.30E-04	1.04E-06	2.74E-05	2.52E-05	8.91E-02	6.80E-06	-	8.92E-02	8.09E-02
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	6.00E-05	9.58E-04	1.19E-03	1.99E-06	6.99E-05	6.43E-05	1.70E-01	1.27E-05	-	1.70E-01	1.54E-01
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	2.36E-04	2.70E-03	2.93E-03	1.55E-05	2.00E-05	1.84E-05	1.38E+00	7.61E-05	-	1.38E+00	1.25E+00
	Truck		2.7692	2.7692		5.5384	4.18E-05	5.89E-04	7.73E-05	6.53E-07	1.36E-05	8.11E-06	1.31E-01	3.11E-07	2.93E-07	1.31E-01	1.19E-01
	Water pump	3.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	7.30E-05	7.88E-05	1.01E-03	7.99E-07	6.33E-06	2.73E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	2.04E-05	3.92E-04	6.30E-04	1.04E-06	2.74E-05	2.52E-05	8.91E-02	6.80E-06	-	8.92E-02	8.09E-02
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	1.14E-04	1.30E-03	1.42E-03	7.47E-06	9.66E-06	8.88E-06	6.64E-01	3.67E-05	-	6.65E-01	6.03E-01
	Truck		2.7692			2.7692	2.09E-05	2.94E-04	3.87E-05	3.26E-07	6.80E-06	4.06E-06	6.55E-02	1.56E-07	1.47E-07	6.55E-02	5.94E-02
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.57E-03	1.56E-02	1.92E-02	4.09E-05	9.90E-04	9.11E-04	3.63E+00	1.42E-04	-	3.63E+00	3.30E+00
	Crane 50'	200 hp	9.4118			9.4118	6.47E-05	8.16E-04	8.99E-04	4.75E-06	5.94E-06	5.47E-06	4.22E-01	2.33E-05	-	4.22E-01	3.83E-01
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	3.55E-04	2.99E-03	2.18E-03	1.24E-05	2.13E-05	1.96E-05	1.26E+00	3.21E-05	-	1.26E+00	1.14E+00
	Loader	190 hp	28.2352	14.2656		42.5008	4.60E-04	5.25E-03	5.72E-03	3.02E-05	3.90E-05	3.59E-05	2.68E+00	1.48E-04	-	2.68E+00	2.43E+00
	Chainsaw		56.4706	28.2353	28.2353	112.9412	2.19E-03	1.20E-04	1.38E-02	1.54E-06	2.17E-05	2.17E-05	3.73E-02	1.36E-04	4.09E-05	5.28E-02	4.79E-02
	1 ton pickup			0.0176		0.0176	3.82E-08	4.89E-08	5.17E-07	1.18E-09	9.41E-09	4.12E-09	3.95E-04	3.93E-08	2.05E-08	4.02E-04	3.65E-04
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	5.97E-07	4.66E-06	5.40E-06	2.74E-08	3.77E-08	3.47E-08	2.72E-03	1.45E-07	-	2.73E-03	2.47E-03
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	2.67E-07	3.04E-06	2.38E-06	1.17E-08	2.26E-08	2.08E-08	1.19E-03	6.57E-08	-	1.19E-03	1.08E-03
	Dump truck	20cy/24 ton		0.1487		0.1487	1.12E-06	1.58E-05	2.08E-06	1.75E-08	3.65E-07	2.18E-07	3.52E-03	8.36E-09	7.87E-09	3.52E-03	3.19E-03
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	1.87E-04	1.07E-03	8.37E-04	4.87E-06	8.28E-06	7.61E-06	4.33E-01	1.69E-05	-	4.33E-01	3.93E-01
	Air Compressor	50 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	5.95E-05	7.51E-04	6.26E-04	3.07E-06	5.47E-06	5.03E-06	3.13E-01	1.73E-05	-	3.13E-01	2.84E-01
	Crane 210'	230 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	1.75E-03	2.88E-02	5.19E-02	8.60E-05	2.09E-03	1.92E-03	7.33E+00	5.60E-04	-	7.34E+00	6.66E+00
	Excavator	430 hp	80	32	48	160	3.77E-03	4.05E-02	3.22E-02	1.58E-04	3.04E-04	2.80E-04	1.61E+01	8.89E-04	-	1.61E+01	1.46E+01
	Loader	190 hp	112	64	48	224	2.43E-03	2.77E-02	3.01E-02	1.59E-04	2.05E-04	1.89E-04	1.41E+01	7.81E-04	-	1.41E+01	1.28E+01
	Front end loader	180 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	4.50E-04	5.13E-03	5.59E-03	2.95E-05	3.81E-05	3.51E-05	2.62E+00	1.45E-04	-	2.62E+00	2.38E+00
	3/4 ton pickup		112	64	48	224	8.66E-04	7.48E-04	1.05E-02	1.50E-05	1.23E-04	5.50E-05	5.03E+00	5.00E-04	2.61E-04	5.12E+00	4.64E+00
	Chainsaw		3.3028	3.3028		6.6056	1.28E-04	7.02E-06	8.07E-04	8.98E-08	1.27E-06	1.27E-06	2.18E-03	7.97E-06	2.39E-06	3.09E-03	2.80E-03
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	1.09E-05	3.29E-04	1.79E-04	5.52E-07	1.14E-05	1.05E-05	4.35E-02	4.74E-06	-	4.36E-02	3.96E-02
	Truck		39.6577	6.1748	6.1748	52.0073	3.93E-04	5.53E-03	7.26E-04	6.13E-06	1.28E-04	7.62E-05	1.23E+00	2.92E-06	2.75E-06	1.23E+00	1.12E+00
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	4.70E-05	6.61E-04	8.69E-05	7.34E-07	1.53E-05	9.11E-06	1.47E-01	3.50E-07	3.29E-07	1.47E-01	1.34E-01
	Suburban	3/4 ton				0	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	7.30E-05	7.88E-05	1.01E-03	7.99E-07	6.33E-06	2.73E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Truck	75 ton				0	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	1.46E-04	1.26E-04	1.77E-03	2.52E-06	2.06E-05	9.25E-06	8.45E-01	8.40E-05	4.38E-05	8.60E-01	7.80E-01
	Crane 210'	230 hp	18.8235			18.8235	1.49E-04	1.88E-03	2.07E-03	1.09E-05	1.37E-05	1.26E-05	9.70E-01	5.37E-05	-	9.71E-01	8.81E-01
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	8.32E-04	1.05E-02	8.75E-03	4.29E-05	7.64E-05	7.03E-05	4.37E+00	2.42E-04	-	4.37E+00	3.97E+00
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	2.91E-04	2.51E-04	3.54E-03	5.05E-06	4.12E-05	1.85E-05	1.69E+00	1.68E-04	8.76E-05	1.72E+00	1.56E+00
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	1.01E-04	2.54E-04	5.30E-03	1.49E-06	1.19E-05	1.19E-05	1.50E-01	5.69E-06	1.43E-05	1.55E-01	1.40E-01
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	1.46E-04	2.39E-03	4.39E-03	7.89E-06	1.52E-04	1.40E-04	7.02E-01	5.36E-05	-	7.03E-01	6.37E-01
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	8.67E-04	1.09E-02	9.11E-03	4.47E-05	7.96E-05	7.33E-05	4.55E+00	2.52E-04	-	4.56E+00	4.13E+00
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	1.96E-04	3.90E-03	4.96E-03	8.86E-06	2.70E-04	2.48E-04	7.55E-01	4.47E-05	-	7.56E-01	6.86E-01
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	2.47E-04	3.09E-03	3.59E-03	7.17E-06	2.12E-04	1.95E-04	6.11E-01	2.22E-05	-	6.11E-01	5.55E-01
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	8.87E-04	9.52E-03	7.57E-03	3.71E-05	7.15E-05	6.58E-05	3.78E+00	2.09E-04	-	3.78E+00	3.43E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.69E-04	4.29E-03	5.34E-03	8.92E-06	3.14E-04	2.88E-04	7.60E-01	5.68E-05	-	7.61E-01	6.91E-01
	Loader/Backhoe	92 hp		9.4118		9.4118	6.60E-05	1.05E-03	1.31E-03	2.19E-06	7.69E-05	7.08E-05	1.86E-01	1.39E-05	-	1.87E-01	1.69E-01
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.55E-04	5.00E-03	6.57E-04	5.55E-06	1.16E-04	6.89E-05	1.11E+00	2.65E-06	2.49E-06	1.11E+00	1.01E+00
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2	7.74E-06	6.68E-06	9.39E-05	1.34E-07	1.09E-06	4.91E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
							2.00E-02	**1.96E-01**	**2.44E-01**	**7.68E-04**	**5.65E-03**	**5.02E-03**	**7.93E+01**	**4.94E-03**	**5.43E-04**	**7.96E+01**	**7.22E+01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

			15	15	15	days per const												
			CC2 & LV1	CC2 & LV2	CC3													
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC2 & LV1) - 2019 (pounds per day)						Peak Daily Emissions (CC2 & LV2) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	2.27E-03	4.36E-02	7.00E-02	1.16E-04	3.04E-03	2.80E-03	1.81E-03	3.49E-02	5.60E-02	9.29E-05	2.44E-03	2.24E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	8.00E-03	1.28E-01	1.59E-01	2.65E-04	9.32E-03	8.58E-03	4.00E-03	6.39E-02	7.94E-02	1.33E-04	4.66E-03	4.29E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	4.17E-02	4.75E-01	5.17E-01	2.73E-03	3.53E-03	3.24E-03	2.14E-02	2.44E-01	2.65E-01	1.40E-03	1.81E-03	1.67E-03
	Truck		2.7692	2.7692		5.5384	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
	Water pump	3.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	2.27E-03	4.36E-02	7.00E-02	1.16E-04	3.04E-03	2.80E-03	1.81E-03	3.49E-02	5.60E-02	9.29E-05	2.44E-03	2.24E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	1.52E-02	1.73E-01	1.89E-01	9.96E-04	1.29E-03	1.18E-03	1.52E-02	1.73E-01	1.89E-01	9.96E-04	1.29E-03	1.18E-03
	Truck		2.7692			2.7692	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	2.10E-01	2.09E+00	2.55E+00	5.45E-03	1.32E-01	1.21E-01	1.05E-01	1.04E+00	1.28E+00	2.73E-03	6.60E-02	6.08E-02
	Crane 50'	200 hp	9.4118			9.4118	1.72E-02	2.18E-01	2.40E-01	1.27E-03	1.58E-03	1.46E-03	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	3.16E-02	2.65E-01	1.94E-01	1.10E-03	1.90E-03	1.75E-03	3.16E-02	2.65E-01	1.94E-01	1.10E-03	1.90E-03	1.75E-03
	Loader	190 hp	28.2352	14.2656		42.5008	8.16E-02	9.31E-01	1.01E+00	5.34E-03	6.91E-03	6.35E-03	4.12E-02	4.70E-01	5.12E-01	2.70E-03	3.49E-03	3.21E-03
	Chainsaw		56.4706	28.2353	28.2353	112.9412	2.92E-01	1.60E-02	1.84E+00	2.05E-04	2.89E-03	2.89E-03	1.46E-01	8.00E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176	-	-	-	-	-	-	1.02E-05	1.30E-05	1.38E-04	3.16E-07	2.51E-06	1.10E-06
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	-	-	-	-	-	-	1.59E-04	1.24E-03	1.44E-03	7.30E-06	1.01E-05	9.26E-06
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	-	-	-	-	-	-	7.11E-05	8.11E-04	6.35E-04	3.11E-06	6.02E-06	5.54E-06
	Dump truck	20cy/24 ton		0.1487		0.1487	-	-	-	-	-	-	2.99E-04	4.21E-03	5.54E-04	4.67E-06	9.74E-05	5.81E-05
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	2.49E-02	1.43E-01	1.12E-01	6.49E-04	1.10E-03	1.02E-03	2.49E-02	1.43E-01	1.12E-01	6.49E-04	1.10E-03	1.02E-03
	Air Compressor	50 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	7.94E-03	1.00E-01	8.35E-02	4.09E-04	7.29E-04	6.71E-04	7.94E-03	1.00E-01	8.35E-02	4.09E-04	7.29E-04	6.71E-04
	Crane 210'	230 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	2.88E-01	4.72E+00	8.51E+00	1.41E-02	3.42E-01	3.15E-01	7.19E-02	1.18E+00	2.13E+00	3.53E-03	8.56E-02	7.87E-02
	Excavator	430 hp	80	32	48	160	5.03E-01	5.39E+00	4.29E+00	2.10E-02	4.05E-02	3.73E-02	2.01E-01	2.16E+00	1.72E+00	8.41E-03	1.62E-02	1.49E-02
	Loader	190 hp	112	64	48	224	3.24E-01	3.69E+00	4.02E+00	2.12E-02	2.74E-02	2.52E-02	1.85E-01	2.11E+00	2.30E+00	1.21E-02	1.57E-02	1.44E-02
	Front end loader	180 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	7.89E-02	9.00E-01	9.79E-01	5.17E-03	6.68E-03	6.14E-03	2.06E-02	2.35E-01	2.55E-01	1.35E-03	1.74E-03	1.60E-03
	3/4 ton pickup		112	64	48	224	1.16E-01	9.97E-02	1.40E+00	2.00E-03	1.63E-02	7.34E-03	6.60E-02	5.70E-02	8.02E-01	1.14E-03	9.34E-03	4.19E-03
	Chainsaw		3.3028	3.3028		6.6056	1.71E-02	9.35E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04	1.71E-02	9.35E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	1.92E-03	5.76E-02	3.14E-02	9.68E-05	2.00E-03	1.84E-03	5.01E-04	1.50E-02	8.20E-03	2.53E-05	5.21E-04	4.80E-04
	Truck		39.6577	6.1748	6.1748	52.0073	7.98E-02	1.12E+00	1.48E-01	1.25E-03	2.60E-02	1.55E-02	1.24E-02	1.75E-01	2.30E-02	1.94E-04	4.04E-03	2.41E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	8.23E-03	1.16E-01	1.52E-02	1.29E-04	2.68E-03	1.60E-03	2.15E-03	3.02E-02	3.97E-03	3.35E-05	6.99E-04	4.17E-04
	Suburban	3/4 ton				0	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Truck	75 ton				0	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03	9.71E-03	8.38E-03	1.18E-01	1.68E-04	1.37E-03	6.16E-04
	Crane 210'	230 hp	18.8235			18.8235	3.97E-02	5.00E-01	5.52E-01	2.91E-03	3.64E-03	3.35E-03	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	7.40E-02	9.33E-01	7.78E-01	3.81E-03	6.79E-03	6.25E-03	7.40E-02	9.33E-01	7.78E-01	3.81E-03	6.79E-03	6.25E-03
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	3.88E-02	3.35E-02	4.72E-01	6.73E-04	5.49E-03	2.47E-03	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	1.61E-02	4.06E-02	8.48E-01	2.38E-04	1.91E-03	1.91E-03	5.37E-03	1.35E-02	2.83E-01	7.95E-05	6.37E-04	6.36E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	1.95E-02	3.18E-01	5.85E-01	1.05E-03	2.03E-02	1.87E-02	9.76E-03	1.59E-01	2.93E-01	5.26E-04	1.01E-02	9.33E-03
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	1.39E-01	1.75E+00	1.46E+00	7.15E-03	1.27E-02	1.17E-02	4.62E-02	5.83E-01	4.86E-01	2.38E-03	4.25E-03	3.91E-03
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	2.61E-02	5.19E-01	6.61E-01	1.18E-03	3.60E-02	3.31E-02	1.31E-02	2.60E-01	3.30E-01	5.91E-04	1.80E-02	1.66E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	3.29E-02	4.11E-01	4.79E-01	9.55E-04	2.82E-02	2.60E-02	1.64E-02	2.06E-01	2.40E-01	4.78E-04	1.41E-02	1.30E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	1.18E-01	1.27E+00	1.01E+00	4.95E-03	9.54E-03	8.77E-03	5.91E-02	6.35E-01	5.05E-01	2.47E-03	4.77E-03	4.39E-03
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.87E-02	4.58E-01	5.70E-01	9.51E-04	3.34E-02	3.08E-02	2.87E-02	4.58E-01	5.70E-01	9.51E-04	3.34E-02	3.08E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	-	-	-	-	-	-	1.76E-02	2.81E-01	3.49E-01	5.83E-04	2.05E-02	1.89E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2	-	-	-	-	-	-	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
							2.77E+00	**2.77E+01**	**3.46E+01**	**1.09E-01**	**8.10E-01**	**7.19E-01**	**1.34E+00**	**1.27E+01**	**1.56E+01**	**5.05E-02**	**3.54E-01**	**3.13E-01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 2
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2019
Speed of Onsite Trucks	10 mph

			15	15	15	days per const						
			CC2 & LV1	CC2 & LV2	CC3							
	Equipment	Equipment	Hours of Operation			Annual	Peak Daily Emissions (CC3) - 2019 (pounds per day)					
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.36E-03	2.62E-02	4.20E-02	6.97E-05	1.83E-03	1.68E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	4.00E-03	6.39E-02	7.94E-02	1.33E-04	4.66E-03	4.29E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	-	-	-	-	-	-
	Truck		2.7692	2.7692		5.5384	-	-	-	-	-	-
	Water pump	3.5 hp				0	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	1.36E-03	2.62E-02	4.20E-02	6.97E-05	1.83E-03	1.68E-03
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	-	-	-	-	-	-
	Truck		2.7692			2.7692	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	1.05E-01	1.04E+00	1.28E+00	2.72E-03	6.60E-02	6.07E-02
	Crane 50'	200 hp	9.4118			9.4118	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	3.16E-02	2.65E-01	1.94E-01	1.10E-03	1.90E-03	1.75E-03
	Loader	190 hp	28.2352	14.2656		42.5008	-	-	-	-	-	-
	Chainsaw		56.4706	28.2353	28.2353	112.9412	1.46E-01	8.00E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		0.0176	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	-	-	-	-	-	-
	Dump truck	20cy/24 ton		0.1487		0.1487	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Air Compressor	50 hp				0	-	-	-	-	-	-
	Crane 126'	350 hp				0	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	-	-	-	-	-	-
	Crane 210'	230 hp				0	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	1.08E-01	1.77E+00	3.19E+00	5.29E-03	1.28E-01	1.18E-01
	Excavator	430 hp	80	32	48	160	3.02E-01	3.24E+00	2.57E+00	1.26E-02	2.43E-02	2.24E-02
	Loader	190 hp	112	64	48	224	1.39E-01	1.58E+00	1.72E+00	9.08E-03	1.17E-02	1.08E-02
	Front end loader	180 hp				0	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	2.06E-02	2.35E-01	2.55E-01	1.35E-03	1.74E-03	1.60E-03
	3/4 ton pickup		112	64	48	224	4.95E-02	4.27E-02	6.01E-01	8.58E-04	7.01E-03	3.14E-03
	Chainsaw		3.3028	3.3028		6.6056	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	5.01E-04	1.50E-02	8.20E-03	2.53E-05	5.21E-04	4.80E-04
	Truck		39.6577	6.1748	6.1748	52.0073	1.24E-02	1.75E-01	2.30E-02	1.94E-04	4.04E-03	2.41E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	2.15E-03	3.02E-02	3.97E-03	3.35E-05	6.99E-04	4.17E-04
	Suburban	3/4 ton				0	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04
	Truck	75 ton				0	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	9.71E-03	8.38E-03	1.18E-01	1.68E-04	1.37E-03	6.16E-04
	Crane 210'	230 hp	18.8235			18.8235	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	7.40E-02	9.33E-01	7.78E-01	3.81E-03	6.79E-03	6.25E-03
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	1.94E-02	1.68E-02	2.36E-01	3.37E-04	2.75E-03	1.23E-03
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Excavator	430 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Generator	7.5 hp				0	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Truck					0	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	-	-	-	-	-	-
	Asphalt paver	120 hp				0	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	-	-	-	-	-	-
	Chip spreader truck					0	-	-	-	-	-	-
	Line striper	23 hp				0	-	-	-	-	-	-
	Flatbed Truck					0	-	-	-	-	-	-
	3/4 ton pickup					0	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	5.37E-03	1.35E-02	2.83E-01	7.95E-05	6.37E-04	6.36E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	9.76E-03	1.59E-01	2.93E-01	5.26E-04	1.01E-02	9.33E-03
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	4.62E-02	5.83E-01	4.86E-01	2.38E-03	4.25E-03	3.91E-03
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	1.31E-02	2.60E-01	3.30E-01	5.91E-04	1.80E-02	1.66E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	1.64E-02	2.06E-01	2.40E-01	4.78E-04	1.41E-02	1.30E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	5.91E-02	6.35E-01	5.05E-01	2.47E-03	4.77E-03	4.39E-03
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	1.43E-02	2.29E-01	2.85E-01	4.75E-04	1.67E-02	1.54E-02
	Loader/Backhoe	92 hp		9.4118		9.4118	-	-	-	-	-	-
	Vibratory roller	44 hp				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0	-	-	-	-	-	-
	3/4 ton pickup			2		2	-	-	-	-	-	-
							1.23E+00	**1.19E+01**	**1.48E+01**	**4.55E-02**	**3.43E-01**	**3.07E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

	Data from EMFAC2011 (g/hr)
	Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2018
Birthday of Martin Luther King, Jr.	1/15/2018
Washington's Birthday	2/19/2018
Memorial Day	5/28/2018
Independence Day	7/4/2018
Labor Day	9/3/2018
Columbus Day	10/8/2018
Veterans Day	11/12/2018
Thanksgiving Day	11/22/2018
Christmas Day	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC2 Equipment Report.pdf
CC3 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV1 Equipment Report.pdf
LV2 Equipment Report.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2020	
Speed of Onsite Trucks	10	mph

50 days per construction period (5 days per week)

			LV3 & LV4	LV2										
	Equipment	Equipment	Hours of Operation		Annual	Emission Factors - 2020 (g/hp-hr or g/hr)								
Activity	Type	Size	4/1-6/9	6/10-6/30	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O
Water Control - Installation	Flatbed Truck				0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	Crane 44'	80 hp	49.6732	0.4444	50.1176	0.046	0.839	1.341	0.002	0.059	0.054	189.413	0.014	0.000
	Loader/Backhoe	75 hp	34.624		34.624	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Truck		34.1719	2.7692	36.9411	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Water pump	3.5 hp			0	4.754	2.132	56.303	0.006	0.058	0.058	177.795	0.269	0.303
Water Control - Removal	Flatbed Truck				0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	Crane 44'	80 hp		0.4444	0.4444	0.046	0.839	1.341	0.002	0.059	0.054	189.413	0.014	0.000
	Loader/Backhoe	75 hp	32		32	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Truck		34.1719		34.1719	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	0.158	1.499	1.845	0.004	0.097	0.089	345.852	0.014	0.000
	Crane 50'	200 hp			0	0.033	0.395	0.433	0.002	0.003	0.003	203.330	0.011	0.000
	Man lift	210 hp			0	0.057	0.459	0.336	0.002	0.003	0.003	192.831	0.005	0.000
	Loader	190 hp	5.9294	0.0074	5.9368	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Chainsaw		5.8824	0.0147	5.8971	2.199	0.115	13.188	0.001	0.021	0.021	35.645	0.137	0.039
	1 ton pickup			0.0088	0.0088	1.653	2.282	22.588	0.061	0.481	0.208	20,361.281	2.024	1.056
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Front end loader	540 hp	5.9294	0.0074	5.9368	0.072	0.534	0.583	0.003	0.004	0.004	291.179	0.016	0.000
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	0.055	0.604	0.471	0.002	0.005	0.004	234.954	0.013	0.000
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Demolition	Air Compressor	250 hp			0	0.110	0.596	0.468	0.003	0.005	0.004	237.866	0.010	0.000
	Air Compressor	50 hp			0	0.634	0.740	57.796	0.004	0.024	0.023	307.061	0.036	0.059
	Crane 126'	350 hp			0	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
	Crane 50'	263 hp			0	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
	Crane 210'	230 hp			0	0.033	0.395	0.433	0.002	0.003	0.003	203.330	0.011	0.000
	Excavator	115 hp		40	40	0.070	1.104	1.968	0.003	0.081	0.074	278.042	0.021	0.000
	Excavator	430 hp	80	20	100	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
	Loader	190 hp		20	20	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Front end loader	180 hp			0	0.073	0.539	0.576	0.003	0.004	0.004	270.055	0.015	0.000
	Loader/Backhoe	75 hp	350		350	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000
	Tractor/crawler/dozer	250 hp	50.068		50.068	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	3/4 ton pickup		72	20	92	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Chainsaw				0	2.199	0.115	13.188	0.001	0.021	0.021	35.645	0.137	0.039
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	0.050	0.911	1.610	0.003	0.056	0.051	280.061	0.016	0.000
	Vibrating compactor	5.5 hp	5.1724		5.1724	2.038	1.507	74.509	0.004	1.056	1.054	126.001	0.115	0.151
	Vibratory compactor	7.5 hp			0	0.064	1.830	0.997	0.003	0.064	0.059	242.190	0.026	0.000
	Truck		372.9363		372.9363	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Asphalt distributor	3000 gal	22.9363		22.9363	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Suburban	3/4 ton			0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Disposal	Truck	35 ton			0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	Truck	75 ton			0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
Bridge Installation	Suburban	3/4 ton			0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Crane 210'	230 hp			0	0.033	0.395	0.433	0.002	0.003	0.003	203.330	0.011	0.000
	Crane 270'	430 hp			0	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
	3/4 ton pickup				0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	Tractor/crawler/dozer	250 hp			0	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Excavator	430 hp			0	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
	Truck				0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Generator	7.5 hp			0	2.020	1.438	103.611	0.005	0.098	0.098	175.214	0.114	0.147
Highway Replacement	Vibrating compactor	5.5 hp			0	2.038	1.507	74.509	0.004	1.056	1.054	126.001	0.115	0.151
	Tractor/crawler/dozer	250 hp			0	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Truck				0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Asphalt distributor	3000 gal			0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Asphalt paver	120 hp			0	0.059	1.174	1.781	0.003	0.081	0.075	261.349	0.018	0.000
	Vibrating roller/compactor	33 hp			0	0.208	2.198	2.035	0.003	0.090	0.083	235.495	0.019	0.000
	Chip spreader truck				0	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	Line striper	23 hp			0	0.184	0.455	9.176	0.003	0.020	0.020	256.420	0.010	0.025
	Flatbed Truck				0	4.669	5.192	64.306	0.060	0.474	0.202	20,361.283	4.604	2.135
	3/4 ton pickup				0	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
Abutments	Roto trowel concrete finisher	9 hp			0	0.184	0.455	9.176	0.003	0.020	0.020	256.420	0.010	0.025
	Crane 80'	130 hp			0	0.046	0.712	1.302	0.002	0.046	0.043	208.093	0.016	0.000
	Crane 114'	430 hp			0	0.033	0.395	0.327	0.002	0.003	0.003	163.221	0.009	0.000
	Auger drill	100 hp			0	0.076	1.495	1.924	0.003	0.104	0.096	291.131	0.018	0.000
	Water pump	80 hp			0	0.125	1.494	1.749	0.003	0.104	0.095	294.362	0.011	0.000
Landscaping	Excavator	430 hp	144.7059		144.7059	0.052	0.532	0.424	0.002	0.004	0.004	211.853	0.012	0.000
	Loader/Backhoe	75 hp	8	9.4118	17.4118	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000
	Loader/Backhoe	92 hp		9.4118	9.4118	0.073	1.110	1.383	0.002	0.082	0.075	195.356	0.015	0.000
	Vibratory roller	44 hp	144.7059		144.7059	0.208	2.198	2.035	0.003	0.090	0.083	235.495	0.019	0.000
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	0.054	0.593	0.642	0.003	0.004	0.004	301.149	0.017	0.000
	Dump truck	12 cy	8	9.4118	17.4118	6.632	77.738	12.413	0.107	2.027	1.144	21,394.036	0.051	0.048
	3/4 ton pickup		181.1765		181.1765	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
	3/4 ton pickup		8	2	10	3.113	2.807	37.915	0.061	0.492	0.219	20,361.282	2.024	1.056
														Total

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2020	
Speed of Onsite Trucks	10	mph

			50	15	days per const						GWP	1	21	310								
			LV3 & LV4	**LV2**																		
	Equipment	**Equipment**	**Hours of Operation**		**Annual**	**Annual Emissions - 2020 (tons per year)**										**Metric Tons**	**Peak Daily Emissions (LV3 & LV4) - 2020 (pounds per day)**					
Activity	**Type**	**Size**	**4/1-6/9**	**6/10-6/30**	**Hours**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2e**	**CO2e/yr**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	2.02E-04	3.71E-03	5.92E-03	9.82E-06	2.62E-04	2.41E-04	8.37E-01	6.39E-05	-	8.38E-01	7.61E-01	1.60E-02	2.94E-01	4.70E-01	7.79E-04	2.07E-02	1.91E-02
	Loader/Backhoe	75 hp	34.624		34.624	2.08E-04	3.18E-03	3.96E-03	6.56E-06	2.34E-04	2.16E-04	5.59E-01	4.27E-05	-	5.60E-01	5.08E-01	1.66E-02	2.54E-01	3.17E-01	5.25E-04	1.88E-02	1.73E-02
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	1.98E-03	2.15E-02	2.33E-02	1.23E-04	1.61E-04	1.48E-04	1.09E+01	6.04E-04	-	1.09E+01	9.92E+00	1.53E-01	1.67E+00	1.81E+00	9.53E-03	1.25E-02	1.15E-02
	Truck		34.1719	2.7692	36.9411	2.70E-04	3.17E-03	5.05E-04	4.34E-06	8.26E-05	4.66E-05	8.71E-01	2.08E-06	1.95E-06	8.72E-01	7.91E-01	2.00E-02	2.34E-01	3.74E-02	3.21E-04	6.11E-03	3.45E-03
	Water pump	3.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	1.79E-06	3.29E-05	5.25E-05	8.71E-08	2.32E-06	2.13E-06	7.42E-03	5.67E-07	-	7.43E-03	6.74E-03	-	-	-	-	-	-
	Loader/Backhoe	75 hp	32		32	1.92E-04	2.94E-03	3.66E-03	6.06E-06	2.17E-04	1.99E-04	5.17E-01	3.95E-05	-	5.18E-01	4.70E-01	1.53E-02	2.35E-01	2.93E-01	4.85E-04	1.73E-02	1.60E-02
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	1.91E-04	2.07E-03	2.25E-03	1.19E-05	1.55E-05	1.43E-05	1.05E+00	5.83E-05	-	1.06E+00	9.58E-01	1.05E-02	1.14E-01	1.23E-01	6.50E-04	8.52E-04	7.84E-04
	Truck		34.1719		34.1719	2.50E-04	2.93E-03	4.68E-04	4.02E-06	7.64E-05	4.31E-05	8.06E-01	1.92E-06	1.81E-06	8.06E-01	7.32E-01	2.00E-02	2.34E-01	3.74E-02	3.21E-04	6.11E-03	3.45E-03
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	1.76E-04	1.67E-03	2.05E-03	4.33E-06	1.08E-04	9.90E-05	3.85E-01	1.59E-05	-	3.85E-01	3.49E-01	1.41E-02	1.33E-01	1.64E-01	3.46E-04	8.60E-03	7.91E-03
	Crane 50'	200 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	6.77E-05	7.37E-04	7.98E-04	4.21E-06	5.52E-06	5.08E-06	3.74E-01	2.07E-05	-	3.75E-01	3.40E-01	5.41E-03	5.89E-02	6.38E-02	3.37E-04	4.41E-04	4.06E-04
	Chainsaw		5.8824	0.0147	5.8971	1.20E-04	6.26E-06	7.20E-04	8.02E-08	1.13E-06	1.13E-06	1.95E-03	7.46E-06	2.14E-06	2.77E-03	2.51E-03	9.58E-03	5.00E-04	5.75E-02	6.40E-06	9.04E-05	9.02E-05
	1 ton pickup			0.0088	0.0088	1.60E-08	2.21E-08	2.19E-07	5.91E-10	4.66E-09	2.02E-09	1.98E-04	1.96E-08	1.02E-08	2.01E-04	1.82E-04	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	8.85E-05	9.63E-04	1.04E-03	5.51E-06	7.22E-06	6.64E-06	4.89E-01	2.71E-05	-	4.90E-01	4.44E-01	7.06E-03	7.68E-02	8.33E-02	4.39E-04	5.76E-04	5.30E-04
	Front end loader	540 hp	5.9294	0.0074	5.9368	2.55E-04	1.89E-03	2.06E-03	1.03E-05	1.55E-05	1.43E-05	1.03E+00	5.69E-05	-	1.03E+00	9.35E-01	2.04E-02	1.51E-01	1.65E-01	8.27E-04	1.24E-03	1.14E-03
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	1.13E-04	1.22E-03	9.55E-04	4.68E-06	9.17E-06	8.44E-06	4.77E-01	2.64E-05	-	4.77E-01	4.33E-01	8.99E-03	9.78E-02	7.63E-02	3.74E-04	7.33E-04	6.74E-04
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	4.35E-04	5.10E-03	8.15E-04	7.00E-06	1.33E-04	7.51E-05	1.40E+00	3.35E-06	3.15E-06	1.41E+00	1.27E+00	3.48E-02	4.08E-01	6.51E-02	5.59E-04	1.06E-02	6.00E-03
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	3.56E-04	5.60E-03	9.98E-03	1.65E-05	4.10E-04	3.77E-04	1.41E+00	1.08E-04	-	1.41E+00	1.28E+00	-	-	-	-	-	-
	Excavator	430 hp	80	20	100	2.46E-03	2.52E-02	2.01E-02	9.86E-05	1.91E-04	1.76E-04	1.00E+01	5.55E-04	-	1.01E+01	9.12E+00	1.57E-01	1.61E+00	1.29E+00	6.31E-03	1.22E-02	1.13E-02
	Loader	190 hp		20	20	2.28E-04	2.48E-03	2.69E-03	1.42E-05	1.86E-05	1.71E-05	1.26E+00	6.98E-05	-	1.26E+00	1.15E+00	-	-	-	-	-	-
	Front end loader	180 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	2.10E-03	3.21E-02	4.00E-02	6.63E-05	2.37E-03	2.18E-03	5.65E+00	4.32E-04	-	5.66E+00	5.14E+00	1.68E-01	2.57E+00	3.20E+00	5.30E-03	1.90E-01	1.74E-01
	Tractor/crawler/dozer	250 hp	50.068		50.068	7.51E-04	8.18E-03	8.86E-03	4.68E-05	6.13E-05	5.64E-05	4.16E+00	2.30E-04	-	4.16E+00	3.77E+00	6.01E-02	6.54E-01	7.09E-01	3.74E-03	4.90E-03	4.51E-03
	3/4 ton pickup		72	20	92	3.16E-04	2.85E-04	3.84E-03	6.16E-06	4.99E-05	2.22E-05	2.06E+00	2.05E-04	1.07E-04	2.10E+00	1.91E+00	1.98E-02	1.78E-02	2.41E-01	3.86E-04	3.12E-03	1.39E-03
	Chainsaw				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	1.53E-04	2.78E-03	4.91E-03	9.61E-06	1.70E-04	1.56E-04	8.54E-01	4.87E-05	-	8.56E-01	7.76E-01	1.22E-02	2.22E-01	3.93E-01	7.69E-04	1.36E-02	1.25E-02
	Vibrating compactor	5.5 hp	5.1724		5.1724	6.39E-05	4.72E-05	2.34E-03	1.13E-07	3.31E-05	3.31E-05	3.95E-03	3.61E-06	4.72E-06	5.49E-03	4.98E-03	5.11E-03	3.78E-03	1.87E-01	9.01E-06	2.65E-03	2.64E-03
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	2.73E-03	3.20E-02	5.10E-03	4.38E-05	8.33E-04	4.70E-04	8.79E+00	2.10E-05	1.97E-05	8.80E+00	7.98E+00	2.18E-01	2.56E+00	4.08E-01	3.51E-03	6.67E-02	3.76E-02
	Asphalt distributor	3000 gal	22.9363		22.9363	1.68E-04	1.97E-03	3.14E-04	2.70E-06	5.13E-05	2.89E-05	5.41E-01	1.29E-06	1.21E-06	5.41E-01	4.91E-01	1.34E-02	1.57E-01	2.51E-02	2.16E-04	4.10E-03	2.31E-03
	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	3.56E-03	3.65E-02	2.91E-02	1.43E-04	2.77E-04	2.55E-04	1.45E+01	8.04E-04	-	1.45E+01	1.32E+01	2.85E-01	2.92E+00	2.33E+00	1.14E-02	2.21E-02	2.04E-02
	Loader/Backhoe	75 hp	8	9.4118	17.4118	1.04E-04	1.60E-03	1.99E-03	3.30E-06	1.18E-04	1.08E-04	2.81E-01	2.15E-05	-	2.82E-01	2.56E-01	3.84E-03	5.87E-02	7.32E-02	1.21E-04	4.33E-03	3.99E-03
	Loader/Backhoe	92 hp		9.4118	9.4118	6.92E-05	1.06E-03	1.32E-03	2.19E-06	7.82E-05	7.19E-05	1.86E-01	1.42E-05	-	1.87E-01	1.69E-01	-	-	-	-	-	-
	Vibratory roller	44 hp	144.7059		144.7059	1.46E-03	1.54E-02	1.43E-02	2.14E-05	6.33E-04	5.82E-04	1.65E+00	1.32E-04	-	1.66E+00	1.50E+00	1.17E-01	1.23E+00	1.14E+00	1.71E-03	5.06E-02	4.66E-02
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	2.17E-03	2.36E-02	2.56E-02	1.35E-04	1.77E-04	1.63E-04	1.20E+01	6.64E-04	-	1.20E+01	1.09E+01	1.74E-01	1.89E+00	2.05E+00	1.08E-02	1.42E-02	1.30E-02
	Dump truck	12 cy	8	9.4118	17.4118	1.27E-04	1.49E-03	2.38E-04	2.05E-06	3.89E-05	2.20E-05	4.11E-01	9.79E-07	9.21E-07	4.11E-01	3.73E-01	4.68E-03	5.48E-02	8.76E-03	7.52E-05	1.43E-03	8.07E-04
	3/4 ton pickup		181.1765		181.1765	6.22E-04	5.61E-04	7.57E-03	1.21E-05	9.83E-05	4.37E-05	4.07E+00	4.04E-04	2.11E-04	4.14E+00	3.76E+00	4.97E-02	4.48E-02	6.06E-01	9.71E-04	7.86E-03	3.49E-03
	3/4 ton pickup		8	2	10	3.43E-05	3.09E-05	4.18E-04	6.70E-07	5.42E-06	2.41E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01	2.07E-01	2.20E-03	1.98E-03	2.67E-02	4.29E-05	3.47E-04	1.54E-04
						2.20E-02	**2.42E-01**	**2.27E-01**	**8.26E-04**	**6.94E-03**	**5.89E-03**	**8.79E+01**	**4.71E-03**	**3.65E-04**	**8.81E+01**	**7.99E+01**	**1.64E+00**	**1.80E+01**	**1.64E+01**	**6.09E-02**	**5.03E-01**	**4.23E-01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 3
Upstream Barrier Removal (Alternatives 2 and 4)

Construction Start Year	2020	
Speed of Onsite Trucks	10	mph

			50	15	days per const						
			LV3 & LV4	LV2							
	Equipment	Equipment	Hours of Operation		Annual	Peak Daily Emissions (LV2) - 2020 (pounds per day)					
Activity	Type	Size	4/1-6/9	6/10-6/30	Hours	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	4.77E-04	8.77E-03	1.40E-02	2.32E-05	6.19E-04	5.69E-04
	Loader/Backhoe	75 hp	34.624		34.624	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	1.60E-02	1.74E-01	1.89E-01	9.96E-04	1.31E-03	1.20E-03
	Truck		34.1719	2.7692	36.9411	5.40E-03	6.33E-02	1.01E-02	8.68E-05	1.65E-03	9.31E-04
	Water pump	3.5 hp			0	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	4.77E-04	8.77E-03	1.40E-02	2.32E-05	6.19E-04	5.69E-04
	Loader/Backhoe	75 hp	32		32	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	1.60E-02	1.74E-01	1.89E-01	9.96E-04	1.31E-03	1.20E-03
	Truck		34.1719		34.1719	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	5.85E-05	5.54E-04	6.82E-04	1.44E-06	3.58E-05	3.29E-05
	Crane 50'	200 hp			0	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	2.25E-05	2.45E-04	2.65E-04	1.40E-06	1.83E-06	1.69E-06
	Chainsaw		5.8824	0.0147	5.8971	7.98E-05	4.16E-06	4.79E-04	5.33E-08	7.53E-07	7.52E-07
	1 ton pickup			0.0088	0.0088	4.28E-06	5.90E-06	5.84E-05	1.58E-07	1.24E-06	5.39E-07
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	5.88E-05	6.40E-04	6.94E-04	3.66E-06	4.80E-06	4.41E-06
	Front end loader	540 hp	5.9294	0.0074	5.9368	8.48E-05	6.28E-04	6.85E-04	3.44E-06	5.16E-06	4.75E-06
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	3.74E-05	4.07E-04	3.17E-04	1.56E-06	3.05E-06	2.81E-06
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	1.45E-04	1.70E-03	2.71E-04	2.33E-06	4.43E-05	2.50E-05
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-
	Excavator	115 hp		40	40	9.50E-02	1.49E+00	2.66E+00	4.41E-03	1.09E-01	1.01E-01
	Excavator	430 hp	80	20	100	1.31E-01	1.34E+00	1.07E+00	5.26E-03	1.02E-02	9.39E-03
	Loader	190 hp		20	20	6.08E-02	6.62E-01	7.17E-01	3.78E-03	4.96E-03	4.56E-03
	Front end loader	180 hp			0	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	50.068		50.068	-	-	-	-	-	-
	3/4 ton pickup		72	20	92	1.83E-02	1.65E-02	2.23E-01	3.57E-04	2.89E-03	1.29E-03
	Chainsaw				0	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	5.1724		5.1724	-	-	-	-	-	-
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-
	Truck		372.9363		372.9363	-	-	-	-	-	-
	Asphalt distributor	3000 gal	22.9363		22.9363	-	-	-	-	-	-
	Suburban	3/4 ton			0	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	-	-	-	-	-	-
	Loader/Backhoe	75 hp	8	9.4118	17.4118	1.50E-02	2.30E-01	2.87E-01	4.75E-04	1.70E-02	1.56E-02
	Loader/Backhoe	92 hp		9.4118	9.4118	1.85E-02	2.82E-01	3.52E-01	5.83E-04	2.09E-02	1.92E-02
	Vibratory roller	44 hp	144.7059		144.7059	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	-	-	-	-	-	-
	Dump truck	12 cy	8	9.4118	17.4118	1.83E-02	2.15E-01	3.43E-02	2.95E-04	5.61E-03	3.17E-03
	3/4 ton pickup		181.1765		181.1765	-	-	-	-	-	-
	3/4 ton pickup		8	2	10	1.83E-03	1.65E-03	2.23E-02	3.57E-05	2.89E-04	1.29E-04
						3.98E-01	**4.68E+00**	**5.79E+00**	**1.73E-02**	**1.77E-01**	**1.59E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

	Data from EMFAC2011 (g/hr)
	Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's	1/1/2019
Birthday of l	1/21/2019
Washington	2/18/2019
Memorial Da	5/27/2019
Independen	7/4/2019
Labor Day	9/2/2019
Columbus D	10/14/2019
Veterans Da	11/11/2019
Thanksgivin	11/28/2019
Christmas D	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC2 Equipment Report.pdf
CC3 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV1 Equipment Report.pdf
LV2 Equipment Report.pdf
LV3 and LV4 Equipment Report.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Ye 2019
Speed of Onsite Truc 10 mph

15 CC1 & CC4 | 15 CC1 & CC5 | 15 LV2 | days per construction period (5 days per week)

GWP 1 21 310

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-21	4/22-5/12	5/13-6/2	Annual Hours	Emission Factors - 2019 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Annual Emissions - 2019 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Water Control - Installation	Flatbed Truck		4	12		16	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	9.74E-05	1.05E-04	1.35E-03	1.07E-06	8.45E-06	3.64E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01	3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.043	0.834	1.340	0.002	0.058	0.054	189.378	0.014	0.000	1.36E-05	2.62E-04	4.20E-04	6.97E-07	1.83E-05	1.68E-05	5.94E-02	4.54E-06	-	5.95E-02	5.40E-02
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000	3.42E-05	5.45E-04	6.78E-04	1.13E-06	3.98E-05	3.66E-05	9.65E-02	7.21E-06	-	9.67E-02	8.77E-02
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	1.78E-04	2.03E-03	2.21E-03	1.17E-05	1.51E-05	1.39E-05	1.04E+00	5.73E-05	-	1.04E+00	9.41E-01
	Truck		0.3077		2.7692	3.0769	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	2.32E-05	3.27E-04	4.30E-05	3.63E-07	7.56E-06	4.51E-06	7.28E-02	1.73E-07	1.63E-07	7.28E-02	6.61E-02
	Water pump	3.5 hp		4		4	4.754	2.132	56.301	0.006	0.058	0.058	177.788	0.269	0.302	7.34E-05	3.29E-05	8.69E-04	9.47E-08	8.94E-07	8.93E-07	2.74E-03	4.15E-06	4.67E-06	4.28E-03	3.88E-03
Water Control - Removal	Flatbed Truck		4	12		16	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	9.74E-05	1.05E-04	1.35E-03	1.07E-06	8.45E-06	3.64E-06	3.59E-01	8.12E-05	3.77E-05	3.72E-01	3.38E-01
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	0.043	0.834	1.340	0.002	0.058	0.054	189.378	0.014	0.000	1.36E-05	2.62E-04	4.20E-04	6.97E-07	1.83E-05	1.68E-05	5.94E-02	4.54E-06	-	5.95E-02	5.40E-02
	Loader/Backhoe	75 hp				0	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	1.52E-04	1.73E-03	1.89E-03	9.96E-06	1.29E-05	1.18E-05	8.85E-01	4.90E-05	-	8.86E-01	8.04E-01
	Truck		0.3077			0.3077	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	2.32E-06	3.27E-05	4.30E-06	3.63E-08	7.56E-07	4.51E-07	7.28E-03	1.73E-08	1.63E-08	7.28E-03	6.61E-03
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	0.149	1.478	1.810	0.004	0.094	0.086	343.002	0.013	0.000	1.84E-03	1.83E-02	2.24E-02	4.79E-05	1.16E-03	1.07E-03	4.25E+00	1.66E-04	-	4.26E+00	3.86E+00
	Crane 50'	200 hp	9.4118	18.8236		28.2354	0.031	0.393	0.433	0.002	0.003	0.003	203.332	0.011	0.000	1.94E-04	2.45E-03	2.70E-03	1.42E-05	1.78E-05	1.64E-05	1.27E+00	7.00E-05	-	1.27E+00	1.15E+00
	Man lift	210 hp				0	0.054	0.457	0.333	0.002	0.003	0.003	192.823	0.005	0.000	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	7.14E-04	8.14E-03	8.86E-03	4.68E-05	6.04E-05	5.56E-05	4.16E+00	2.30E-04	-	4.16E+00	3.77E+00
	Chainsaw		56.7647	75.2941	0.2941	132.3529	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039	2.57E-03	1.41E-04	1.62E-02	1.80E-06	2.54E-05	2.54E-05	4.37E-02	1.60E-04	4.80E-05	6.19E-02	5.62E-02
	1 ton pickup		0.1765		0.1765	0.353	1.967	2.522	26.628	0.061	0.485	0.212	20,361.283	2.024	1.056	7.65E-07	9.81E-07	1.04E-05	2.37E-08	1.89E-07	8.27E-08	7.92E-03	7.88E-07	4.11E-07	8.07E-03	7.32E-03
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	8.38E-06	9.57E-05	1.04E-04	5.49E-07	7.10E-07	6.53E-07	4.88E-02	2.70E-06	-	4.89E-02	4.43E-02
	Front end loader	540 hp	0.2964		0.2964	0.5928	0.068	0.529	0.613	0.003	0.004	0.004	309.181	0.016	0.000	2.39E-05	1.87E-04	2.16E-04	1.10E-06	1.51E-06	1.39E-06	1.09E-01	5.81E-06	-	1.09E-01	9.91E-02
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	0.053	0.602	0.471	0.002	0.004	0.004	234.975	0.013	0.000	5.34E-06	6.09E-05	4.77E-05	2.34E-07	4.52E-07	4.16E-07	2.38E-02	1.32E-06	-	2.38E-02	2.16E-02
	Dump truck	20cy/24 ton			1.4866	1.4866	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	1.12E-05	1.58E-04	2.08E-05	1.75E-07	3.65E-06	2.18E-06	3.52E-02	8.36E-08	7.87E-08	3.52E-02	3.19E-02
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	0.103	0.590	0.460	0.003	0.005	0.004	237.822	0.009	0.000	2.52E-03	1.45E-02	1.13E-02	6.56E-05	1.11E-04	1.02E-04	5.83E+00	2.27E-04	-	5.83E+00	5.29E+00
	Air Compressor	50 hp		32		32	0.601	0.717	53.729	0.004	0.024	0.023	307.156	0.034	0.058	1.06E-03	1.26E-03	9.48E-02	6.59E-06	4.15E-05	4.14E-05	5.42E-01	5.99E-05	1.02E-04	5.75E-01	5.21E-01
	Crane 126'	350 hp	5.1111	5.1111		10.2222	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	1.23E-04	1.55E-03	1.29E-03	6.32E-06	1.13E-05	1.04E-05	6.44E-01	3.56E-05	-	6.44E-01	5.85E-01
	Crane 50'	263 hp	44.4571	44.4571		88.9142	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	8.01E-04	1.01E-02	8.43E-03	4.13E-05	7.36E-05	6.77E-05	4.21E+00	2.33E-04	-	4.21E+00	3.82E+00
	Crane 210'	230 hp	16	16		32	0.031	0.393	0.433	0.002	0.003	0.003	203.332	0.011	0.000	2.53E-04	3.19E-03	3.52E-03	1.86E-05	2.32E-05	2.14E-05	1.65E+00	9.12E-05	-	1.65E+00	1.50E+00
	Excavator	115 hp	32	16	24	72	0.066	1.092	1.968	0.003	0.079	0.073	278.045	0.021	0.000	6.07E-04	9.96E-03	1.80E-02	2.98E-05	7.22E-04	6.64E-04	2.54E+00	1.94E-04	-	2.54E+00	2.31E+00
	Excavator	430 hp	8	8	12	28	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	6.60E-04	7.08E-03	5.63E-03	2.76E-05	5.32E-05	4.89E-05	2.81E+00	1.55E-04	-	2.81E+00	2.55E+00
	Loader	190 hp	72	64	12	148	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	1.60E-03	1.83E-02	1.99E-02	1.05E-04	1.36E-04	1.25E-04	9.34E+00	5.16E-04	-	9.35E+00	8.48E+00
	Front end loader	180 hp	4.6667	4.6667		9.3334	0.068	0.534	0.569	0.003	0.004	0.004	270.062	0.014	0.000	1.27E-04	9.88E-04	1.05E-03	5.63E-06	8.00E-06	7.36E-06	5.00E-01	2.66E-05	-	5.01E-01	4.54E-01
	Loader/Backhoe	75 hp	11.1	11.1		22.2	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000	1.27E-04	2.03E-03	2.52E-03	4.21E-06	1.48E-04	1.36E-04	3.59E-01	2.68E-05	-	3.59E-01	3.26E-01
	Tractor/crawler/dozer	250 hp	4	4		8	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	1.14E-04	1.30E-03	1.42E-03	7.47E-06	9.66E-06	8.88E-06	6.64E-01	3.67E-05	-	6.65E-01	6.03E-01
	3/4 ton pickup		72	80	12	164	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	6.34E-04	5.48E-04	7.70E-03	1.10E-05	8.98E-05	4.03E-05	3.68E+00	3.66E-04	1.91E-04	3.75E+00	3.40E+00
	Chainsaw		44.4571	44.4571		88.9142	2.096	0.115	13.187	0.001	0.021	0.021	35.644	0.130	0.039	1.73E-03	9.44E-05	1.09E-02	1.21E-06	1.71E-05	1.70E-05	2.93E-02	1.07E-04	3.22E-05	4.16E-02	3.77E-02
Road Realignment	Vibratory roller	145 hp				0	0.048	0.908	1.585	0.003	0.055	0.050	280.051	0.015	0.000	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	2.038	1.506	74.477	0.004	1.056	1.054	125.946	0.115	0.150	9.88E-05	7.30E-05	3.61E-03	1.74E-07	5.12E-05	5.11E-05	6.11E-03	5.59E-06	7.30E-06	8.49E-03	7.70E-03
	Vibratory compactor	7.5 hp				0	0.061	1.825	0.996	0.003	0.063	0.058	241.833	0.026	0.000	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	2.42E-04	3.40E-03	4.47E-04	3.77E-06	7.86E-05	4.69E-05	7.57E-01	1.80E-06	1.69E-06	7.57E-01	6.87E-01
	Asphalt distributor	3000 gal	4	4		8	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	6.04E-05	8.50E-04	1.12E-04	9.43E-07	1.96E-05	1.17E-05	1.89E-01	4.50E-07	4.23E-07	1.89E-01	1.72E-01
	Suburban	3/4 ton	4	4		8	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	3.09E-05	2.67E-05	3.76E-04	5.36E-07	4.38E-06	1.97E-06	1.80E-01	1.78E-05	9.31E-06	1.83E-01	1.66E-01
Disposal	Truck	35 ton	40	40		80	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	4.87E-04	5.25E-04	6.75E-03	5.33E-06	4.22E-05	1.82E-05	1.80E+00	4.06E-04	1.88E-04	1.86E+00	1.69E+00
	Truck	75 ton	11.2	11.2		22.4	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	1.69E-04	2.38E-03	3.13E-04	2.64E-06	5.50E-05	3.28E-05	5.30E-01	1.26E-06	1.19E-06	5.30E-01	4.81E-01
Bridge Installation	Suburban	3/4 ton	12	12		24	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	9.28E-05	8.01E-05	1.13E-03	1.61E-06	1.31E-05	5.90E-06	5.39E-01	5.35E-05	2.79E-05	5.48E-01	4.98E-01
	Crane 210'	230 hp	24	24		48	0.031	0.393	0.433	0.002	0.003	0.003	203.332	0.011	0.000	3.79E-04	4.79E-03	5.28E-03	2.78E-05	3.48E-05	3.21E-05	2.47E+00	1.37E-04	-	2.48E+00	2.25E+00
	Crane 270'	430 hp	24	24		48	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	7.07E-04	8.92E-03	7.44E-03	3.64E-05	6.50E-05	5.98E-05	3.71E+00	2.05E-04	-	3.72E+00	3.37E+00
	3/4 ton pickup		24	24		48	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	1.86E-04	1.60E-04	2.25E-03	3.22E-06	2.63E-05	1.18E-05	1.08E+00	1.07E-04	5.59E-05	1.10E+00	9.95E-01
	Tractor/crawler/dozer	250 hp	8	8		16	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	2.28E-04	2.60E-03	2.83E-03	1.49E-05	1.93E-05	1.78E-05	1.33E+00	7.34E-05	-	1.33E+00	1.21E+00
	Excavator	430 hp	0.6137	0.6137		1.2274	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	2.89E-05	3.10E-04	2.47E-04	1.21E-06	2.33E-06	2.15E-06	1.23E-01	6.82E-06	-	1.23E-01	1.12E-01
	Truck		2.9609	2.9609		5.9218	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	4.47E-05	6.29E-04	8.27E-05	6.98E-07	1.45E-05	8.67E-06	1.40E-01	3.33E-07	3.13E-07	1.40E-01	1.27E-01
	Generator	7.5 hp	15.8865	15.8865		31.773	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	5.31E-04	3.78E-04	2.72E-02	1.31E-06	2.57E-05	2.57E-05	4.60E-02	3.00E-05	3.86E-05	5.86E-02	5.32E-02
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	2.038	1.506	74.477	0.004	1.056	1.054	125.946	0.115	0.150	9.01E-05	6.66E-05	3.29E-03	1.59E-07	4.67E-05	4.66E-05	5.57E-03	5.10E-06	6.66E-06	7.74E-03	7.02E-03
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	5.76E-05	6.58E-04	7.15E-04	3.78E-06	4.88E-06	4.49E-06	3.36E-01	1.86E-05	-	3.36E-01	3.05E-01
	Truck		4.3678	4.3678		8.7356	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	6.60E-05	9.28E-04	1.22E-04	1.03E-06	2.15E-05	1.28E-05	2.07E-01	4.91E-07	4.62E-07	2.07E-01	1.88E-01
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	7.47E-05	1.05E-03	1.38E-04	1.17E-06	2.43E-05	1.45E-05	2.34E-01	5.56E-07	5.24E-07	2.34E-01	2.12E-01
	Asphalt paver	120 hp	0.208	0.208		0.416	0.056	1.162	1.747	0.003	0.080	0.073	261.288	0.017	0.000	3.07E-06	6.40E-05	9.61E-05	1.69E-07	4.39E-06	4.04E-06	1.44E-02	9.10E-07	-	1.44E-02	1.31E-02
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000	1.20E-05	1.34E-04	1.21E-04	1.88E-07	5.37E-06	4.94E-06	1.45E-02	1.08E-06	-	1.45E-02	1.32E-02
	Chip spreader truck		0.64	0.64		1.28	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	9.66E-06	1.36E-04	1.79E-05	1.51E-07	3.14E-06	1.87E-06	3.03E-02	7.20E-08	6.77E-08	3.03E-02	2.75E-02
	Line striper	23 hp	0.0713	0.0713		0.1426	0.172	0.435	9.082	0.003	0.020	0.020	257.050	0.010	0.025	6.23E-07	1.57E-06	3.28E-05	9.23E-09	7.40E-08	7.39E-08	9.29E-04	3.52E-08	8.86E-08	9.58E-04	8.69E-04
	Flatbed Truck		0.0713	0.0713		0.1426	5.520	5.957	76.523	0.060	0.479	0.206	20,361.280	4.604	2.135	8.68E-07	9.36E-07	1.20E-05	9.49E-09	7.53E-08	3.24E-08	3.20E-03	7.24E-07	3.36E-07	3.32E-03	3.01E-03
	3/4 ton pickup		0.0713	0.0713		0.1426	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	5.52E-07	4.76E-07	6.70E-06	9.56E-09	7.80E-08	3.50E-08	3.20E-03	3.18E-07	1.66E-07	3.26E-03	2.96E-03
Abutments	Roto trowel concrete finisher	9 hp				0	0.172	0.435	9.082	0.003	0.020	0.020	257.050	0.010	0.025	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0	0.043	0.708	1.302	0.002	0.045	0.042	208.054	0.016	0.000	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0	0.031	0.392	0.327	0.002	0.003	0.003	163.194	0.009	0.000	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0	0.075	1.502	1.911	0.003	0.104	0.096	291.139	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0	0.119	1.487	1.732	0.003	0.102	0.094	294.396	0.011	0.000	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	0.050	0.533	0.424	0.002	0.004	0.004	211.858	0.012	0.000	4.43E-04	4.76E-03	3.79E-03	1.86E-05	3.58E-05	3.29E-05	1.89E+00	1.05E-04	-	1.89E+00	1.72E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000	2.69E-04	4.29E-03	5.34E-03	8.92E-06	3.14E-04	2.88E-04	7.60E-01	5.68E-05	-	7.61E-01	6.91E-01
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	0.069	1.104	1.373	0.002	0.081	0.074	195.357	0.015	0.000	1.65E-04	2.63E-03	3.28E-03	5.47E-06	1.92E-04	1.77E-04	4.66E-01	3.48E-05	-	4.67E-01	4.24E-01
	Vibratory roller	44 hp				0	0.194	2.169	1.953	0.003	0.087	0.080	235.458	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	0.052	0.590	0.642	0.003	0.004	0.004	301.172	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.850	96.426	12.666	0.107	2.228	1.329	21,451.850	0.051	0.048	3.55E-04	5.00E-03	6.57E-04	5.55E-06	1.16E-04	6.89E-05	1.11E+00	2.65E-06	2.49E-06	1.11E+00	1.01E+00
	3/4 ton pickup					0	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	3.509	3.029	42.612	0.061	0.496	0.223	20,361.281	2.024	1.056	3.87E-05	3.34E-05	4.70E-04	6.70E-07	5.47E-06	2.46E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01	2.07E-01
															Total	**2.13E-02**	**1.51E-01**	**3.22E-01**	**6.16E-04**	**4.07E-03**	**3.55E-03**	**6.39E+01**	**4.30E-03**	**8.07E-04**	**6.42E+01**	**5.82E+01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 1
Alternative 3

Construction Start Ye 2019
Speed of Onsite Truc 10 mph

			15	15	15	days per cor																
			CC1 & CC4	CC1 & CC5	LV2		Peak Daily Emissions (CC1 & CC4) - 2019 (pounds per day)						Peak Daily Emissions (CC1 & CC5) - 2019 (pounds per day)						Peak Daily Emissions (LV2) - 2019 (pounds per day)					
	Equipment	Equipment	Hours of Operation			Annual																
Activity	Type	Size	4/1-21	4/22-5/12	5/13-6/2	Hours	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5	VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	12		16	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	1.95E-02	2.10E-02	2.70E-01	2.13E-04	1.69E-03	7.28E-04	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.81E-03	3.49E-02	5.60E-02	9.29E-05	2.44E-03	2.24E-03	1.36E-03	2.62E-02	4.20E-02	6.97E-05	1.83E-03	1.68E-03	4.53E-04	8.72E-03	1.40E-02	2.32E-05	6.09E-04	5.60E-04
	Loader/Backhoe	75 hp	2.624	3.3513		5.9753	4.00E-03	6.39E-02	7.94E-02	1.33E-04	4.66E-03	4.29E-03	5.11E-03	8.15E-02	1.01E-01	1.69E-04	5.95E-03	5.48E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.5208		6.958	12.4788	2.10E-02	2.39E-01	2.60E-01	1.37E-03	1.78E-03	1.63E-03	-	-	-	-	-	-	2.64E-02	3.02E-01	3.28E-01	1.73E-03	2.24E-03	2.06E-03
	Truck		0.3077		2.7692	3.0769	6.20E-04	8.72E-03	1.15E-03	9.67E-06	2.02E-04	1.20E-04	-	-	-	-	-	-	5.58E-03	7.85E-02	1.03E-02	8.70E-05	1.81E-03	1.08E-03
	Water pump	3.5 hp		4		4	-	-	-	-	-	-	1.96E-02	8.77E-03	2.32E-01	2.53E-05	2.39E-04	2.38E-04	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	12		16	6.49E-03	7.00E-03	9.00E-02	7.10E-05	5.63E-04	2.43E-04	1.95E-02	2.10E-02	2.70E-01	2.13E-04	1.69E-03	7.28E-04	-	-	-	-	-	-
	Crane 44'	80 hp	1.7777	1.3333	0.4444	3.5554	1.81E-03	3.49E-02	5.60E-02	9.29E-05	2.44E-03	2.24E-03	1.36E-03	2.62E-02	4.20E-02	6.97E-05	1.83E-03	1.68E-03	4.53E-04	8.72E-03	1.40E-02	2.32E-05	6.09E-04	5.60E-04
	Loader/Backhoe	75 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	5.3333		5.3333	10.6666	2.03E-02	2.31E-01	2.52E-01	1.33E-03	1.72E-03	1.58E-03	-	-	-	-	-	-	2.03E-02	2.31E-01	2.52E-01	1.33E-03	1.72E-03	1.58E-03
	Truck		0.3077			0.3077	6.20E-04	8.72E-03	1.15E-03	9.67E-06	2.02E-04	1.20E-04	-	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.3835	37.6471	0.1482	66.1788	2.11E-01	2.10E+00	2.57E+00	5.47E-03	1.33E-01	1.22E-01	2.79E-01	2.78E+00	3.40E+00	7.26E-03	1.76E-01	1.62E-01	1.10E-03	1.09E-02	1.34E-02	2.86E-05	6.93E-04	6.37E-04
	Crane 50'	200 hp	9.4118	18.8236		28.2354	1.72E-02	2.18E-01	2.40E-01	1.27E-03	1.58E-03	1.46E-03	3.45E-02	4.35E-01	4.80E-01	2.53E-03	3.17E-03	2.91E-03	-	-	-	-	-	-
	Man lift	210 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	28.2353	37.6471		65.8824	8.16E-02	9.31E-01	1.01E+00	5.34E-03	6.91E-03	6.35E-03	1.09E-01	1.24E+00	1.35E+00	7.12E-03	9.21E-03	8.47E-03	-	-	-	-	-	-
	Chainsaw		56.7647	75.2941	0.2941	132.3529	2.94E-01	1.61E-02	1.85E+00	2.06E-04	2.91E-03	2.90E-03	3.90E-01	2.13E-02	2.45E+00	2.73E-04	3.86E-03	3.85E-03	1.52E-03	8.33E-05	9.58E-03	1.07E-06	1.51E-05	1.50E-05
	1 ton pickup		0.1765		0.1765	0.353	1.02E-04	1.31E-04	1.38E-03	3.17E-06	2.52E-05	1.10E-05	-	-	-	-	-	-	1.02E-04	1.31E-04	1.38E-03	3.17E-06	2.52E-05	1.10E-05
	Tractor/crawler/dozer	250 hp	0.2941		0.2941	0.5882	1.12E-03	1.28E-02	1.39E-02	7.32E-05	9.47E-05	8.71E-05	-	-	-	-	-	-	1.12E-03	1.28E-02	1.39E-02	7.32E-05	9.47E-05	8.71E-05
	Front end loader	540 hp	0.2964		0.2964	0.5928	3.19E-03	2.49E-02	2.89E-02	1.46E-04	2.02E-04	1.85E-04	-	-	-	-	-	-	3.19E-03	2.49E-02	2.89E-02	1.46E-04	2.02E-04	1.85E-04
	Tractor/crawler/dozer	310 hp	0.1482		0.1482	0.2964	7.12E-04	8.12E-03	6.36E-03	3.11E-05	6.03E-05	5.55E-05	-	-	-	-	-	-	7.12E-04	8.12E-03	6.36E-03	3.11E-05	6.03E-05	5.55E-05
	Dump truck	20cy/24 ton			1.4866	1.4866	-	-	-	-	-	-	-	-	-	-	-	-	2.99E-03	4.21E-02	5.53E-03	4.67E-05	9.74E-04	5.81E-04
Demolition	Air Compressor	250 hp	44.4571	44.4571		88.9142	3.36E-01	1.93E+00	1.50E+00	8.74E-03	1.49E-02	1.37E-02	3.36E-01	1.93E+00	1.50E+00	8.74E-03	1.49E-02	1.37E-02	-	-	-	-	-	-
	Air Compressor	50 hp		32		32	-	-	-	-	-	-	2.83E-01	3.37E-01	2.53E+01	1.76E-03	1.11E-02	1.10E-02	-	-	-	-	-	-
	Crane 126'	350 hp	5.1111	5.1111		10.2222	1.63E-02	2.06E-01	1.72E-01	8.42E-04	1.50E-03	1.38E-03	1.63E-02	2.06E-01	1.72E-01	8.42E-04	1.50E-03	1.38E-03	-	-	-	-	-	-
	Crane 50'	263 hp	44.4571	44.4571		88.9142	1.07E-01	1.35E+00	1.12E+00	5.51E-03	9.82E-03	9.03E-03	1.07E-01	1.35E+00	1.12E+00	5.51E-03	9.82E-03	9.03E-03	-	-	-	-	-	-
	Crane 210'	230 hp	16	16		32	3.37E-02	4.25E-01	4.69E-01	2.47E-03	3.10E-03	2.85E-03	3.37E-02	4.25E-01	4.69E-01	2.47E-03	3.10E-03	2.85E-03	-	-	-	-	-	-
	Excavator	115 hp	32	16	24	72	7.19E-02	1.18E+00	2.13E+00	3.53E-03	8.56E-02	7.87E-02	3.59E-02	5.90E-01	1.06E+00	1.76E-03	4.28E-02	3.94E-02	5.39E-02	8.86E-01	1.60E+00	2.65E-03	6.42E-02	5.91E-02
	Excavator	430 hp	8	8	12	28	5.03E-02	5.39E-01	4.29E-01	2.10E-03	4.05E-03	3.73E-03	5.03E-02	5.39E-01	4.29E-01	2.10E-03	4.05E-03	3.73E-03	7.54E-02	8.09E-01	6.44E-01	3.15E-03	6.08E-03	5.59E-03
	Loader	190 hp	72	64	12	148	2.08E-01	2.37E+00	2.58E+00	1.36E-02	1.76E-02	1.62E-02	1.85E-01	2.11E+00	2.30E+00	1.21E-02	1.57E-02	1.44E-02	3.47E-02	3.96E-01	4.30E-01	2.27E-03	2.94E-03	2.70E-03
	Front end loader	180 hp	4.6667	4.6667		9.3334	1.69E-02	1.32E-01	1.40E-01	7.50E-04	1.07E-03	9.82E-04	1.69E-02	1.32E-01	1.40E-01	7.50E-04	1.07E-03	9.82E-04	-	-	-	-	-	-
	Loader/Backhoe	75 hp	11.1	11.1		22.2	1.69E-02	2.70E-01	3.36E-01	5.61E-04	1.97E-02	1.81E-02	1.69E-02	2.70E-01	3.36E-01	5.61E-04	1.97E-02	1.81E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	1.52E-02	1.73E-01	1.89E-01	9.96E-04	1.29E-03	1.18E-03	1.52E-02	1.73E-01	1.89E-01	9.96E-04	1.29E-03	1.18E-03	-	-	-	-	-	-
	3/4 ton pickup		72	80	12	164	7.43E-02	6.41E-02	9.02E-01	1.29E-03	1.05E-02	4.72E-03	8.25E-02	7.12E-02	1.00E+00	1.43E-03	1.17E-02	5.24E-03	1.24E-02	1.07E-02	1.50E-01	2.15E-04	1.75E-03	7.86E-04
	Chainsaw		44.4571	44.4571		88.9142	2.30E-01	1.26E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03	2.30E-01	1.26E-02	1.45E+00	1.61E-04	2.28E-03	2.27E-03	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	4	4		8	1.32E-02	9.74E-03	4.82E-01	2.32E-05	6.83E-03	6.81E-03	1.32E-02	9.74E-03	4.82E-01	2.32E-05	6.83E-03	6.81E-03	-	-	-	-	-	-
	Vibratory compactor	7.5 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		16	16		32	3.22E-02	4.54E-01	5.96E-02	5.03E-04	1.05E-02	6.25E-03	3.22E-02	4.54E-01	5.96E-02	5.03E-04	1.05E-02	6.25E-03	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4	4		8	8.05E-03	1.13E-01	1.49E-02	1.26E-04	2.62E-03	1.56E-03	8.05E-03	1.13E-01	1.49E-02	1.26E-04	2.62E-03	1.56E-03	-	-	-	-	-	-
	Suburban	3/4 ton	4	4		8	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	-	-	-	-	-	-
Disposal	Truck	35 ton	40	40		80	6.49E-02	7.00E-02	9.00E-01	7.10E-04	5.63E-03	2.43E-03	6.49E-02	7.00E-02	9.00E-01	7.10E-04	5.63E-03	2.43E-03	-	-	-	-	-	-
	Truck	75 ton	11.2	11.2		22.4	2.26E-02	3.17E-01	4.17E-02	3.52E-04	7.33E-03	4.37E-03	2.26E-02	3.17E-01	4.17E-02	3.52E-04	7.33E-03	4.37E-03	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	12	12		24	1.24E-02	1.07E-02	1.50E-01	2.15E-04	1.75E-03	7.86E-04	1.24E-02	1.07E-02	1.50E-01	2.15E-04	1.75E-03	7.86E-04	-	-	-	-	-	-
	Crane 210'	230 hp	24	24		48	5.06E-02	6.38E-01	7.03E-01	3.71E-03	4.65E-03	4.27E-03	5.06E-02	6.38E-01	7.03E-01	3.71E-03	4.65E-03	4.27E-03	-	-	-	-	-	-
	Crane 270'	430 hp	24	24		48	9.43E-02	1.19E+00	9.92E-01	4.86E-03	8.66E-03	7.97E-03	9.43E-02	1.19E+00	9.92E-01	4.86E-03	8.66E-03	7.97E-03	-	-	-	-	-	-
	3/4 ton pickup		24	24		48	2.48E-02	2.14E-02	3.01E-01	4.29E-04	3.50E-03	1.57E-03	2.48E-02	2.14E-02	3.01E-01	4.29E-04	3.50E-03	1.57E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8	8		16	3.04E-02	3.47E-01	3.77E-01	1.99E-03	2.57E-03	2.37E-03	3.04E-02	3.47E-01	3.77E-01	1.99E-03	2.57E-03	2.37E-03	-	-	-	-	-	-
	Excavator	430 hp	0.6137	0.6137		1.2274	3.86E-03	4.14E-02	3.29E-02	1.61E-04	3.11E-04	2.86E-04	3.86E-03	4.14E-02	3.29E-02	1.61E-04	3.11E-04	2.86E-04	-	-	-	-	-	-
	Truck		2.9609	2.9609		5.9218	5.96E-03	8.39E-02	1.10E-02	9.31E-05	1.94E-03	1.16E-03	5.96E-03	8.39E-02	1.10E-02	9.31E-05	1.94E-03	1.16E-03	-	-	-	-	-	-
	Generator	7.5 hp	15.8865	15.8865		31.773	7.07E-02	5.03E-02	3.63E+00	1.75E-04	3.43E-03	3.42E-03	7.07E-02	5.03E-02	3.63E+00	1.75E-04	3.43E-03	3.42E-03	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp	3.648	3.648		7.296	1.20E-02	8.88E-03	4.39E-01	2.12E-05	6.23E-03	6.21E-03	1.20E-02	8.88E-03	4.39E-01	2.12E-05	6.23E-03	6.21E-03	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	2.0218	2.0218		4.0436	7.69E-03	8.77E-02	9.54E-02	5.03E-04	6.51E-04	5.99E-04	7.69E-03	8.77E-02	9.54E-02	5.03E-04	6.51E-04	5.99E-04	-	-	-	-	-	-
	Truck		4.3678	4.3678		8.7356	8.79E-03	1.24E-01	1.63E-02	1.37E-04	2.86E-03	1.71E-03	8.79E-03	1.24E-01	1.63E-02	1.37E-04	2.86E-03	1.71E-03	-	-	-	-	-	-
	Asphalt distributor	3000 gal	4.9474	4.9474		9.8948	9.96E-03	1.40E-01	1.84E-02	1.56E-04	3.24E-03	1.93E-03	9.96E-03	1.40E-01	1.84E-02	1.56E-04	3.24E-03	1.93E-03	-	-	-	-	-	-
	Asphalt paver	120 hp	0.208	0.208		0.416	4.09E-04	8.53E-03	1.28E-02	2.25E-05	5.85E-04	5.39E-04	4.09E-04	8.53E-03	1.28E-02	2.25E-05	5.85E-04	5.39E-04	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp	0.848	0.848		1.696	1.60E-03	1.78E-02	1.61E-02	2.50E-05	7.16E-04	6.59E-04	1.60E-03	1.78E-02	1.61E-02	2.50E-05	7.16E-04	6.59E-04	-	-	-	-	-	-
	Chip spreader truck		0.64	0.64		1.28	1.29E-03	1.81E-02	2.38E-03	2.01E-05	4.19E-04	2.50E-04	1.29E-03	1.81E-02	2.38E-03	2.01E-05	4.19E-04	2.50E-04	-	-	-	-	-	-
	Line striper	23 hp	0.0713	0.0713		0.1426	8.31E-05	2.10E-04	4.38E-03	1.23E-06	9.87E-06	9.85E-06	8.31E-05	2.10E-04	4.38E-03	1.23E-06	9.87E-06	9.85E-06	-	-	-	-	-	-
	Flatbed Truck		0.0713	0.0713		0.1426	1.16E-04	1.25E-04	1.60E-03	1.27E-06	1.00E-05	4.32E-06	1.16E-04	1.25E-04	1.60E-03	1.27E-06	1.00E-05	4.32E-06	-	-	-	-	-	-
	3/4 ton pickup		0.0713	0.0713		0.1426	7.35E-05	6.35E-05	8.93E-04	1.27E-06	1.04E-05	4.67E-06	7.35E-05	6.35E-05	8.93E-04	1.27E-06	1.04E-05	4.67E-06	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	9.4118	9.4118		18.8236	5.91E-02	6.35E-01	5.05E-01	2.47E-03	4.77E-03	4.39E-03	5.91E-02	6.35E-01	5.05E-01	2.47E-03	4.77E-03	4.39E-03	-	-	-	-	-	-
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	2.87E-02	4.58E-01	5.70E-01	9.51E-04	3.34E-02	3.08E-02	2.87E-02	4.58E-01	5.70E-01	9.51E-04	3.34E-02	3.08E-02	1.43E-02	2.29E-01	2.85E-01	4.75E-04	1.67E-02	1.54E-02
	Loader/Backhoe	92 hp	4.7059	9.4118	9.4118	23.5295	8.80E-03	1.40E-01	1.75E-01	2.92E-04	1.03E-02	9.43E-03	1.76E-02	2.81E-01	3.49E-01	5.83E-04	2.05E-02	1.89E-02	1.76E-02	2.81E-01	3.49E-01	5.83E-04	2.05E-02	1.89E-02
	Vibratory roller	44 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	3.79E-02	5.34E-01	7.01E-02	5.92E-04	1.23E-02	7.35E-03	1.89E-02	2.67E-01	3.50E-02	2.96E-04	6.16E-03	3.68E-03
	3/4 ton pickup					0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup		4	4	2	10	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	4.13E-03	3.56E-03	5.01E-02	7.15E-05	5.84E-04	2.62E-04	2.06E-03	1.78E-03	2.51E-02	3.58E-05	2.92E-04	1.31E-04
							2.47E+00	**1.81E+01**	**2.77E+01**	**7.50E-02**	**4.67E-01**	**4.06E-01**	**2.91E+00**	**1.85E+01**	**5.40E+01**	**7.61E-02**	**4.91E-01**	**4.28E-01**	**2.93E-01**	**3.61E+00**	**4.21E+00**	**1.32E-02**	**1.28E-01**	**1.14E-01**

Conversions
2000 pounds per ton
453.6 grams per pound
2 peak day scaling factor
0.9072 metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/2/2017
Birthday of Martin Luther King, Jr.	1/16/2017
Washington's Birthday	2/20/2017
Memorial Day	5/29/2017
Independence Day	7/4/2017
Labor Day	9/4/2017
Columbus Day	10/9/2017
Veterans Day	10/10/2017
Thanksgiving Day	11/23/2017
Christmas Day	12/25/2017

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http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV2 Equipment Report.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Y 2021
Speed of Onsite Tru 10 mph

15 CC2 & LV1 | 15 CC2 & LV2 | 15 CC3 | days per construction period (5 days per week)

GWP 1 | 21 | 310

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-21	4/22-5/12	5/13-6/2	Annual Hours	Emission Factors - 2021 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Annual Emissions - 2021 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Water Control - Installation	Flatbed Truck		4	4	4	12	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	5.20E-05	5.98E-05	7.17E-04	7.99E-07	6.23E-06	2.64E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.048	0.846	1.340	0.002	0.060	0.055	189.347	0.014	0.000	2.26E-05	3.98E-04	6.30E-04	1.04E-06	2.83E-05	2.61E-05	8.90E-02	6.80E-06	-	8.92E-02	8.09E-02
	Loader/Backhoe	75 hp	5.248	2.624	2.624	10.496	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	6.58E-05	9.70E-04	1.20E-03	1.99E-06	7.23E-05	6.65E-05	1.70E-01	1.29E-05	-	1.70E-01	1.54E-01
	Tractor/crawler/dozer	250 hp	10.9583	5.625		16.5833	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.62E-04	2.73E-03	2.93E-03	1.55E-05	2.06E-05	1.90E-05	1.38E+00	7.61E-05	-	1.38E+00	1.25E+00
	Truck		2.7692	2.7692		5.5384	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.27E-05	3.05E-04	8.11E-05	6.49E-07	1.13E-05	5.97E-06	1.30E-01	3.11E-07	2.93E-07	1.30E-01	1.18E-01
	Water pump	3.5 hp				0	4.755	2.132	56.307	0.006	0.058	0.058	177.809	0.269	0.303	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	12	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	5.20E-05	5.98E-05	7.17E-04	7.99E-07	6.23E-06	2.64E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Crane 44'	80 hp	2.2222	1.7777	1.3333	5.3332	0.048	0.846	1.340	0.002	0.060	0.055	189.347	0.014	0.000	2.26E-05	3.98E-04	6.30E-04	1.04E-06	2.83E-05	2.61E-05	8.90E-02	6.80E-06	-	8.92E-02	8.09E-02
	Loader/Backhoe	75 hp				0	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		8	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	1.26E-04	1.32E-03	1.42E-03	7.47E-06	9.96E-06	9.16E-06	6.64E-01	3.67E-05	-	6.65E-01	6.03E-01
	Truck		2.7692			2.7692	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	2.13E-05	1.52E-04	4.05E-05	3.24E-07	5.64E-06	2.99E-06	6.50E-02	1.56E-07	1.47E-07	6.51E-02	5.90E-02
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	56.4852	0.163	1.476	1.826	0.004	0.097	0.089	338.630	0.015	0.000	1.73E-03	1.56E-02	1.93E-02	4.03E-05	1.03E-03	9.45E-04	3.58E+00	1.56E-04	-	3.59E+00	3.25E+00
	Crane 50'	200 hp	9.4118			9.4118	0.034	0.397	0.433	0.002	0.003	0.003	203.318	0.011	0.000	7.15E-05	8.24E-04	8.99E-04	4.75E-06	6.10E-06	5.62E-06	4.22E-01	2.33E-05	-	4.22E-01	3.83E-01
	Man lift	210 hp	9.4118	9.4118	9.4118	28.2354	0.060	0.462	0.339	0.002	0.003	0.003	192.994	0.005	0.000	3.93E-04	3.02E-03	2.21E-03	1.24E-05	2.19E-05	2.02E-05	1.26E+00	3.55E-05	-	1.26E+00	1.15E+00
	Loader	190 hp	28.2352	14.2656		42.5008	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	5.10E-04	5.32E-03	5.72E-03	3.02E-05	4.02E-05	3.70E-05	2.68E+00	1.48E-04	-	2.68E+00	2.43E+00
	Chainsaw		56.4706	28.2353	28.2353	112.9412	2.303	0.115	13.188	0.001	0.021	0.021	35.645	0.143	0.039	2.41E-03	1.20E-04	1.38E-02	1.54E-06	2.17E-05	2.17E-05	3.73E-02	1.50E-04	4.09E-05	5.31E-02	4.82E-02
	1 ton pickup			0.0176		0.0176	1.379	2.069	19.104	0.061	0.477	0.205	20,361.282	2.024	1.056	2.68E-08	4.01E-08	3.71E-07	1.19E-09	9.25E-09	3.97E-09	3.95E-04	3.93E-08	2.05E-08	4.02E-04	3.65E-04
	Tractor/crawler/dozer	250 hp				0	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		0.0148	0.075	0.538	0.626	0.003	0.004	0.004	312.589	0.017	0.000	6.65E-07	4.74E-06	5.52E-06	2.77E-08	3.94E-08	3.62E-08	2.75E-03	1.52E-07	-	2.76E-03	2.50E-03
	Tractor/crawler/dozer	310 hp		0.0148		0.0148	0.058	0.607	0.471	0.002	0.005	0.004	234.947	0.013	0.000	2.94E-07	3.07E-06	2.38E-06	1.17E-08	2.32E-08	2.14E-08	1.19E-03	6.57E-08	-	1.19E-03	1.08E-03
	Dump truck	20cy/24 ton		0.1487		0.1487	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	1.15E-06	8.19E-06	2.18E-06	1.74E-08	3.03E-07	1.60E-07	3.49E-03	8.36E-09	7.87E-09	3.49E-03	3.17E-03
Demolition	Air Compressor	250 hp	3.3028	3.3028		6.6056	0.118	0.602	0.476	0.003	0.005	0.004	237.782	0.011	0.000	2.14E-04	1.10E-03	8.67E-04	4.87E-06	8.67E-06	7.98E-06	4.33E-01	1.93E-05	-	4.33E-01	3.93E-01
	Air Compressor	50 hp				0	2.038	1.507	74.498	0.004	1.056	1.054	125.982	0.115	0.151	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				0	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		6.6056	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	6.61E-05	7.61E-04	6.26E-04	3.07E-06	5.64E-06	5.18E-06	3.13E-01	1.73E-05	-	3.13E-01	2.84E-01
	Crane 210'	230 hp				0	0.034	0.397	0.433	0.002	0.003	0.003	203.318	0.011	0.000	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	208	0.074	1.116	1.968	0.003	0.083	0.076	278.052	0.021	0.000	1.95E-03	2.94E-02	5.19E-02	8.60E-05	2.18E-03	2.00E-03	7.33E+00	5.60E-04	-	7.34E+00	6.66E+00
	Excavator	430 hp	80	32	48	160	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	4.11E-03	4.05E-02	3.22E-02	1.58E-04	3.10E-04	2.85E-04	1.61E+01	8.89E-04	-	1.61E+01	1.46E+01
	Loader	190 hp	112	64	48	224	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	2.69E-03	2.80E-02	3.01E-02	1.59E-04	2.12E-04	1.95E-04	1.41E+01	7.81E-04	-	1.41E+01	1.28E+01
	Front end loader	180 hp				0	0.076	0.543	0.576	0.003	0.005	0.004	270.060	0.015	0.000	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				0	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	31.5714	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	4.99E-04	5.20E-03	5.59E-03	2.95E-05	3.93E-05	3.61E-05	2.62E+00	1.45E-04	-	2.62E+00	2.38E+00
	3/4 ton pickup		112	64	48	224	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	6.74E-04	6.41E-04	8.28E-03	1.50E-05	1.20E-04	5.31E-05	5.03E+00	5.00E-04	2.61E-04	5.12E+00	4.64E+00
	Chainsaw		3.3028	3.3028		6.6056	2.303	0.115	13.188	0.001	0.021	0.021	35.645	0.143	0.039	1.41E-04	7.02E-06	8.07E-04	8.98E-08	1.27E-06	1.27E-06	2.18E-03	8.75E-06	2.39E-06	3.11E-03	2.82E-03
Road Realignment	Vibratory roller	145 hp				0	0.052	0.912	1.635	0.003	0.057	0.052	280.084	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				0	2.038	1.507	74.498	0.004	1.056	1.054	125.982	0.115	0.151	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	21.78	0.067	1.839	0.997	0.003	0.065	0.060	242.030	0.026	0.000	1.21E-05	3.31E-04	1.79E-04	5.53E-07	1.18E-05	1.08E-05	4.36E-02	4.74E-06	-	4.37E-02	3.96E-02
	Truck		39.6577	6.1748	6.1748	52.0073	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.01E-04	2.86E-03	7.61E-04	6.09E-06	1.06E-04	5.61E-05	1.22E+00	2.92E-06	2.75E-06	1.22E+00	1.11E+00
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	6.2227	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	4.80E-05	3.43E-04	9.11E-05	7.29E-07	1.27E-05	6.71E-06	1.46E-01	3.50E-07	3.29E-07	1.46E-01	1.33E-01
	Suburban	3/4 ton				0	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	12	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	5.20E-05	5.98E-05	7.17E-04	7.99E-07	6.23E-06	2.64E-06	2.69E-01	6.09E-05	2.82E-05	2.79E-01	2.53E-01
	Truck	75 ton				0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	37.6472	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	1.13E-04	1.08E-04	1.39E-03	2.53E-06	2.02E-05	8.92E-06	8.45E-01	8.40E-05	4.38E-05	8.60E-01	7.80E-01
	Crane 210'	230 hp	18.8235			18.8235	0.034	0.397	0.433	0.002	0.003	0.003	203.318	0.011	0.000	1.65E-04	1.90E-03	2.07E-03	1.09E-05	1.40E-05	1.29E-05	9.70E-01	5.37E-05	-	9.71E-01	8.81E-01
	Crane 270'	430 hp	18.8235	18.8235	18.8235	56.4705	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	9.23E-04	1.06E-02	8.76E-03	4.29E-05	7.88E-05	7.25E-05	4.37E+00	2.42E-04	-	4.38E+00	3.97E+00
	3/4 ton pickup		37.647	18.8235	18.8235	75.294	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	2.27E-04	2.15E-04	2.78E-03	5.06E-06	4.05E-05	1.78E-05	1.69E+00	1.68E-04	8.76E-05	1.72E+00	1.56E+00
	Tractor/crawler/dozer	250 hp				0	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				0	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				0	2.020	1.438	103.611	0.005	0.098	0.098	175.213	0.114	0.147	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				0	2.038	1.507	74.498	0.004	1.056	1.054	125.982	0.115	0.151	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Truck					0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				0	0.061	1.179	1.814	0.003	0.082	0.076	261.320	0.019	0.000	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				0	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					0	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				0	0.196	0.474	9.240	0.003	0.020	0.020	254.963	0.011	0.026	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					0	3.935	4.518	54.221	0.060	0.471	0.199	20,361.282	4.604	2.135	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					0	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	58.8235	0.196	0.474	9.240	0.003	0.020	0.020	254.963	0.011	0.026	1.14E-04	2.76E-04	5.39E-03	1.48E-06	1.19E-05	1.18E-05	1.49E-01	6.45E-06	1.49E-05	1.54E-01	1.39E-01
	Crane 80'	130 hp	11.7648	5.8824	5.8824	23.5296	0.048	0.715	1.302	0.002	0.047	0.043	208.020	0.016	0.000	1.62E-04	2.41E-03	4.39E-03	7.89E-06	1.59E-04	1.47E-04	7.01E-01	5.36E-05	-	7.03E-01	6.37E-01
	Crane 114'	430 hp	35.2941	11.7647	11.7647	58.8235	0.034	0.397	0.327	0.002	0.003	0.003	163.300	0.009	0.000	9.62E-04	1.11E-02	9.12E-03	4.47E-05	8.21E-05	7.55E-05	4.55E+00	2.52E-04	-	4.56E+00	4.14E+00
	Auger drill	100 hp	11.7648	5.8824	5.8824	23.5296	0.074	1.441	1.938	0.003	0.100	0.092	291.984	0.018	0.000	1.93E-04	3.74E-03	5.03E-03	8.88E-06	2.61E-04	2.40E-04	7.57E-01	4.67E-05	-	7.58E-01	6.88E-01
	Water pump	80 hp	11.7648	5.8824	5.8824	23.5296	0.131	1.502	1.766	0.003	0.105	0.097	294.369	0.012	0.000	2.73E-04	3.12E-03	3.66E-03	7.16E-06	2.18E-04	2.01E-04	6.11E-01	2.46E-05	-	6.11E-01	5.55E-01
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	37.6472	0.054	0.534	0.424	0.002	0.004	0.004	211.856	0.012	0.000	9.68E-04	9.54E-03	7.57E-03	3.71E-05	7.30E-05	6.71E-05	3.78E+00	2.09E-04	-	3.78E+00	3.43E+00
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	47.059	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	2.95E-04	4.35E-03	5.38E-03	8.92E-06	3.24E-04	2.98E-04	7.60E-01	5.81E-05	-	7.61E-01	6.91E-01
	Loader/Backhoe	92 hp		9.4118		9.4118	0.076	1.118	1.383	0.002	0.083	0.077	195.356	0.015	0.000	7.23E-05	1.07E-03	1.32E-03	2.19E-06	7.95E-05	7.32E-05	1.86E-01	1.42E-05	-	1.87E-01	1.69E-01
	Vibratory roller	44 hp				0	0.222	2.225	2.115	0.003	0.093	0.086	235.529	0.020	0.000	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				0	0.057	0.597	0.642	0.003	0.005	0.004	301.159	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	47.059	6.993	49.941	13.281	0.106	1.847	0.978	21,297.572	0.051	0.048	3.63E-04	2.59E-03	6.89E-04	5.51E-06	9.58E-05	5.07E-05	1.10E+00	2.65E-06	2.49E-06	1.11E+00	1.00E+00
	3/4 ton pickup					0	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		2	2.731	2.596	33.529	0.061	0.488	0.215	20,361.282	2.024	1.056	6.02E-06	5.72E-06	7.39E-05	1.34E-07	1.08E-06	4.74E-07	4.49E-02	4.46E-06	2.33E-06	4.57E-02	4.15E-02
															Total	**2.15E-02**	**1.92E-01**	**2.40E-01**	**7.68E-04**	**5.78E-03**	**5.13E-03**	**7.92E+01**	**4.98E-03**	**5.44E-04**	**7.95E+01**	**7.21E+01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 2
Alternative 3

Construction Start Y 2021
Speed of Onsite Tru 10 mph

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-21 (15 CC2 & LV1)	4/22-5/12 (15 CC2 & LV2)	5/13-6/2 (15 CC3)	Peak Daily Emissions (CC2 & LV1) - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions (CC2 & LV2) - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions (CC3) - 2021 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck		4	4	4	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	2.51E-03	4.42E-02	7.00E-02	1.16E-04	3.15E-03	2.90E-03	2.01E-03	3.53E-02	5.60E-02	9.29E-05	2.52E-03	2.32E-03	1.51E-03	2.65E-02	4.20E-02	6.96E-05	1.89E-03	1.74E-03
	Loader/Backhoe	75 hp	5.248	2.624	2.624	8.77E-03	1.29E-01	1.60E-01	2.65E-04	9.64E-03	8.87E-03	4.38E-03	6.47E-02	8.00E-02	1.33E-04	4.82E-03	4.43E-03	4.38E-03	6.47E-02	8.00E-02	1.33E-04	4.82E-03	4.43E-03
	Tractor/crawler/dozer	250 hp	10.9583	5.625		4.61E-02	4.81E-01	5.17E-01	2.73E-03	3.64E-03	3.35E-03	2.37E-02	2.47E-01	2.65E-01	1.40E-03	1.87E-03	1.72E-03	-	-	-	-	-	-
	Truck		2.7692	2.7692		5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04	5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04	-	-	-	-	-	-
	Water pump	3.5 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck		4	4	4	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Crane 44'	80 hp	2.2222	1.7777	1.3333	2.51E-03	4.42E-02	7.00E-02	1.16E-04	3.15E-03	2.90E-03	2.01E-03	3.53E-02	5.60E-02	9.29E-05	2.52E-03	2.32E-03	1.51E-03	2.65E-02	4.20E-02	6.96E-05	1.89E-03	1.74E-03
	Loader/Backhoe	75 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	4	4		1.68E-02	1.76E-01	1.89E-01	9.96E-04	1.33E-03	1.22E-03	1.68E-02	1.76E-01	1.89E-01	9.96E-04	1.33E-03	1.22E-03	-	-	-	-	-	-
	Truck		2.7692			5.69E-03	4.07E-02	1.08E-02	8.65E-05	1.50E-03	7.96E-04	-	-	-	-	-	-	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	28.2352	14.1324	14.1176	2.30E-01	2.08E+00	2.58E+00	5.38E-03	1.37E-01	1.26E-01	1.15E-01	1.04E+00	1.29E+00	2.69E-03	6.85E-02	6.30E-02	1.15E-01	1.04E+00	1.29E+00	2.69E-03	6.85E-02	6.30E-02
	Crane 50'	200 hp	9.4118			1.91E-02	2.20E-01	2.40E-01	1.27E-03	1.63E-03	1.50E-03	-	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp	9.4118	9.4118	9.4118	3.50E-02	2.68E-01	1.97E-01	1.10E-03	1.95E-03	1.79E-03	3.50E-02	2.68E-01	1.97E-01	1.10E-03	1.95E-03	1.79E-03	3.50E-02	2.68E-01	1.97E-01	1.10E-03	1.95E-03	1.79E-03
	Loader	190 hp	28.2352	14.2656		9.04E-02	9.42E-01	1.01E+00	5.34E-03	7.12E-03	6.55E-03	4.57E-02	4.76E-01	5.12E-01	2.70E-03	3.60E-03	3.31E-03	-	-	-	-	-	-
	Chainsaw		56.4706	28.2353	28.2353	3.21E-01	1.60E-02	1.84E+00	2.05E-04	2.89E-03	2.89E-03	1.61E-01	8.00E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03	1.61E-01	8.00E-03	9.19E-01	1.02E-04	1.45E-03	1.44E-03
	1 ton pickup			0.0176		-	-	-	-	-	-	7.14E-06	1.07E-05	9.88E-05	3.16E-07	2.47E-06	1.06E-06	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Front end loader	540 hp		0.0148		-	-	-	-	-	-	1.77E-04	1.27E-03	1.47E-03	7.38E-06	1.05E-05	9.66E-06	-	-	-	-	-	-
	Tractor/crawler/dozer	310 hp		0.0148		-	-	-	-	-	-	7.85E-05	8.19E-04	6.35E-04	3.11E-06	6.19E-06	5.69E-06	-	-	-	-	-	-
	Dump truck	20cy/24 ton		0.1487		-	-	-	-	-	-	3.06E-04	2.18E-03	5.81E-04	4.65E-06	8.07E-05	4.27E-05	-	-	-	-	-	-
Demolition	Air Compressor	250 hp	3.3028	3.3028		2.86E-02	1.46E-01	1.16E-01	6.49E-04	1.16E-03	1.06E-03	2.86E-02	1.46E-01	1.16E-01	6.49E-04	1.16E-03	1.06E-03	-	-	-	-	-	-
	Air Compressor	50 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp	3.3028	3.3028		8.81E-03	1.01E-01	8.35E-02	4.09E-04	7.51E-04	6.91E-04	8.81E-03	1.01E-01	8.35E-02	4.09E-04	7.51E-04	6.91E-04	-	-	-	-	-	-
	Crane 210'	230 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp	128	32	48	3.19E-01	4.83E+00	8.51E+00	1.41E-02	3.57E-01	3.29E-01	7.99E-02	1.21E+00	2.13E+00	3.53E-03	8.94E-02	8.22E-02	1.20E-01	1.81E+00	3.19E+00	5.29E-03	1.34E-01	1.23E-01
	Excavator	430 hp	80	32	48	5.48E-01	5.40E+00	4.29E+00	2.10E-02	4.14E-02	3.81E-02	2.19E-01	2.16E+00	1.72E+00	8.41E-03	1.65E-02	1.52E-02	3.29E-01	3.24E+00	2.57E+00	1.26E-02	2.48E-02	2.28E-02
	Loader	190 hp	112	64	48	3.58E-01	3.74E+00	4.02E+00	2.12E-02	2.82E-02	2.60E-02	2.05E-01	2.13E+00	2.29E+00	1.21E-02	1.61E-02	1.49E-02	1.54E-01	1.60E+00	1.72E+00	9.08E-03	1.21E-02	1.11E-02
	Front end loader	180 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	20.7454	5.413	5.413	8.74E-02	9.11E-01	9.79E-01	5.17E-03	6.88E-03	6.33E-03	2.28E-02	2.38E-01	2.55E-01	1.35E-03	1.80E-03	1.65E-03	2.28E-02	2.38E-01	2.55E-01	1.35E-03	1.80E-03	1.65E-03
	3/4 ton pickup		112	64	48	8.99E-02	8.55E-02	1.10E+00	2.01E-03	1.61E-02	7.08E-03	5.14E-02	4.88E-02	6.31E-01	1.15E-03	9.18E-03	4.04E-03	3.85E-02	3.66E-02	4.73E-01	8.60E-04	6.88E-03	3.03E-03
	Chainsaw		3.3028	3.3028		1.88E-02	9.35E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04	1.88E-02	9.35E-04	1.08E-01	1.20E-05	1.69E-04	1.69E-04	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating compactor	5.5 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vibratory compactor	7.5 hp	14.31	3.735	3.735	2.12E-03	5.80E-02	3.14E-02	9.69E-05	2.06E-03	1.90E-03	5.52E-04	1.51E-02	8.21E-03	2.53E-05	5.38E-04	4.95E-04	5.52E-04	1.51E-02	8.21E-03	2.53E-05	5.38E-04	4.95E-04
	Truck		39.6577	6.1748	6.1748	8.15E-02	5.82E-01	1.55E-01	1.24E-03	2.15E-02	1.14E-02	1.27E-02	9.06E-02	2.41E-02	1.93E-04	3.35E-03	1.78E-03	1.27E-02	9.06E-02	2.41E-02	1.93E-04	3.35E-03	1.78E-03
	Asphalt distributor	3000 gal	4.0885	1.0671	1.0671	8.40E-03	6.00E-02	1.60E-02	1.28E-04	2.22E-03	1.18E-03	2.19E-03	1.57E-02	4.17E-03	3.33E-05	5.79E-04	3.07E-04	2.19E-03	1.57E-02	4.17E-03	3.33E-05	5.79E-04	3.07E-04
	Suburban	3/4 ton				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton	4	4	4	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04	4.63E-03	5.31E-03	6.38E-02	7.10E-05	5.54E-04	2.34E-04
	Truck	75 ton				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton	18.8236	9.4118	9.4118	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03	7.56E-03	7.18E-03	9.28E-02	1.69E-04	1.35E-03	5.95E-04	7.56E-03	7.18E-03	9.28E-02	1.69E-04	1.35E-03	5.95E-04
	Crane 210'	230 hp	18.8235			4.39E-02	5.05E-01	5.52E-01	2.91E-03	3.74E-03	3.44E-03	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp	18.8235	18.8235	18.8235	8.21E-02	9.45E-01	7.78E-01	3.81E-03	7.00E-03	6.44E-03	8.21E-02	9.45E-01	7.78E-01	3.81E-03	7.00E-03	6.44E-03	8.21E-02	9.45E-01	7.78E-01	3.81E-03	7.00E-03	6.44E-03
	3/4 ton pickup		37.647	18.8235	18.8235	3.02E-02	2.87E-02	3.71E-01	6.74E-04	5.40E-03	2.38E-03	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03	1.51E-02	1.44E-02	1.86E-01	3.37E-04	2.70E-03	1.19E-03
	Tractor/crawler/dozer	250 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Truck					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp	35.2941	11.7647	11.7647	1.83E-02	4.42E-02	8.63E-01	2.36E-04	1.90E-03	1.89E-03	6.09E-03	1.47E-02	2.88E-01	7.88E-05	6.32E-04	6.31E-04	6.09E-03	1.47E-02	2.88E-01	7.88E-05	6.32E-04	6.31E-04
	Crane 80'	130 hp	11.7648	5.8824	5.8824	2.16E-02	3.21E-01	5.85E-01	1.05E-03	2.12E-02	1.95E-02	1.08E-02	1.61E-01	2.93E-01	5.26E-04	1.06E-02	9.77E-03	1.08E-02	1.61E-01	2.93E-01	5.26E-04	1.06E-02	9.77E-03
	Crane 114'	430 hp	35.2941	11.7647	11.7647	1.54E-01	1.77E+00	1.46E+00	7.15E-03	1.31E-02	1.21E-02	5.13E-02	5.91E-01	4.86E-01	2.38E-03	4.38E-03	4.03E-03	5.13E-02	5.91E-01	4.86E-01	2.38E-03	4.38E-03	4.03E-03
	Auger drill	100 hp	11.7648	5.8824	5.8824	2.57E-02	4.98E-01	6.70E-01	1.18E-03	3.48E-02	3.20E-02	1.29E-02	2.49E-01	3.35E-01	5.92E-04	1.74E-02	1.60E-02	1.29E-02	2.49E-01	3.35E-01	5.92E-04	1.74E-02	1.60E-02
	Water pump	80 hp	11.7648	5.8824	5.8824	3.63E-02	4.15E-01	4.89E-01	9.55E-04	2.91E-02	2.67E-02	1.82E-02	2.08E-01	2.44E-01	4.78E-04	1.45E-02	1.34E-02	1.82E-02	2.08E-01	2.44E-01	4.78E-04	1.45E-02	1.34E-02
Landscaping	Excavator	430 hp	18.8236	9.4118	9.4118	1.29E-01	1.27E+00	1.01E+00	4.95E-03	9.73E-03	8.95E-03	6.45E-02	6.36E-01	5.05E-01	2.47E-03	4.87E-03	4.48E-03	6.45E-02	6.36E-01	5.05E-01	2.47E-03	4.87E-03	4.48E-03
	Loader/Backhoe	75 hp	18.8236	18.8236	9.4118	3.15E-02	4.64E-01	5.74E-01	9.51E-04	3.46E-02	3.18E-02	3.15E-02	4.64E-01	5.74E-01	9.51E-04	3.46E-02	3.18E-02	1.57E-02	2.32E-01	2.87E-01	4.75E-04	1.73E-02	1.59E-02
	Loader/Backhoe	92 hp		9.4118		-	-	-	-	-	-	1.93E-02	2.84E-01	3.52E-01	5.83E-04	2.12E-02	1.95E-02	-	-	-	-	-	-
	Vibratory roller	44 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dump truck	12 cy	18.8236	18.8236	9.4118	3.87E-02	2.76E-01	7.35E-02	5.88E-04	1.02E-02	5.41E-03	3.87E-02	2.76E-01	7.35E-02	5.88E-04	1.02E-02	5.41E-03	1.93E-02	1.38E-01	3.67E-02	2.94E-04	5.11E-03	2.71E-03
	3/4 ton pickup					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup			2		-	-	-	-	-	-	1.61E-03	1.53E-03	1.97E-02	3.58E-05	2.87E-04	1.26E-04	-	-	-	-	-	-
						2.98E+00	**2.70E+01**	**3.41E+01**	**1.09E-01**	**8.27E-01**	**7.35E-01**	**1.43E+00**	**1.24E+01**	**1.54E+01**	**5.05E-02**	**3.61E-01**	**3.19E-01**	**1.31E+00**	**1.17E+01**	**1.45E+01**	**4.54E-02**	**3.52E-01**	**3.14E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend
Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2018
Birthday of Martin Luther King, Jr.	1/15/2018
Washington's Birthday	2/19/2018
Memorial Day	5/28/2018
Independence Day	7/4/2018
Labor Day	9/3/2018
Columbus Day	10/8/2018
Veterans Day	11/12/2018
Thanksgiving Day	11/22/2018
Christmas Day	12/25/2018
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC2 Equipment Report.pdf
CC3 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV1 Equipment Report.pdf
LV2 Equipment Report.pdf

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 3
Alternative 3

Construction Start Y 2023
Speed of Onsite Tru 10 mph

50 LV3 & LV4 | 15 LV2 | days per construction period (5 days per week)

GWP 1 21 310

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-6/9	Hours of Operation 6/10-6/30	Annual Hours	Emission Factors - 2023 (g/hp-hr or g/hr) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	Annual Emissions - 2023 (tons per year) VOC	NOx	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e	Metric Tons CO2e/yr
Water Control - Installation	Flatbed Truck				0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	0.053	0.856	1.340	0.002	0.062	0.057	189.341	0.014	0.000	2.32E-04	3.78E-03	5.92E-03	9.82E-06	2.75E-04	2.53E-04	8.37E-01	6.39E-05	-	8.38E-01	7.60E-01
	Loader/Backhoe	75 hp	34.624		34.624	0.081	1.131	1.383	0.002	0.086	0.079	195.357	0.015	0.000	2.33E-04	3.24E-03	3.96E-03	6.56E-06	2.45E-04	2.26E-04	5.59E-01	4.27E-05	-	5.60E-01	5.08E-01
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	2.25E-03	2.18E-02	2.33E-02	1.23E-04	1.67E-04	1.54E-04	1.09E+01	6.04E-04	-	1.09E+01	9.92E+00
	Truck		34.1719	2.7692	36.9411	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	2.59E-04	1.01E-03	4.92E-04	4.30E-06	7.33E-05	3.81E-05	8.61E-01	2.08E-06	1.95E-06	8.62E-01	7.82E-01
	Water pump	3.5 hp			0	4.754	2.132	56.303	0.006	0.058	0.058	177.795	0.269	0.303	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	0.053	0.856	1.340	0.002	0.062	0.057	189.341	0.014	0.000	2.06E-06	3.35E-05	5.25E-05	8.70E-08	2.44E-06	2.24E-06	7.42E-03	5.67E-07	-	7.43E-03	6.74E-03
	Loader/Backhoe	75 hp	32		32	0.081	1.131	1.383	0.002	0.086	0.079	195.357	0.015	0.000	2.16E-04	2.99E-03	3.66E-03	6.06E-06	2.27E-04	2.09E-04	5.17E-01	3.95E-05	-	5.18E-01	4.70E-01
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	2.17E-04	2.10E-03	2.25E-03	1.19E-05	1.62E-05	1.49E-05	1.05E+00	5.83E-05	-	1.06E+00	9.58E-01
	Truck		34.1719		34.1719	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	2.40E-04	9.36E-04	4.55E-04	3.98E-06	6.78E-05	3.53E-05	7.97E-01	1.92E-06	1.81E-06	7.97E-01	7.23E-01
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	0.180	1.493	1.865	0.004	0.102	0.094	338.470	0.016	0.000	2.00E-04	1.66E-03	2.07E-03	4.24E-06	1.13E-04	1.04E-04	3.77E-01	1.81E-05	-	3.77E-01	3.42E-01
	Crane 50'	200 hp			0	0.038	0.400	0.434	0.002	0.003	0.003	203.339	0.011	0.000	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	0.066	0.466	0.343	0.002	0.003	0.003	192.867	0.006	0.000	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	7.72E-05	7.46E-04	7.98E-04	4.21E-06	5.74E-06	5.28E-06	3.74E-01	2.07E-05	-	3.75E-01	3.40E-01
	Chainsaw		5.8824	0.0147	5.8971	2.509	0.115	13.187	0.001	0.021	0.021	35.644	0.156	0.039	1.37E-04	6.26E-06	7.20E-04	8.02E-08	1.13E-06	1.13E-06	1.95E-03	8.52E-06	2.14E-06	2.79E-03	2.53E-03
	1 ton pickup			0.0088	0.0088	0.952	1.707	13.882	0.061	0.470	0.199	20,361.282	2.024	1.056	9.23E-09	1.66E-08	1.35E-07	5.93E-10	4.56E-09	1.93E-09	1.98E-04	1.96E-08	1.02E-08	2.01E-04	1.82E-04
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	1.01E-04	9.75E-04	1.04E-03	5.51E-06	7.50E-06	6.90E-06	4.89E-01	2.71E-05	-	4.90E-01	4.45E-01
	Front end loader	540 hp	5.9294	0.0074	5.9368	0.075	0.538	0.548	0.003	0.004	0.004	273.357	0.015	0.000	2.67E-04	1.90E-03	1.94E-03	9.71E-06	1.58E-05	1.45E-05	9.66E-01	5.34E-05	-	9.67E-01	8.77E-01
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	0.063	0.611	0.471	0.002	0.005	0.004	234.966	0.013	0.000	1.28E-04	1.24E-03	9.55E-04	4.68E-06	9.53E-06	8.76E-06	4.77E-01	2.64E-05	-	4.77E-01	4.33E-01
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	4.17E-04	1.63E-03	7.93E-04	6.93E-06	1.18E-04	6.14E-05	1.39E+00	3.35E-06	3.15E-06	1.39E+00	1.26E+00
Demolition	Air Compressor	250 hp			0	0.133	0.613	0.493	0.003	0.005	0.005	237.830	0.012	0.000	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	0.731	0.811	70.044	0.004	0.024	0.023	307.049	0.041	0.062	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	0.038	0.400	0.434	0.002	0.003	0.003	203.339	0.011	0.000	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	0.079	1.120	1.968	0.003	0.084	0.078	278.047	0.021	0.000	4.02E-04	5.68E-03	9.98E-03	1.65E-05	4.28E-04	3.94E-04	1.41E+00	1.08E-04	-	1.41E+00	1.28E+00
	Excavator	430 hp	80	20	100	0.058	0.534	0.424	0.002	0.004	0.004	211.846	0.012	0.000	2.75E-03	2.53E-02	2.01E-02	9.86E-05	1.97E-04	1.81E-04	1.00E+01	5.55E-04	-	1.01E+01	9.12E+00
	Loader	190 hp		20	20	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	2.60E-04	2.51E-03	2.69E-03	1.42E-05	1.93E-05	1.78E-05	1.26E+00	6.98E-05	-	1.26E+00	1.15E+00
	Front end loader	180 hp			0	0.076	0.543	0.576	0.003	0.005	0.004	270.058	0.015	0.000	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	0.081	1.131	1.383	0.002	0.086	0.079	195.357	0.015	0.000	2.36E-03	3.27E-02	4.00E-02	6.63E-05	2.48E-03	2.28E-03	5.65E+00	4.32E-04	-	5.66E+00	5.14E+00
	Tractor/crawler/dozer	250 hp	50.068		50.068	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	8.57E-04	8.28E-03	8.86E-03	4.68E-05	6.37E-05	5.86E-05	4.16E+00	2.30E-04	-	4.16E+00	3.77E+00
	3/4 ton pickup		72	20	92	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	2.07E-04	2.24E-04	2.66E-03	6.18E-06	4.87E-05	2.11E-05	2.06E+00	2.05E-04	1.07E-04	2.10E+00	1.91E+00
	Chainsaw				0	2.509	0.115	13.187	0.001	0.021	0.021	35.644	0.156	0.039	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	0.056	0.922	1.681	0.003	0.059	0.054	280.032	0.019	0.000	1.71E-04	2.81E-03	5.13E-03	9.61E-06	1.79E-04	1.64E-04	8.54E-01	5.70E-05	-	8.56E-01	7.76E-01
	Vibrating compactor	5.5 hp	5.1724		5.1724	2.035	1.504	74.398	0.004	1.055	1.053	125.812	0.115	0.150	6.38E-05	4.72E-05	2.33E-03	1.12E-07	3.31E-05	3.30E-05	3.95E-03	3.61E-06	4.71E-06	5.48E-03	4.97E-03
	Vibratory compactor	7.5 hp			0	0.073	1.863	2.268	0.003	0.068	0.062	235.492	0.022	0.000	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	2.61E-03	1.02E-02	4.97E-03	4.34E-05	7.40E-04	3.85E-04	8.69E+00	2.10E-05	1.97E-05	8.70E+00	7.89E+00
	Asphalt distributor	3000 gal	22.9363		22.9363	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	1.61E-04	6.28E-04	3.05E-04	2.67E-06	4.55E-05	2.37E-05	5.35E-01	1.29E-06	1.21E-06	5.35E-01	4.85E-01
	Suburban	3/4 ton			0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	0.038	0.400	0.434	0.002	0.003	0.003	203.339	0.011	0.000	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	0.058	0.534	0.424	0.002	0.004	0.004	211.846	0.012	0.000	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	2.020	1.438	103.610	0.005	0.098	0.098	175.213	0.114	0.147	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	2.035	1.504	74.398	0.004	1.055	1.053	125.812	0.115	0.150	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	0.066	1.194	1.849	0.003	0.085	0.078	261.322	0.020	0.000	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	0.073	1.863	2.268	0.003	0.068	0.062	235.492	0.022	0.000	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	0.188	0.447	8.459	0.002	0.018	0.018	230.541	0.011	0.024	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	2.768	3.433	39.111	0.060	0.466	0.195	20,361.281	4.604	2.135	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	0.188	0.447	8.459	0.002	0.018	0.018	230.541	0.011	0.024	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	0.052	0.722	1.302	0.002	0.049	0.045	208.013	0.016	0.000	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	0.038	0.402	0.327	0.002	0.003	0.003	163.219	0.009	0.000	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	0.076	1.447	1.957	0.003	0.101	0.093	292.298	0.019	0.000	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	0.144	1.517	1.800	0.003	0.108	0.099	294.409	0.013	0.000	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	0.058	0.534	0.424	0.002	0.004	0.004	211.846	0.012	0.000	3.98E-03	3.66E-02	2.91E-02	1.43E-04	2.85E-04	2.62E-04	1.45E+01	8.04E-04	-	1.45E+01	1.32E+01
	Loader/Backhoe	75 hp	8	9.4118	17.4118	0.081	1.131	1.383	0.002	0.086	0.079	195.357	0.015	0.000	1.17E-04	1.63E-03	1.99E-03	3.30E-06	1.23E-04	1.14E-04	2.81E-01	2.15E-05	-	2.82E-01	2.56E-01
	Loader/Backhoe	92 hp		9.4118	9.4118	0.081	1.131	1.383	0.002	0.086	0.079	195.357	0.015	0.000	7.78E-05	1.08E-03	1.32E-03	2.19E-06	8.18E-05	7.53E-05	1.86E-01	1.42E-05	-	1.87E-01	1.69E-01
	Vibratory roller	44 hp	144.7059		144.7059	0.073	1.863	2.268	0.003	0.068	0.062	235.492	0.022	0.000	5.15E-04	1.31E-02	1.59E-02	2.14E-05	4.75E-04	4.37E-04	1.65E+00	1.57E-04	-	1.66E+00	1.50E+00
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	0.062	0.600	0.642	0.003	0.005	0.004	301.160	0.017	0.000	2.48E-03	2.39E-02	2.56E-02	1.35E-04	1.84E-04	1.69E-04	1.20E+01	6.64E-04	-	1.20E+01	1.09E+01
	Dump truck	12 cy	8	9.4118	17.4118	6.360	24.855	12.079	0.106	1.801	0.936	21,149.122	0.051	0.048	1.22E-04	4.77E-04	2.32E-04	2.03E-06	3.46E-05	1.80E-05	4.06E-01	9.79E-07	9.21E-07	4.06E-01	3.69E-01
	3/4 ton pickup		181.1765		181.1765	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	4.08E-04	4.42E-04	5.24E-03	1.22E-05	9.60E-05	4.16E-05	4.07E+00	4.04E-04	2.11E-04	4.14E+00	3.76E+00
	3/4 ton pickup		8	2	10	2.041	2.213	26.223	0.061	0.481	0.208	20,361.281	2.024	1.056	2.25E-05	2.44E-05	2.89E-04	6.71E-07	5.30E-06	2.30E-06	2.24E-01	2.23E-05	1.16E-05	2.29E-01	2.07E-01
														Total	**2.25E-02**	**2.10E-01**	**2.25E-01**	**8.25E-04**	**6.86E-03**	**5.81E-03**	**8.77E+01**	**4.74E-03**	**3.65E-04**	**8.79E+01**	**7.97E+01**

Malibu Creek Environmental Restoration Project EIS/EIR
Construction Equipment - Upstream Barriers - Year 3
Alternative 3

Construction Start Y 2023
Speed of Onsite Tru 10 mph

50 LV3 & LV4 | 15 LV2 | days per const

Activity	Equipment Type	Equipment Size	Hours of Operation 4/1-6/9	Hours of Operation 6/10-6/30	Annual Hours	Peak Daily Emissions (LV3 & LV4) - 2023 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5	Peak Daily Emissions (LV2) - 2023 (pounds per day) VOC	NOx	CO	SO2	PM10	PM2.5
Water Control - Installation	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp	49.6732	0.4444	50.1176	1.84E-02	3.00E-01	4.70E-01	7.78E-04	2.18E-02	2.00E-02	5.49E-04	8.95E-03	1.40E-02	2.32E-05	6.50E-04	5.98E-04
	Loader/Backhoe	75 hp	34.624		34.624	1.87E-02	2.59E-01	3.17E-01	5.25E-04	1.96E-02	1.81E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	127.6318	4	131.6318	1.75E-01	1.69E+00	1.81E+00	9.53E-03	1.30E-02	1.19E-02	1.82E-02	1.76E-01	1.89E-01	9.96E-04	1.36E-03	1.25E-03
	Truck		34.1719	2.7692	36.9411	1.92E-02	7.49E-02	3.64E-02	3.18E-04	5.43E-03	2.82E-03	5.18E-03	2.02E-02	9.83E-03	8.59E-05	1.47E-03	7.62E-04
	Water pump	3.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Water Control - Removal	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 44'	80 hp		0.4444	0.4444	-	-	-	-	-	-	5.49E-04	8.95E-03	1.40E-02	2.32E-05	6.50E-04	5.98E-04
	Loader/Backhoe	75 hp	32		32	1.72E-02	2.39E-01	2.93E-01	4.85E-04	1.81E-02	1.67E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	8.7059	4	12.7059	1.19E-02	1.15E-01	1.23E-01	6.50E-04	8.86E-04	8.15E-04	1.82E-02	1.76E-01	1.89E-01	9.96E-04	1.36E-03	1.25E-03
	Truck		34.1719		34.1719	1.92E-02	7.49E-02	3.64E-02	3.18E-04	5.43E-03	2.82E-03	-	-	-	-	-	-
Clear & Grub	Brush chipper	170 hp	5.9294	0.0074	5.9368	1.60E-02	1.33E-01	1.66E-01	3.39E-04	9.04E-03	8.32E-03	6.65E-05	5.52E-04	6.90E-04	1.41E-06	3.76E-05	3.46E-05
	Crane 50'	200 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Man lift	210 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader	190 hp	5.9294	0.0074	5.9368	6.17E-03	5.96E-02	6.38E-02	3.37E-04	4.58E-04	4.22E-04	2.57E-05	2.48E-04	2.65E-04	1.40E-06	1.91E-06	1.75E-06
	Chainsaw		5.8824	0.0147	5.8971	1.09E-02	5.00E-04	5.75E-02	6.40E-06	9.04E-05	9.02E-05	9.11E-05	4.16E-06	4.79E-04	5.33E-08	7.53E-07	7.52E-07
	1 ton pickup			0.0088	0.0088	-	-	-	-	-	-	2.46E-06	4.42E-06	3.59E-05	1.58E-07	1.22E-06	5.14E-07
	Tractor/crawler/dozer	250 hp	5.8824	0.0147	5.8971	8.05E-03	7.78E-02	8.33E-02	4.39E-04	5.98E-04	5.50E-04	6.71E-05	6.48E-04	6.94E-04	3.66E-06	4.98E-06	4.59E-06
	Front end loader	540 hp	5.9294	0.0074	5.9368	2.13E-02	1.52E-01	1.55E-01	7.76E-04	1.26E-03	1.16E-03	8.86E-05	6.33E-04	6.43E-04	3.23E-06	5.25E-06	4.83E-06
	Tractor/crawler/dozer	310 hp	5.9294	0.0074	5.9368	1.02E-02	9.90E-02	7.63E-02	3.74E-04	7.61E-04	7.00E-04	4.26E-05	4.12E-04	3.17E-04	1.56E-06	3.17E-06	2.91E-06
	Dump truck	20cy/24 ton	59.4635	0.0743	59.5378	3.34E-02	1.30E-01	6.33E-02	5.53E-04	9.44E-03	4.91E-03	1.39E-04	5.43E-04	2.64E-04	2.31E-06	3.93E-05	2.04E-05
Demolition	Air Compressor	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Air Compressor	50 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 126'	350 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 50'	263 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	115 hp		40	40	-	-	-	-	-	-	1.07E-01	1.51E+00	2.66E+00	4.41E-03	1.14E-01	1.05E-01
	Excavator	430 hp	80	20	100	1.76E-01	1.62E+00	1.29E+00	6.31E-03	1.26E-02	1.16E-02	1.47E-01	1.35E+00	1.07E+00	5.26E-03	1.05E-02	9.65E-03
	Loader	190 hp		20	20	-	-	-	-	-	-	6.93E-02	6.71E-01	7.17E-01	3.78E-03	5.15E-03	4.74E-03
	Front end loader	180 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Loader/Backhoe	75 hp	350		350	1.89E-01	2.62E+00	3.20E+00	5.30E-03	1.98E-01	1.83E-01	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	50.068		50.068	6.85E-02	6.63E-01	7.09E-01	3.74E-03	5.09E-03	4.69E-03	-	-	-	-	-	-
	3/4 ton pickup		72	20	92	1.30E-02	1.41E-02	1.66E-01	3.87E-04	3.05E-03	1.32E-03	1.20E-02	1.30E-02	1.54E-01	3.58E-04	2.83E-03	1.22E-03
	Chainsaw				0	-	-	-	-	-	-	-	-	-	-	-	-
Road Realignment	Vibratory roller	145 hp	19.0893		19.0893	1.37E-02	2.25E-01	4.10E-01	7.69E-04	1.43E-02	1.32E-02	-	-	-	-	-	-
	Vibrating compactor	5.5 hp	5.1724		5.1724	5.11E-03	3.77E-03	1.87E-01	9.00E-06	2.65E-03	2.64E-03	-	-	-	-	-	-
	Vibratory compactor	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck		372.9363		372.9363	2.09E-01	8.17E-01	3.97E-01	3.47E-03	5.92E-02	3.08E-02	-	-	-	-	-	-
	Asphalt distributor	3000 gal	22.9363		22.9363	1.29E-02	5.03E-02	2.44E-02	2.13E-04	3.64E-03	1.89E-03	-	-	-	-	-	-
	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
Disposal	Truck	35 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck	75 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Installation	Suburban	3/4 ton			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 210'	230 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 270'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Excavator	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Generator	7.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Highway Replacement	Vibrating compactor	5.5 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt distributor	3000 gal			0	-	-	-	-	-	-	-	-	-	-	-	-
	Asphalt paver	120 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Vibrating roller/compactor	33 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Chip spreader truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	Line striper	23 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Flatbed Truck				0	-	-	-	-	-	-	-	-	-	-	-	-
	3/4 ton pickup				0	-	-	-	-	-	-	-	-	-	-	-	-
Abutments	Roto trowel concrete finisher	9 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 80'	130 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Crane 114'	430 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Auger drill	100 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
	Water pump	80 hp			0	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping	Excavator	430 hp	144.7059		144.7059	3.18E-01	2.93E+00	2.33E+00	1.14E-02	2.28E-02	2.10E-02	-	-	-	-	-	-
	Loader/Backhoe	75 hp	8	9.4118	17.4118	4.31E-03	5.98E-02	7.32E-02	1.21E-04	4.54E-03	4.17E-03	1.69E-02	2.35E-01	2.87E-01	4.75E-04	1.78E-02	1.64E-02
	Loader/Backhoe	92 hp		9.4118	9.4118	-	-	-	-	-	-	2.07E-02	2.88E-01	3.52E-01	5.83E-04	2.18E-02	2.01E-02
	Vibratory roller	44 hp	144.7059		144.7059	4.12E-02	1.05E+00	1.27E+00	1.71E-03	3.80E-02	3.50E-02	-	-	-	-	-	-
	Tractor/crawler/dozer	250 hp	144.7059		144.7059	1.98E-01	1.91E+00	2.05E+00	1.08E-02	1.47E-02	1.35E-02	-	-	-	-	-	-
	Dump truck	12 cy	8	9.4118	17.4118	4.49E-03	1.75E-02	8.52E-03	7.45E-05	1.27E-03	6.60E-04	1.76E-02	6.88E-02	3.34E-02	2.92E-04	4.98E-03	2.59E-03
	3/4 ton pickup		181.1765		181.1765	3.26E-02	3.54E-02	4.19E-01	9.73E-04	7.68E-03	3.33E-03	-	-	-	-	-	-
	3/4 ton pickup		8	2	10	1.44E-03	1.56E-03	1.85E-02	4.30E-05	3.39E-04	1.47E-04	1.20E-03	1.30E-03	1.54E-02	3.58E-05	2.83E-04	1.22E-04
						1.67E+00	**1.54E+01**	**1.63E+01**	**6.08E-02**	**4.94E-01**	**4.16E-01**	**4.35E-01**	**4.53E+00**	**5.71E+00**	**1.73E-02**	**1.83E-01**	**1.64E-01**

Conversions

2000	pounds per ton
453.6	grams per pound
2	peak day scaling factor
0.9072	metric tons per short ton

Legend

Data from EMFAC2011 (g/hr)
Formula overwritten

Speciation Profiles

	PM10	PM2.5	Ratio	NO.
Diesel	1	0.92	0.92	425 (DIESEL VEHICLE EXHAUST)
Gasoline	0.994	0.992	0.998	117 (VEHICULAR SOURCES-GASOLINE)

Federal Holidays

New Year's Day	1/1/2019
Birthday of Martin Luther King, Jr.	1/21/2019
Washington's Birthday	2/18/2019
Memorial Day	5/27/2019
Independence Day	7/4/2019
Labor Day	9/2/2019
Columbus Day	10/14/2019
Veterans Day	11/11/2019
Thanksgiving Day	11/28/2019
Christmas Day	12/25/2019
10	

http://beta.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=2018

Source:
CC1 Equipment Report.pdf
CC2 Equipment Report.pdf
CC3 Equipment Report.pdf
CC4 Equipment Report.pdf
CC5 Equipment Report.pdf
LV1 Equipment Report.pdf
LV2 Equipment Report.pdf
LV3 and LV4 Equipment Report.pdf

Supplemental Air Quality Analyses

October 2016

Alternative 2: Ventura Harbor Haul Route

2018 Haul Emissions

		trips	mileage / trip	total miles	Daily Trips
Surfrider	ORIGINAL	1632	8	13056	136
Topanga	ORIGINAL	4725	20	94500	105
Ventura	UPDATED	2467	80	197360	70
Increase				89804	

2018 Daily Emission Multiplier	
1088	1.67
2100	
5600	
3500	

2019 Haul Emissions

		trips	mileage / trip	total miles	Daily Trips
Topanga	ORIGINAL	371	20	7420	53
Zuma	ORIGINAL	6413	20	128260	53
Ventura	UPDATED	4864	80	389120	35
Increase				253440	

2019 Daily Emission Multiplier	
1060	1.64
1060	
2800	
1740	

2020 Haul Emissions

		trips	mileage / trip	total miles	Daily Trips
Zuma	ORIGINAL	1007	20	20140	53
Ventura	UPDATED	4864	80	389120	35
Increase				368980	

2020 Daily Emission Multiplier	
1060	1.64
2800	
1740	

	Annual Mileage Increase	Peak Daily Mile Increase
2018	89804	3500
2019	253440	1740
2020	368980	2767

	Emissions Factors (grams per mile)					
year	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
2018	0.14	0.69	6.86	0.16	0.10	0.02
2019	0.14	0.71	6.18	0.16	0.10	0.02
2020	0.14	0.74	4.65	0.16	0.10	0.02

		Annual Emissions (tons per year)					
Year	Miles	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
2018	89804	0.01	0.06	0.63	0.02	0.01	0.00
2019	253440	0.04	0.18	1.60	0.04	0.03	0.00
2020	368980	0.05	0.28	1.75	0.06	0.04	0.01

convert gm to tons	1.0231E-06

The numbers in the table above were used to update the MAX annual emissions tables from the EIS.

		Daily Emissions (lbs/day)					
Year	Miles	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
2018	3500	1.06	5.31	52.91	1.26	0.74	0.13
2019	1740	0.53	2.72	23.72	0.63	0.37	0.06
2020	2767	0.87	4.51	28.35	1.00	0.58	0.10

convert grams to pounds	453.592

The numbers in the table above were used to update the MAX daily emissions tables from the EIS.

Alternative 4: Ventura Harbor Haul Route

2018 Haul Emissions

		trips	mileage / trip	total miles	Daily Trips
Surfrider	ORIGINAL	1632	8	13056	136
Topanga	ORIGINAL	3465	20	69300	105
Ventura	UPDATED	2467	80	197360	70
Increase				115004	

2019 Haul Emissions

		trips	mileage / trip	total miles	Daily Trips
Topanga	ORIGINAL	371	20	7420	53
Zuma	ORIGINAL	5517	20	110340	53
Ventura	UPDATED	4864	80	389120	35
Increase				271360	

2020 Haul Emissions

		trips	mileage / trip	total miles	Daily Trips
Zuma	ORIGINAL	1007	20	20140	53
Ventura	UPDATED	698	80	55840	35
Increase				35700	

	Annual Mileage Increase	Peak Daily Mile Increase
2018	115004	3500
2019	271360	1740
2020	35700	1740

	Emissions Factors (grams per mile)					
year	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
2018	0.14	0.69	6.86	0.16	0.10	0.02
2019	0.14	0.71	6.18	0.16	0.10	0.02
2020	0.14	0.74	4.65	0.16	0.10	0.02

		Annual Emissions (tons per year)					
Year	Miles	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
2018	115004	0.02	0.08	0.81	0.02	0.01	0.00
2019	271360	0.04	0.20	1.72	0.05	0.03	0.00
2020	35700	0.01	0.03	0.17	0.01	0.00	0.00

convert gm to tons	1.0231E-06

The numbers in the table above were used to update the MAX annual emissions tables from the EIS.

		Daily Emissions (lbs/day)					
Year	Miles	**VOC**	**CO**	**NOX**	**PM10**	**PM2.5**	**SO2**
2018	3500	1.06	5.31	52.91	1.26	0.74	0.13
2019	1740	0.53	2.72	23.72	0.63	0.37	0.06
2020	1740	0.55	2.84	17.83	0.63	0.37	0.06

convert grams to pounds	453.592

The numbers in this table were used to update the MAX daily emissions tables from the EIS.

Alternative 2A

Table 5.12-6b Alternative 2a Maximum Daily Emissions (pounds per day)

Pollutant	Original		Updated		SCAQMD Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	109.4	96.2	114.7	100.9	550
Reactive Organic Gas, ROG	20.3	18.7	21.4	19.7	75
Nitrogen Oxides, NO_x	223.5	125.7	276.4	154.8	100
Sulfur Dioxide, SO_2	0.4	0.4	0.5	0.5	150
Inhalable Particulate Matter, PM_{10}	16.9	13.3	18.2	14.3	150
Fine Particulate Matter, $PM_{2.5}$	8.5	3.6	9.2	3.9	55

Table 5.12-9b Alternative 2a Maximum Annual Emissions (tons per year)

Pollutant	Original		Updated		NEPA Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	5.8	5.1	6.1	5.4	100
Volatile Organic Compounds	0.8	0.5	1.3	0.8	10
Nitrogen Oxides, NO_x	11.9	6.8	13.7	7.8	10
Lead, Pb	0.0	0.0	0.0	0.0	25
Inhalable Particulate Matter, PM_{10}	1.1	0.9	1.7	1.4	100
Fine Particulate Matter, $PM_{2.5}$	0.5	0.2	0.9	0.4	100

Alternative 2B

Table 5.12-10b Alternative 2b Maximum Daily Emissions (pounds per day)

Pollutant	Original		Updated		SCAQMD Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	147.4	133.0	152.7	137.4	550
Reactive Organic Gas, ROG	21.1	18.7	22.2	19.7	75
Nitrogen Oxides, NO_x	284.6	153.6	337.5	182.3	100
Sulfur Dioxide, SO_2	0.5	0.5	0.6	0.6	150
Inhalable Particulate Matter, PM_{10}	20.0	13.3	21.3	14.2	150
Fine Particulate Matter, $PM_{2.5}$	11.0	4.2	11.7	4.5	55

Table 5.12-17b Alternative 2b Maximum Annual Emissions (tons per year)

Pollutant	Original		Updated		Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	6.1	5.4	6.4	5.7	100
Volatile Organic Compounds	0.9	0.5	1.4	0.8	10
Nitrogen Oxides, NO_x	12.4	7.0	14.2	8.0	10
Lead, Pb	0.0	0.0	0.0	0.0	25
Inhalable Particulate Matter, PM_{10}	1.1	0.9	1.7	1.4	100
Fine Particulate Matter, $PM_{2.5}$	0.5	0.2	0.9	9.4	100

Alternative 4A

Table 5.12-6b Alternative 4a Maximum Daily Emissions (pounds per day)

Pollutant	Original		Updated		SCAQMD Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	510.2	412.4	515.5	416.7	550
Volatile Organic Compounds	75.3	52.7	76.4	53.4	75
Nitrogen Oxides, NO_x	1095.5	486.1	1148.4	509.6	100
Sulfur Dioxide, SO_2	1.9	1.9	2.0	2.0	150
Inhalable Particulate Matter, PM_{10}	49.1	17.2	50.4	17.6	150
Fine Particulate Matter, $PM_{2.5}$	38.0	7.0	38.7	7.1	55

Table 5.12-34b Alternative 4a Maximum Annual Emissions (tons per year)

Pollutant	Original		Updated		Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	5.8	5.1	6.0	5.3	100
Reactive Organic Gas, ROG	0.8	0.5	0.8	0.5	10
Nitrogen Oxides, NO_x	11.7	6.6	13.4	7.6	10
Lead, Pb	0.0	0.0	0.0	0.0	25
Inhalable Particulate Matter, PM_{10}	1.1	0.9	1.2	0.9	100
Fine Particulate Matter, $PM_{2.5}$	0.5	0.2	0.5	0.2	100

Alternative 4B

Table 5.12-35b Alternative 4b Maximum Daily Emissions (pounds per day)

Pollutant	Original		Updated		SCAQMD Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	548.3	449.2	553.6	453.6	550
Volatile Organic Compounds	81.0	52.9	82.1	53.6	75
Nitrogen Oxides, NO_x	1156.6	514.1	1209.5	537.6	100
Sulfur Dioxide, SO_2	2.1	2.0	2.1	2.0	150
Inhalable Particulate Matter, PM_{10}	52.3	17.7	53.6	18.1	150
Fine Particulate Matter, $PM_{2.5}$	40.5	7.2	41.2	7.3	55

Table 5.12-36b Alternative 4b Maximum Annual Emissions (tons per year)

Pollutant	Original		Updated		Significance Threshold
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Carbon Monoxide, CO	6.1	5.4	6.3	5.6	100
Reactive Organic Gas, ROG	0.9	0.5	0.9	0.5	10
Nitrogen Oxides, NO_x	12.2	6.8	13.9	7.8	10
Lead, Pb	0.0	0.0	0.0	0.0	25
Inhalable Particulate Matter, PM_{10}	1.1	0.9	1.2	0.9	100
Fine Particulate Matter, $PM_{2.5}$	0.5	0.2	0.5	0.2	100