



Santiago Basin Saddle Repair Project

Appendix B

Santiago Basins Saddle Improvement Project Air Quality and Greenhouse Gas Emissions Technical Memorandum

VISTA ENVIRONMENTAL

December 3, 2018

Greg Woodside
Orange County Water District
18700 Ward Street
Fountain Valley, CA 92708

Subject: Orange County Water (OCWD) – Santiago Basins Saddle Improvement Project Air Quality and Greenhouse Gas Emissions Technical Memorandum.

Dear Mr. Woodside:

Vista Environmental has conducted an analysis to evaluate whether the proposed Santiago Basins Saddle Improvement Project (proposed project) would cause significant air quality or greenhouse gas impacts. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the South Coast Air Quality Management District (SCAQMD) recommendations for quantification of emissions and evaluation of potential air quality and greenhouse gas impacts.

Project Location and Description

The proposed saddle repair and improvement activities would occur in the area between the Blue Diamond Basin and Bond Basin at the Santiago Recharge Basins, which are located in the City of Orange. The Santiago Basins are bounded by Prospect Avenue to the west, Hewes Street to the east, Bond Avenue to the south, and Villa Park Road to the north. The project site is surrounded by open space and residential land uses. The nearest sensitive receptors are residents at the single-family homes located as near as 210 feet southeast of the project site. The nearest school to the project site is Eldorado Emerson Private School, located approximately 0.6 miles south of the project site.

The proposed project would consist improvements to the stabilization of the saddle side slopes, the reconstruction of the saddle apron, reconstruction of an equalization culvert for the protection of the saddle apron, and restoration of any vegetation removed for the project. To improve the stability of the saddle side slopes, the slopes of the saddle would need to be cut back to a maximum steepness of 1.8 to 1. The proposed grading activity would remove slope failure related debris and areas prone to failing.

In conjunction with the slope grading, the saddle would be widened by approximately 60 feet and the existing grade would be lowered by approximately 30 feet. A 12-foot square by 400-foot concrete box culvert would be excavated and installed between the basins in the saddle area. The underground pipeline would convey flows between Blue Diamond Basin and Bond basin, allowing the basin levels to equalize without overtopping and destroying the apron. After the culvert is constructed, the trench would be backfilled with native material and the saddle would be reconstructed. The saddle would also function as an apron allowing water within Blue Diamond Basin to spill over into Bond Basin if the basins cannot equalize due to high basin inflows.

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Proposed Construction Activities

Construction of the proposed project would require the use of multiple pieces of equipment over four phases of construction. The overall construction of the project would take approximately four months to complete.

Phase 1 – Clearing and Remedial Excavation

Phase 1 is anticipated to start in August 2019 and would take approximately three weeks to complete. Phase 1 would consist of clearing the work area of existing vegetation, excavation to create 1.8 to 1 slope on either side of the saddle and remedial rough grading to remove loose soil deposits. The loose soil deposits on the existing slopes on the east and west side of the saddle that were left by the erosion damage during storm events would be excavated during Phase 1 to make sure the excavation for Phase 2 is safe. The field activities and approximate equipment usage for the clearing and remedial excavation phase is shown below in Table A.

Table A – Phase 1 Clearing and Remedial Excavation Equipment Mix

Equipment	Pieces of Equipment	Hours of Operation per Day	Total Days	Total Hours of Operation	Horsepower Ratings
Phase 1A - Clearing and Grubbing					
Bulldozer	1	8	5	40	250
Tracked Excavator	1	8	5	40	200
Off-Road Haul Truck	1	8	5	40	350
Dump Truck	5	8	1	40	350
Water Truck	1	8	5	40	350
Work Truck	1	8	5	40	300
Phase 1B - Grading					
Scraper	2	8	10	160	490
Bulldozer	1	8	10	80	250
Compactor	1	8	10	80	200
Water Truck	1	8	10	80	350
Work Truck	2	8	10	80	300

Source: OCWD.

Phase 2 – Culvert Installation and Backfill

Phase 2 is anticipated to start in September 2019 and would take four weeks to complete. Phase 2 would consist of excavation, placement, and backfill of the concrete box culvert. This culvert will allow the basin elevations to rise and fall together and prevent an elevation differential that leads to damaging erosion over the saddle apron. The field activities and approximate equipment usage for the culvert installation and backfill phase is shown below in Table B.

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Table B – Phase 2 Culvert Installation and Backfill Equipment Mix

Equipment	Pieces of Equipment	Hours of Operation per Day	Total Days	Total Hours of Operation	Horsepower Ratings
Crane	1	8	10	80	300
Tracked Excavator	2	8	20	320	200
Wheel Loader	1	8	20	160	250
Compactor	1	8	20	160	200
Water Truck	1	8	20	160	350
Work Truck	1	8	20	160	300

Source: OCWD.

Phase 3 – Saddle Apron Embankment and Finish Grading

Phase 3 is anticipated to start in October 2019 and would take four weeks to complete. Phase 2 would consist of placing fill for the saddle apron and finish grading all surfaces within the work area. The saddle apron will create a divider that will prevent erosive water flows between the two basins and create a buttress that will stabilize the slopes on the east and west sides of the saddle. The field activities and approximate equipment usage for the sediment depositing and spreading equipment mix phase as shown bellowing in Table C.

Table C – Phase 3 Saddle Apron Embankment and Finish Grading Equipment Mix

Equipment	Pieces of Equipment	Hours of Operation per Day	Total Days	Total Hours of Operation	Horsepower Ratings
Scraper	4	8	15	480	490
Bulldozer	1	8	15	120	250
Compactor	1	8	15	120	200
Water Truck	1	8	15	120	350
Work Truck	1	8	15	120	300

Source: OCWD.

Phase 4 – Vegetation Restoration

Phase 4 is anticipated to start in November 2019 and would take approximately four weeks to complete. Phase 4 would consist of activities required to restore the vegetation removed by construction activities. This work will be completed mostly by hand and the only equipment anticipated for work consists of support for the planting crew. The field activities and approximate equipment usage for the vegetation restoration as shown bellowing in Table D.

Table D – Phase 4 Vegetation Restoration Equipment Mix

Equipment	Pieces of Equipment	Hours of Operation per Day	Total Days	Total Hours of Operation	Horsepower Ratings
Water Truck	1	4	10	40	350

Source: OCWD.

Proposed Long-Term Maintenance Activities

Annually, OCWD would dewater the basin to inspect the condition of the saddle and to remove any debris or trash that might accumulate along the saddle apron. All maintenance activities would be

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conducted in accordance with Orange County Water District Regional Maintenance Plan for Groundwater Recharge Facilities Streambed Alteration Agreement 1600-201-0013-R5. Since maintenance activities would involve minimal equipment and would be done by hand, there is no maintenance equipment list. Additionally, the maintenance activities associated with the proposed saddle improvements would not significantly alter current maintenance activities at the existing saddle.

Air Quality Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographical features. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with physical features of the landscape to determine their movement and dispersal, and consequently, their effect on air quality. The combination of topography and inversion layers generally prevents dispersion of air pollutants in the South Coast Air Basin (Air Basin).

The climate of the Air Basin lies in the semi-permanent high-pressure zone of the eastern Pacific Ocean, which results in a mild climate, tempered by cool sea breezes. Although the Air Basin has a semiarid climate, the air near the surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry air is brought into the basin by offshore winds, the ocean effect is dominant. Periods of heavy fog are frequent; and low stratus clouds, often referred to as “high fog” are a characteristic climate feature. Average temperatures for Anaheim, which is the nearest monitoring station to the project site (WRCC 2016), range from an average low of 46.9 degrees Fahrenheit (°F) in December to an average high of 87.1 °F in August. Rainfall averages approximately 14.09 inches a year, with almost all annual rainfall coming from the fringes of mid-latitude storms from late November to early April and summers being almost completely dry.

Winds are an important parameter in characterizing the air quality environment of a project site because they determine the regional pattern of air pollution transport and control the rate of dispersion near a source. Daytime winds in the Air Basin are usually light breezes from off the coast as air moves regionally onshore from the cool Pacific Ocean. These winds are usually the strongest in the dry summer months. Nighttime winds in the Air Basin result mainly from the drainage of cool air off the mountains to the east, and they occur more often during the winter months and are usually lighter than the daytime winds. Between the periods of dominant airflow, periods of air stagnation may occur, both in the morning and evening hours. Whether such a period of stagnation occurs is one of the critical determinants of air quality conditions on any given day.

During the winter and fall months, surface high-pressure systems north of the Air Basin, combined with other meteorological conditions, can result in very strong winds from the northeast called “Santa Ana Winds.” These winds normally have durations of a few days before predominant meteorological conditions are reestablished. The highest wind speed typically occurs during the afternoon due to daytime thermal convection caused by surface heating. This convection brings about a downward transfer of momentum from stronger winds aloft. It is not uncommon to have sustained winds of 60 miles per hour with higher gusts during a Santa Ana Wind.

Monitored Air Quality

The air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates of the existing emissions in the Air Basin provided in the Final 2012 AQMP, December 2012, indicate that, collectively, mobile sources account for 59 percent of the volatile organic compounds (VOC), 88 percent of the NOx emissions, and 40 percent of directly emitted PM2.5, with another 10 percent of PM2.5 from road dust.

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SCAQMD has divided the Air Basin into 38 air-monitoring areas. The project site is located in Air Monitoring Area 17, which covers Central Orange County. The nearest air monitoring station to the project site is the Anaheim-Pampas Lane Station (Anaheim Station), which is located approximately eight miles northwest of the project site at 1630 West Pampas Lane, Anaheim. However, it should be noted that due to the air monitoring station's distance from the project site, recorded air pollution levels at the Anaheim Station reflect with varying degrees of accuracy, local air quality conditions at the project site. Table E presents the composite of gaseous pollutants monitored from 2015 through 2017.

Table E – Local Area Air Quality Monitoring Summary

Pollutant (Standard)	Year ¹		
	2015	2016	2017
Ozone:			
Maximum 1-Hour Concentration (ppm)	0.100	0.103	0.090
Days > CAAQS (0.09 ppm)	1	2	0
Maximum 8-Hour Concentration (ppm)	0.081	0.075	0.076
Days > NAAQS (0.070 ppm)	1	4	4
Days > CAAQs (0.070 ppm)	1	4	4
Nitrogen Dioxide:			
Maximum 1-Hour Concentration (ppb)	59.1	64.3	81.2
Days > NAAQS (100 ppb)	0	0	0
Inhalable Particulates (PM10):			
Maximum 24-Hour California Measurement (ug/m ³)	59.0	74.0	95.7
Days > NAAQS (150 ug/m ³)	0	0	0
Days > CAAQS (50 ug/m ³)	2	ND	ND
Annual Arithmetic Mean (AAM) (ug/m ³)	25.5	27.5	26.9
Annual > NAAQS (50 ug/m ³)	No	No	No
Annual > CAAQS (20 ug/m ³)	No	No	No
Ultra-Fine Particulates (PM2.5):			
Maximum 24-Hour National Measurement (ug/m ³)	53.8	45.5	56.2
Days > NAAQS (35 ug/m ³)	3	1	7
Annual Arithmetic Mean (AAM) (ug/m ³)	14.7	9.4	ND
Annual > NAAQS and CAAQS (12 ug/m ³)	Yes	No	ND

Notes: Exceedances are listed in **bold**. CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million; ppb = parts per billion; ND = no data available.

¹ Data obtained from the Anaheim Station.

Source: <http://www.arb.ca.gov/adam/>

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Project Impacts

Thresholds of Significance

Regional Air Quality

To estimate if the proposed project may adversely affect the air quality in the region, the SCAQMD has prepared CEQA Air Quality Handbook (SCAQMD 1993) to provide guidance to those who analyze the air quality impacts of proposed projects. The SCAQMD CEQA Handbook states that any project in the Air Basin with daily emissions that exceed any of the identified significance thresholds should be considered as having an individually and cumulatively significant air quality impact. For the purposes of this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the SCAQMD significance thresholds identified in Table D.

Table F – SCAQMD Regional Criteria Pollutant Emission Thresholds of Significance

	Pollutant Emissions (pounds/day)					
	VOC	NO _x	CO	SO _x	PM10	PM2.5
Construction	75	100	550	150	150	55
Operation	55	55	550	150	150	55

Source: <http://www.aqmd.gov/ceqa/handbook/signthres.pdf>

Local Air Quality

Project-related construction and operational air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significant Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. SCAQMD has also provided Final Localized Significance Threshold Methodology (LST Methodology), July 2008, which details the methodology to analyze local air emission impacts. The LST Methodology found that the primary emissions of concern are NO₂, CO, PM10, and PM2.5.

The Look-Up Tables include site acreage sizes of 1-acre, 2-acres and 5-acres. The *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, prepared by SCAQMD, 2015, provides guidance on how to determine the appropriate site acreage size to utilize for a project. The Fact Sheet details the site acreage should be based on the maximum number of acres disturbed on the peak day of construction that is calculated on the construction equipment list utilized in the CalEEMod model, where crawler tractors, graders, and rubber tired dozers are all assumed to disturb 0.5-acre in an 8-hour day and scrapers are assumed to disturb 1.0-acre in an 8-hour day. Table G lists all of the construction equipment modeled in CalEEMod and utilizes the methodology in the Fact Sheet to calculate the acres disturbed per day.

As shown in Table G, the maximum disturbed per day would occur during Phase 3 when 4.5 acres would be disturbed. As such, the 5-acre project site shown in the Look-Up Tables, which is the closest size available to the calculated 4.5 acres disturbed per day and has been utilized in this analysis.

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Table G – Construction Equipment Modeled in CalEEMod and Acres Disturbed per Day

Phase	Equipment Type	Equipment Quantity	Acres Disturbed per piece of Equipment per Day ¹	Operating Hours per Day	Acres Disturbed per Day
Phase 1A	Bulldozer	1	0.5	8	0.5
	Excavator	1	0	8	0
	Haul Truck	1	0	8	0
	Dump Truck	5	0	8	0
	Water Truck	1	0	8	0
	Work Truck	1	0	8	0
	Total Acres Disturbed per Day During Phase 1A				
Phase 1B	Scraper	2	1.0	8	2.0
	Bulldozer	1	0.5	8	0.5
	Compactor	1	0	8	0
	Water Truck	1	0	8	0
	Work Truck	2	0	8	0
	Total Acres Disturbed per Day During Phase 1B				
Phase 2	Crane	1	0	8	0
	Excavator	2	0	8	0
	Wheel Loader	1	0	8	0
	Compactor	1	0	8	0
	Water Truck	1	0	8	0
	Work Truck	1	0	8	0
	Total Acres Disturbed per Day During Phase 2				
Phase 3	Scraper	4	1.0	8	4.0
	Bulldozer	1	0.5	8	0.5
	Compactor	1	1	8	0
	Water Truck	1	1	8	0
	Work Truck	1	1	8	0
	Total Acres Disturbed per Day During Phase 3				
Phase 4	Water Truck	1	0	8	0
Total Acres Disturbed per Day During Phase 4					0.0
Maximum Acres Disturbed during All Construction Activities					4.5

Notes:

¹ Based on the Fact Sheet for Applying CalEEMod to Localized Significance Thresholds where crawler tractors, graders, and rubber tired dozers disturb 0.5-acre in an 8-hour day and scrapers disturb 1.0-acre in an 8-hour day. All other equipment disturb 0 acres per 8-hour day. Source: SCAQMD, 2015.

As detailed above, the project site is located in Air Monitoring Area 17, which covers Central Orange County. The nearest sensitive receptors are residents at the single-family homes located as near as 210 feet (64 meters) southeast of the project site. Since the Look-up Tables only provide emissions thresholds for 25, 50, 100, 200 and 500 meters, in order to provide a conservative analysis, the 50 meter threshold provided in the Look-Up Tables was utilized. Table H below shows the NO_x, CO, PM10, and PM2.5 for both construction and operational activities.

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Table H – SCAQMD Local Air Quality Thresholds of Significance

Activity	Allowable Emissions ¹ (pounds/day)			
	NO _x	CO	PM10	PM2.5
Construction	167	1,734	39	9
Operation	167	1,734	10	3

Notes:

¹ The nearest sensitive receptors are residents at the single-family homes located as near as 210 feet (64 meters) southeast of the project site. In order to provide a conservative analysis, the 50 meter thresholds were utilized.

Source: Calculated from SCAQMD’s Mass Rate Look-up Tables for five acres in Air Monitoring Area 17, Central Orange County.

Greenhouse Gas Emissions

The proposed project is located within the jurisdiction of the SCAQMD. In order to identify significance criteria under CEQA for development projects, SCAQMD initiated a Working Group, which provided detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual threshold of 3,000 MTCO_{2e} for all land use projects. Although the SCAQMD provided substantial evidence supporting the use of the above threshold, as of March 2018, the SCAQMD Board has not yet considered or approved the Working Group’s thresholds. Originally SCAQMD had stated that they were waiting to approve the Working Group’s thresholds dependent on the outcome of the State Supreme Court decision of the California Building Industry Association v. Bay Area Air Quality Management District (BAAQMD), which was filed on December 17, 2015. However, since that court decision has been decided for some time now, the most likely time for the SCAQMD Board to consider the Working Group thresholds will be in combination with the consideration of the updated CEQA Air Quality Handbook that is currently being revised by SCAQMD staff. In order to provide a conservative analysis, the Working Group’s draft thresholds have been utilized. Therefore, the proposed project would be considered to create a significant cumulative GHG impact if the proposed project would exceed the annual threshold of 3,000 MTCO_{2e}.

Construction Emissions

The proposed project would require the use of multiple pieces of equipment over four phases of construction. The overall construction of the proposed project would take approximately four months. The construction equipment utilized during each phase of construction have been detailed above. In order to provide a more precise analysis, Phase 1 Clearing and Remedial Excavation has been run in the CalEEMod model as two different phases.

Construction-Related Regional Impacts

The CalEEMod model has been utilized to calculate the construction-related regional emissions from the proposed project. The worst-case summer or winter daily construction-related criteria pollutant emissions from the proposed project for each phase of construction activities are shown below in Table I and the CalEEMod model run printout is attached to this letter.

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Table I – Construction-Related Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day) ¹					
	VOC	NOx	CO	SO ₂	PM10	PM2.5
Phase 1A – Clearing						
Onsite	6.27	64.53	33.28	0.11	4.83	3.57
Offsite	0.12	0.07	0.89	0.00	0.28	0.08
Total	6.39	64.60	34.17	0.11	5.11	3.65
Phase 1B – Excavation						
Onsite	5.15	58.42	32.41	0.07	5.55	3.56
Offsite	0.07	0.04	0.54	0.00	0.17	0.05
Total	5.22	58.46	32.95	0.07	5.72	3.61
Phase 2 – Culvert Installation and Backfill						
Onsite	2.68	30.29	16.16	0.05	1.07	0.99
Offsite	0.06	0.48	0.44	0.00	0.13	0.04
Total	2.74	30.77	16.60	0.05	1.20	1.03
Phase 3 – Saddle Apron Embankment and Finish Grading						
Onsite	7.99	92.81	53.85	0.11	7.72	4.89
Offsite	0.09	0.06	0.71	0.00	0.23	0.06
Total	8.08	92.87	54.56	0.11	7.95	4.95
Phase 4 – Vegetation Restoration						
Onsite	0.31	3.13	1.74	0.01	0.11	0.10
Offsite	0.00	0.00	0.01	0.00	0.00	0.00
Total	0.31	3.13	1.75	0.01	0.11	0.10
SCQAMD Thresholds	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Notes:

¹ Based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.

² Onsite emissions from equipment not operated on public roads.

³ Offsite emissions from vehicles operating on public roads.

Source: CalEEMod Version 2016.3.2.

Table I shows that none of the analyzed criteria pollutants would exceed the regional emissions thresholds during any of the construction phases for the proposed project. Therefore, a less than significant regional air quality impact would occur from construction of the proposed project.

Construction-Related Local Impacts

Construction-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin.

The local air quality emissions from construction were analyzed through utilizing the methodology described in *Localized Significance Threshold Methodology* (LST Methodology), prepared by SCAQMD, revised October 2009. The LST Methodology found the primary criteria pollutant emissions of concern are NOx, CO, PM10, and PM2.5. In order to determine if any of these pollutants require a detailed analysis of the local air quality impacts, each phase of construction was screened using the SCAQMD's Mass Rate LST Look-up Tables. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily onsite emissions of CO, NOx, PM10, and PM2.5 from the proposed project

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could result in a significant impact to the local air quality. Table J shows the onsite emissions from the CalEEMod model for the different construction phases and the calculated emissions thresholds that have been detailed above.

Table J – Construction-Related Local Criteria Pollutant Emissions Prior to Mitigation

Construction Phase	Pollutant Emissions (pounds/day) ¹			
	NO _x	CO	PM ₁₀	PM _{2.5}
Phase 1A – Clearing	64.53	33.28	4.83	3.57
Phase 1B – Remedial Excavation	58.42	32.41	5.55	3.56
Phase 2 – Culvert Installation and Backfill	30.29	16.16	1.07	0.99
Phase 3 – Saddle Apron Embankment and Finish Grading	92.81	53.85	7.72	4.89
Phase 4 – Vegetation Restoration	3.13	1.74	0.11	0.11
SCAQMD Thresholds ²	167	1,734	39	9
Exceeds Threshold?	No	No	No	No

Notes:

¹ Based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.

² The nearest sensitive receptors are residents at the single-family homes located as near as 210 feet (64 meters) southeast of the project site. In order to provide a conservative analysis, the 50 meter thresholds were utilized.

Source: Calculated from SCAQMD’s Mass Rate Look-up Tables for five acres in Air Monitoring Area 17, Central Orange County.

The data provided in Table J shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds during and of the construction phases for the proposed project. Therefore a less than significant local air quality impact would occur from construction of the proposed project.

Operational Emissions

The proposed saddle repair activities would consist of four phases of construction that would be completed over an approximately four month period. Annually, OCWD would dewater the basin to inspect the condition of the saddle and to remove any debris or trash that might accumulate along the saddle apron. No changes are proposed to the annual maintenance activities that currently occur within the Santiago Basins and all maintenance activities would be conducted in accordance with Orange County Water District Regional Maintenance Plan for Groundwater Recharge Facilities Streambed Alteration Agreement 1600-201-0013-R5. In addition, maintenance activities would primarily be done by hand and would require only minimal use of off-road equipment. As such, no operational emissions are anticipated to be created from the proposed project.

Generation of Greenhouse Gas Emissions

The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The proposed saddle repair project would require the use of multiple pieces of equipment over four phases of construction. The proposed project is anticipated to generate GHG emissions from construction activities associated with the proposed project, however no generation of GHG emissions is anticipated from the operation of the proposed project.

The project’s GHG emissions have been calculated with the CalEEMod model. A summary of the results is shown below in Table K and the CalEEMod model run printout is attached to this letter.

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Table K – Construction Related Greenhouse Gas Emissions

Construction Phase	Greenhouse Gas Emissions (Metric Tons)			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Phase 1A – Clearing	24.40	0.01	0.00	24.58
Phase 1B – Remedial Excavation	32.47	0.01	0.00	32.72
Phase 2 – Culvert Installation and Backfill	46.60	0.01	0.00	46.96
Phase 3 – Saddle Apron Embankment and Finish Grading	104.57	0.03	0.00	102.36
Phase 4 – Vegetation Restoration	5.20	0.00	0.00	5.24
Total Construction Emissions	210.24	0.06	0.00	211.86
Amortized Total Construction Emissions (30 years) ¹	9.08	0.00	0.00	7.06
SCAQMD Draft Threshold of Significance				3,000

Notes:

¹ Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.

Source: CalEEMod Version 2016.3.2.

The data provided in Table K above shows that the proposed project would create a total of 211.86 MTCO₂e or 7.06 MTCO₂e per year, when amortized over a 30 year period. According to the SCAQMD draft threshold of significance detailed above, a cumulative global climate change impact would occur if the GHG emissions created from a proposed project would exceed 3,000 MTCO₂e per year. Therefore, a less than significant generation of greenhouse gas emissions would occur from implementation of the proposed project. Impacts would be less than significant.

Greenhouse Gas Plan Consistency

The proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing GHG emissions. The proposed project would consist improvements to the stabilization of the saddle side slopes, the reconstruction of the saddle apron, reconstruction of an equalization culvert for the protection of the saddle apron, and restoration of any vegetation removed for the project. Annually, OCWD would dewater the basin to inspect the condition of the saddle and to remove any debris or trash that might accumulate along the saddle apron. No changes are proposed to the annual maintenance activities that currently occur within the Santiago Basins and all maintenance activities would be conducted in accordance with Orange County Water District Regional Maintenance Plan for Groundwater Recharge Facilities Streambed Alteration Agreement 1600-201-0013-R5. In addition, maintenance activities would primarily be done by hand and would require only minimal use of off-road equipment.

As detailed above, the proposed project is anticipated to create an average of 9.76 MTCO₂e per year, which is well below the SCAQMD draft threshold of significance of 3,000 MTCO₂e per year. The SCAQMD developed this threshold through a Working Group, which also developed detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual threshold of 3,000 MTCO₂e for all land use type projects, which was based on substantial evidence supporting the use of the recommended thresholds. Therefore, the proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

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Analysis Findings for the Proposed Project

This analysis found that through implementation the applicable State and SCAQMD air quality and GHG emissions reductions regulations, all criteria pollutants, toxic air contaminants, odors, and GHG emissions from the proposed project would be reduced to less than significant levels. As such, no air quality or GHG emissions-related mitigation measures are required for the proposed project.

Please let me know if you have any questions or need additional information with regard to the above analysis. I can be reached at (949) 510-5355, or email me at greg@vistalb.com.

Sincerely,



Greg Tonkovich, AICP
Senior Analyst
Vista Environmental

Encl.: CalEEMod Printouts

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OCWD Santiago Basins Saddle Improvement Project - Orange County, Summer

OCWD Santiago Basins Saddle Improvement Project
Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW/hr)	702.44	CH4 Intensity (lb/MW/hr)	0.029	N2O Intensity (lb/MW/hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Opening Year 2019

Land Use - 0.5 AC Other Non-Asphalt Surfaces

Construction Phase - Construction phases and schedule provided by applicant.

Off-road Equipment - Clearing equipment provided by applicant.

Off-road Equipment - Remedial Excavation equipment provided by applicant.

Off-road Equipment - Culvert Installation and Backfill equipment provided by applicant.

Off-road Equipment - Saddle Apron Embankment and Finish Grading equipment provided by applicant.

Off-road Equipment - Vegetation Restoration equipment provided by applicant.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation - Per SCAQMD Rule 403 minimum requirements, water exposure 3x per day selected.

Table Name	Column Name	Default Value	New Value
tbIconstructionPhase	NumDays	100.00	20.00
tbIconstructionPhase	NumDays	2.00	10.00
tbIconstructionPhase	NumDays	1.00	5.00
tbIconstructionPhase	NumDays	2.00	20.00
tbIconstructionPhase	PhaseEndDate	1/6/2020	9/27/2019
tbIconstructionPhase	PhaseEndDate	8/19/2019	8/21/2019
tbIconstructionPhase	PhaseEndDate	8/15/2019	8/7/2019
tbIconstructionPhase	PhaseStartDate	8/20/2019	9/1/2019
tbIconstructionPhase	PhaseStartDate	8/16/2019	8/8/2019
tbIconstructionPhase	PhaseStartDate	8/15/2019	8/1/2019
tbIOffRoadEquipment	HorsePower	402.00	350.00
tbIOffRoadEquipment	HorsePower	158.00	200.00
tbIOffRoadEquipment	HorsePower	231.00	300.00
tbIOffRoadEquipment	HorsePower	367.00	490.00
tbIOffRoadEquipment	HorsePower	367.00	490.00
tbIOffRoadEquipment	HorsePower	247.00	250.00
tbIOffRoadEquipment	HorsePower	158.00	200.00
tbIOffRoadEquipment	HorsePower	402.00	350.00
tbIOffRoadEquipment	HorsePower	203.00	250.00
tbIOffRoadEquipment	HorsePower	247.00	250.00
tbIOffRoadEquipment	HorsePower	402.00	300.00
tbIOffRoadEquipment	HorsePower	8.00	200.00
tbIOffRoadEquipment	HorsePower	247.00	250.00
tbIOffRoadEquipment	HorsePower	8.00	200.00
tbIOffRoadEquipment	HorsePower	402.00	350.00
tbIOffRoadEquipment	HorsePower	402.00	300.00
tbIOffRoadEquipment	HorsePower	402.00	350.00

tbIOffRoadEquipment	HorsePower	402.00	300.00
tbIOffRoadEquipment	HorsePower	8.00	200.00
tbIOffRoadEquipment	HorsePower	402.00	350.00
tbIOffRoadEquipment	HorsePower	402.00	300.00
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.48	0.48
tbIOffRoadEquipment	LoadFactor	0.40	0.40
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.36	0.36
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.40	0.40
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tbIOffRoadEquipment	OffRoadEquipmentType		Excavators
tbIOffRoadEquipment	OffRoadEquipmentType		Scrapers
tbIOffRoadEquipment	OffRoadEquipmentType		Scrapers
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tbIOffRoadEquipment	OffRoadEquipmentType		Excavators
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tbIOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tbIOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks

tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Plate Compactors
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	PhaseName	4 - Vegetation Restoration
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	UsageHours	4.00
tbOffRoadEquipment	UsageHours	1.00
tbOffRoadEquipment	UsageHours	1.00
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	UsageHours	8.00
tbOffRoadEquipment	UsageHours	8.00
tbOffRoadEquipment	UsageHours	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
2019	8.0678	92.8677	54.5649	0.1132	10.4876	3.7225	14.2101	3.8276	3.4247	7.2522	0.0000	11,205.32	11,205.32	3.4795	0.0000	11,292.31
Maximum	8.0678	92.8677	54.5649	0.1132	10.4876	3.7225	14.2101	3.8276	3.4247	7.2522	0.0000	11,205.32	11,205.32	3.4795	0.0000	11,292.31

Mitigated Construction

Year	lb/day															
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
2019	8.0678	92.8677	54.5649	0.1132	4.2265	3.7225	7.9490	1.5289	3.4247	4.9536	0.0000	11,205.3246	11,205.3246	3.4795	0.0000	11,292.3127
Maximum	8.0678	92.8677	54.5649	0.1132	4.2265	3.7225	7.9490	1.5289	3.4247	4.9536	0.0000	11,205.3246	11,205.3246	3.4795	0.0000	11,292.3127

ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
0.00	0.00	0.00	0.00	59.70	0.00	44.06	60.06	0.00	31.70	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	1A - Clearing	Site Preparation	8/1/2019	8/7/2019	5	5	
2	1B - Remedial Excavation	Grading	8/8/2019	8/21/2019	5	10	
3	2 - Culvert Installation and Backfill	Building Construction	9/1/2019	9/27/2019	5	20	
4	3 - Saddle Apron Embankment and Finish Grading	Grading	10/1/2019	10/28/2019	5	20	
5	4 - Vegetation Restoration	Trenching	11/1/2019	11/28/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
4 - Vegetation Restoration	Off-Highway Trucks	1	4.00	350	0.38
2 - Culvert Installation and Backfill	Excavators	2	8.00	200	0.38
2 - Culvert Installation and Backfill	Cranes	1	8.00	300	0.29
3 - Saddle Apron Embankment and Finish Grading	Scrapers	4	8.00	490	0.48
1B - Remedial Excavation	Scrapers	2	8.00	490	0.48
1A - Clearing	Rubber Tired Dozers	1	8.00	250	0.40
1A - Clearing	Excavators	1	8.00	200	0.38
1A - Clearing	Off-Highway Trucks	7	8.00	350	0.38
2 - Culvert Installation and Backfill	Rubber Tired Loaders	1	8.00	250	0.36
3 - Saddle Apron Embankment and Finish Grading	Rubber Tired Dozers	1	8.00	250	0.40
1A - Clearing	Off-Highway Trucks	1	8.00	300	0.38
2 - Culvert Installation and Backfill	Plate Compactors	1	8.00	200	0.43
1B - Remedial Excavation	Rubber Tired Dozers	1	8.00	250	0.40
1B - Remedial Excavation	Plate Compactors	1	8.00	200	0.43
1B - Remedial Excavation	Off-Highway Trucks	1	8.00	350	0.38
1B - Remedial Excavation	Off-Highway Trucks	1	8.00	300	0.38
2 - Culvert Installation and Backfill	Off-Highway Trucks	1	8.00	350	0.38
2 - Culvert Installation and Backfill	Off-Highway Trucks	1	8.00	300	0.38
3 - Saddle Apron Embankment and Finish Grading	Plate Compactors	1	8.00	200	0.43
3 - Saddle Apron Embankment and Finish Grading	Off-Highway Trucks	1	8.00	350	0.38
3 - Saddle Apron Embankment and Finish Grading	Off-Highway Trucks	1	8.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
3 - Saddle Apron Embankment and 1A - Clearing	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
1B - Remedial Excavation and Backfill	10	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
2 - Culvert Installation	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
4 - Vegetation Restoration	7	9.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
	1	3.00	0.00	0.00			20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 1A - Clearing - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	6.2655	64.5259	33.2809	0.1059	2.4779	2.4779	2.4779	2.2797	2.2797	2.2797	10,485.94	22	10,485.942	3.3176		10,568.88
Total	6.2655	64.5259	33.2809	0.1059	6.0221	2.4779	8.5000	3.3102	2.2797	5.5899		22	10,485.942	3.3176		10,568.88

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1030	0.0676	0.8919	2.8200e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758	281.5351	281.5351	6.9200e-003	6.9200e-003		281.7081
Total	0.1030	0.0676	0.8919	2.8200e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758	281.5351	281.5351	6.9200e-003	6.9200e-003		281.7081

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	6.2655	64.5259	33.2809	0.1059		2.4779	2.4779		2.2797	2.2797	0.0000	10,485.94	10,485.942	3.3176		10,568.88
Total	6.2655	64.5259	33.2809	0.1059	2.3486	2.4779	4.8265	1.2910	2.2797	3.5706	0.0000	10,485.94	10,485.942	3.3176		10,568.88

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1030	0.0676	0.8919	2.8200e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758	281.5351	281.5351	6.9200e-003	281.7081		281.7081
Total	0.1030	0.0676	0.8919	2.8200e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758	281.5351	281.5351	6.9200e-003	281.7081		281.7081

3.3 1B - Remedial Excavation - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	5.1473	58.4168	32.4140	0.0707	2.3717	2.3717	2.3717	2.1819	2.1819	2.1819		6,995.6851	6,995.6851	2.2134		7,051.0192
Total	5.1473	58.4168	32.4140	0.0707	8.1431	2.3717	10.5148	3.5393	2.1819	5.7212		6,995.6851	6,995.6851	2.2134		7,051.0192

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0618	0.0405	0.5351	1.6900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	168.9210	168.9210	4.1500e-003			169.0249
Total	0.0618	0.0405	0.5351	1.6900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	168.9210	168.9210	4.1500e-003			169.0249

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					3.1758	0.0000	3.1758	1.3803	0.0000	1.3803			0.0000			0.0000
Off-Road	5.1473	58.4168	32.4140	0.0707	2.3717	2.3717	2.3717	2.1819	2.1819	2.1819	0.0000	6,995.6851	6,995.6851	2.2134		7,051.0192
Total	5.1473	58.4168	32.4140	0.0707	3.1758	2.3717	5.5475	1.3803	2.1819	3.5622	0.0000	6,995.6851	6,995.6851	2.2134		7,051.0192

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0618	0.0405	0.5351	1.6900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	168.9210	4.1500e-003	168.9210	4.1500e-003		169.0249
Total	0.0618	0.0405	0.5351	1.6900e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	168.9210	4.1500e-003	168.9210	4.1500e-003		169.0249

3.4.2 - Culvert Installation and Backfill - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Off-Road	2.6829	30.2894	16.1638	0.0498		1.0738	1.0738		0.9879	0.9879		4,931.5827	4,931.5827	1.5603		4,970.5902
Total	2.6829	30.2894	16.1638	0.0498		1.0738	1.0738		0.9879	0.9879		4,931.5827	4,931.5827	1.5603		4,970.5902

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0150	0.4539	0.1200	1.0000e-003	0.0256	3.0700e-003	0.0286	7.3500e-003	2.9300e-003	0.0103	109.1876	109.1876	109.1876	9.2200e-003		109.4180
Worker	0.0371	0.0243	0.3211	1.0200e-003	0.1006	6.7000e-004	0.1013	0.0267	6.2000e-004	0.0273	101.3526	101.3526	101.3526	2.4900e-003		101.4149
Total	0.0521	0.4782	0.4411	2.0200e-003	0.1262	3.7400e-003	0.1299	0.0340	3.5500e-003	0.0376	210.5402	210.5402	210.5402	0.0117		210.8329

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Off-Road	2.6829	30.2894	16.1638	0.0498		1.0738	1.0738		0.9879	0.9879	0.0000	4,931.5827	4,931.5827	1.5603		4,970.5902
Total	2.6829	30.2894	16.1638	0.0498		1.0738	1.0738		0.9879	0.9879	0.0000	4,931.5827	4,931.5827	1.5603		4,970.5902

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0150	0.4539	0.1200	1.0000e-003	0.0256	3.0700e-003	0.0286	7.3500e-003	2.9300e-003	0.0103	109.1876	109.1876	109.1876	9.2200e-003		109.4180
Worker	0.0371	0.0243	0.3211	1.0200e-003	0.1006	6.7000e-004	0.1013	0.0267	6.2000e-004	0.0273	101.3526	101.3526	101.3526	2.4900e-003		101.4149
Total	0.0521	0.4782	0.4411	2.0200e-003	0.1262	3.7400e-003	0.1299	0.0340	3.5500e-003	0.0376	210.5402	210.5402	210.5402	0.0117		210.8329

3.5 3 - Saddle Apron Embankment and Finish Grading - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					10.2641	0.0000	10.2641	3.7683	0.0000	3.7683			0.0000			0.0000
Off-Road	7.9854	92.8137	53.8515	0.1109	3.7210	3.7210	3.7210	3.4233	3.4233	3.4233	10,980.0966	66	10,980.0966	3.4740		11,066.9462
Total	7.9854	92.8137	53.8515	0.1109	10.2641	3.7210	13.9851	3.7683	3.4233	7.1915	10,980.0966	66	10,980.0966	3.4740		11,066.9462

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0824	0.0541	0.7135	2.2600e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	225.2281	225.2281	5.5400e-003			225.3665
Total	0.0824	0.0541	0.7135	2.2600e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	225.2281	225.2281	5.5400e-003			225.3665

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					4.0030	0.0000	4.0030	1.4696	0.0000	1.4696			0.0000			0.0000
Off-Road	7.9854	92.8137	53.8515	0.1109	3.7210	3.7210	3.7210	3.4233	3.4233	3.4233	0.0000	10,980.0966	10,980.0966	3.4740		11,066.9462
Total	7.9854	92.8137	53.8515	0.1109	4.0030	3.7210	7.7240	1.4696	3.4233	4.8929	0.0000	10,980.0966	10,980.0966	3.4740		11,066.9462

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0824	0.0541	0.7135	2.2600e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	225.2281	225.2281	5.5400e-003			225.3665
Total	0.0824	0.0541	0.7135	2.2600e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	225.2281	225.2281	5.5400e-003			225.3665

3.6 4 - Vegetation Restoration - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Off-Road	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047		569.2861	569.2861	0.1801		573.7890
Total	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047		569.2861	569.2861	0.1801		573.7890

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.1400e-003	8.9000e-004	0.0119	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005		0.6990	0.6990	6.0000e-005		0.7006
Total	3.1400e-003	8.9000e-004	0.0119	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005		0.6990	0.6990	6.0000e-005		0.7006

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Off-Road	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047	0.0000	569.2861	569.2861	0.1801		573.7890
Total	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047	0.0000	569.2861	569.2861	0.1801		573.7890

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1400e-003	8.9000e-004	0.0119	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005	0.6990	0.6990	6.0000e-005	6.0000e-005		0.7006
Total	3.1400e-003	8.9000e-004	0.0119	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005	0.6990	0.6990	6.0000e-005	6.0000e-005		0.7006

OCWD Santiago Basins Saddle Improvement Project - Orange County, Winter

OCWD Santiago Basins Saddle Improvement Project Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW/hr)	702.44	CH4 Intensity (lb/MW/hr)	0.029	N2O Intensity (lb/MW/hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Opening Year 2019

Land Use - 0.5 AC Other Non-Asphalt Surfaces

Construction Phase - Construction phases and schedule provided by applicant.

Off-road Equipment - Clearing equipment provided by applicant.

Off-road Equipment - Remedial Excavation equipment provided by applicant.

Off-road Equipment - Culvert Installation and Backfill equipment provided by applicant.

Off-road Equipment - Saddle Apron Embankment and Finish Grading equipment provided by applicant.

Off-road Equipment - Vegetation Restoration equipment provided by applicant.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation - Per SCAQMD Rule 403 minimum requirements, water exposure 3x per day selected.

Table Name	Column Name	Default Value	New Value
tb\ConstructionPhase	NumDays	100.00	20.00
tb\ConstructionPhase	NumDays	2.00	10.00
tb\ConstructionPhase	NumDays	1.00	5.00
tb\ConstructionPhase	NumDays	2.00	20.00
tb\ConstructionPhase	PhaseEndDate	1/6/2020	9/27/2019
tb\ConstructionPhase	PhaseEndDate	8/19/2019	8/21/2019
tb\ConstructionPhase	PhaseEndDate	8/15/2019	8/7/2019
tb\ConstructionPhase	PhaseStartDate	8/20/2019	9/1/2019
tb\ConstructionPhase	PhaseStartDate	8/16/2019	8/8/2019
tb\ConstructionPhase	PhaseStartDate	8/15/2019	8/1/2019
tb\OffRoadEquipment	HorsePower	402.00	350.00
tb\OffRoadEquipment	HorsePower	158.00	200.00
tb\OffRoadEquipment	HorsePower	231.00	300.00
tb\OffRoadEquipment	HorsePower	367.00	490.00
tb\OffRoadEquipment	HorsePower	367.00	490.00
tb\OffRoadEquipment	HorsePower	247.00	250.00
tb\OffRoadEquipment	HorsePower	158.00	200.00
tb\OffRoadEquipment	HorsePower	402.00	350.00
tb\OffRoadEquipment	HorsePower	203.00	250.00
tb\OffRoadEquipment	HorsePower	247.00	250.00
tb\OffRoadEquipment	HorsePower	402.00	300.00
tb\OffRoadEquipment	HorsePower	8.00	200.00
tb\OffRoadEquipment	HorsePower	247.00	250.00
tb\OffRoadEquipment	HorsePower	8.00	200.00
tb\OffRoadEquipment	HorsePower	402.00	350.00
tb\OffRoadEquipment	HorsePower	402.00	300.00
tb\OffRoadEquipment	HorsePower	402.00	350.00

tbIOffRoadEquipment	HorsePower	402.00	300.00
tbIOffRoadEquipment	HorsePower	8.00	200.00
tbIOffRoadEquipment	HorsePower	402.00	350.00
tbIOffRoadEquipment	HorsePower	402.00	300.00
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.48	0.48
tbIOffRoadEquipment	LoadFactor	0.40	0.40
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.36	0.36
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.40	0.40
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	LoadFactor	0.38	0.38
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tbIOffRoadEquipment	OffRoadEquipmentType		Excavators
tbIOffRoadEquipment	OffRoadEquipmentType		Scrapers
tbIOffRoadEquipment	OffRoadEquipmentType		Scrapers
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tbIOffRoadEquipment	OffRoadEquipmentType		Excavators
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tbIOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tbIOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tbIOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tbIOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks

tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Plate Compactors
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00
tbOffRoadEquipment	PhaseName	4 - Vegetation Restoration
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	PhaseName	3 - Saddle Apron Embankment and Finish Grading
tbOffRoadEquipment	UsageHours	8.00
tbOffRoadEquipment	UsageHours	8.00
tbOffRoadEquipment	UsageHours	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
2019	8.0784	92.8731	54.5120	0.1130	10.4876	3.7225	14.2101	3.8276	3.4247	7.2522	0.0000	11,193.25	11,193.25	3.4792	0.0000	11,280.23
Maximum	8.0784	92.8731	54.5120	0.1130	10.4876	3.7225	14.2101	3.8276	3.4247	7.2522	0.0000	11,193.25	11,193.25	3.4792	0.0000	11,280.23

Mitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day															
2019	8.0784	92.8731	54.5120	0.1130	4.2265	3.7225	7.9490	1.5289	3.4247	4.9536	0.0000	11,193.25	11,193.251	3.4792	0.0000	11,280.23
Maximum	8.0784	92.8731	54.5120	0.1130	4.2265	3.7225	7.9490	1.5289	3.4247	4.9536	0.0000	11,193.25	11,193.251	3.4792	0.0000	11,280.23

ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	59.70	0.00	44.06	60.06	0.00	31.70	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	1A - Clearing	Site Preparation	8/1/2019	8/7/2019	5	5	
2	1B - Remedial Excavation	Grading	8/8/2019	8/21/2019	5	10	
3	2 - Culvert Installation and Backfill	Building Construction	9/1/2019	9/27/2019	5	20	
4	3 - Saddle Apron Embankment and Finish Grading	Grading	10/1/2019	10/28/2019	5	20	
5	4 - Vegetation Restoration	Trenching	11/1/2019	11/28/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
4 - Vegetation Restoration	Off-Highway Trucks	1	4.00	350	0.38
2 - Culvert Installation and Backfill	Excavators	2	8.00	200	0.38
2 - Culvert Installation and Backfill	Cranes	1	8.00	300	0.29
3 - Saddle Apron Embankment and Finish Grading	Scrapers	4	8.00	490	0.48
1B - Remedial Excavation	Scrapers	2	8.00	490	0.48
1A - Clearing	Rubber Tired Dozers	1	8.00	250	0.40
1A - Clearing	Excavators	1	8.00	200	0.38
1A - Clearing	Off-Highway Trucks	7	8.00	350	0.38
2 - Culvert Installation and Backfill	Rubber Tired Loaders	1	8.00	250	0.36
3 - Saddle Apron Embankment and Finish Grading	Rubber Tired Dozers	1	8.00	250	0.40
1A - Clearing	Off-Highway Trucks	1	8.00	300	0.38
2 - Culvert Installation and Backfill	Plate Compactors	1	8.00	200	0.43
1B - Remedial Excavation	Rubber Tired Dozers	1	8.00	250	0.40
1B - Remedial Excavation	Plate Compactors	1	8.00	200	0.43
1B - Remedial Excavation	Off-Highway Trucks	1	8.00	350	0.38
1B - Remedial Excavation	Off-Highway Trucks	1	8.00	300	0.38
2 - Culvert Installation and Backfill	Off-Highway Trucks	1	8.00	350	0.38
2 - Culvert Installation and Backfill	Off-Highway Trucks	1	8.00	300	0.38
3 - Saddle Apron Embankment and Finish Grading	Plate Compactors	1	8.00	200	0.43
3 - Saddle Apron Embankment and Finish Grading	Off-Highway Trucks	1	8.00	350	0.38
3 - Saddle Apron Embankment and Finish Grading	Off-Highway Trucks	1	8.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
3 - Saddle Apron Embankment and 1A - Clearing	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
1B - Remedial Excavation and Backfill	10	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
2 - Culvert Installation	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
4 - Vegetation Restoration	7	9.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
	1	3.00	0.00	0.00			20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 1A - Clearing - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Biogenic CO2	Non-Biogenic CO2	Total CO2	CH4	N2O	CO2e
	lb/day															
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	6.2655	64.5259	33.2809	0.1059		2.4779	2.4779		2.2797	2.2797	10,485.9422	22	10,485.9422	3.3176		10,568.8832
Total	6.2655	64.5259	33.2809	0.1059	6.0221	2.4779	8.5000	3.3102	2.2797	5.5899	10,485.9422	22	10,485.9422	3.3176		10,568.8832

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1162	0.0743	0.8257	2.6700e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758	266.4434	266.4434	266.4434	6.5600e-003		266.6075
Total	0.1162	0.0743	0.8257	2.6700e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758	266.4434	266.4434	266.4434	6.5600e-003		266.6075

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	6.2655	64.5259	33.2809	0.1059	2.4779	2.4779	2.4779	2.2797	2.2797	2.2797	0.0000	10,485.94	10,485.942	3.3176		10,568.88
Total	6.2655	64.5259	33.2809	0.1059	2.3486	2.4779	4.8265	1.2910	2.2797	3.5706	0.0000	10,485.94	10,485.942	3.3176		10,568.88

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1162	0.0743	0.8257	2.6700e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758		266.4434	266.4434	6.5600e-003		266.6075
Total	0.1162	0.0743	0.8257	2.6700e-003	0.2794	1.8700e-003	0.2813	0.0741	1.7200e-003	0.0758		266.4434	266.4434	6.5600e-003		266.6075

3.3 1B - Remedial Excavation - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	5.1473	58.4168	32.4140	0.0707	2.3717	2.3717	2.3717	2.1819	2.1819	2.1819		6,995.6851	6,995.6851	2.2134		7,051.0192
Total	5.1473	58.4168	32.4140	0.0707	8.1431	2.3717	10.5148	3.5393	2.1819	5.7212		6,995.6851	6,995.6851	2.2134		7,051.0192

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0697	0.0446	0.4954	1.6000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	159.8661	159.8661	3.9400e-003			159.9645
Total	0.0697	0.0446	0.4954	1.6000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	159.8661	159.8661	3.9400e-003			159.9645

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					3.1758	0.0000	3.1758	1.3803	0.0000	1.3803			0.0000			0.0000
Off-Road	5.1473	58.4168	32.4140	0.0707	2.3717	2.3717	2.3717	2.1819	2.1819	2.1819	0.0000	6,995.6851	6,995.6851	2.2134		7,051.0192
Total	5.1473	58.4168	32.4140	0.0707	3.1758	2.3717	5.5475	1.3803	2.1819	3.5622	0.0000	6,995.6851	6,995.6851	2.2134		7,051.0192

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0697	0.0446	0.4954	1.6000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	159.8661	159.8661	3.9400e-003	0.0000	0.0000	159.9645
Total	0.0697	0.0446	0.4954	1.6000e-003	0.1677	1.1200e-003	0.1688	0.0445	1.0300e-003	0.0455	159.8661	159.8661	3.9400e-003	0.0000	0.0000	159.9645

3.4.2 - Culvert Installation and Backfill - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Off-Road	2.6829	30.2894	16.1638	0.0498	1.0738	1.0738	1.0738	0.9879	0.9879	0.9879	4,931.5827	7	4,931.5827	1.5603	0.0000	4,970.5902
Total	2.6829	30.2894	16.1638	0.0498	1.0738	1.0738	1.0738	0.9879	0.9879	0.9879	4,931.5827	7	4,931.5827	1.5603	0.0000	4,970.5902

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0156	0.4544	0.1317	9.8000e-004	0.0256	3.1200e-003	0.0287	7.3500e-003	2.9900e-003	0.0103	106.5421	106.5421	106.5421	9.7000e-003		106.7847
Worker	0.0419	0.0267	0.2973	9.6000e-004	0.1006	6.7000e-004	0.1013	0.0267	6.2000e-004	0.0273	95.9196	95.9196	95.9196	2.3600e-003		95.9787
Total	0.0575	0.4811	0.4290	1.9400e-003	0.1262	3.7900e-003	0.1300	0.0340	3.6100e-003	0.0376	202.4617	202.4617	202.4617	0.0121		202.7634

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day															
Off-Road	2.6829	30.2894	16.1638	0.0498		1.0738	1.0738		0.9879	0.9879	0.0000	4,931.5827	4,931.5827	1.5603		4,970.5902
Total	2.6829	30.2894	16.1638	0.0498		1.0738	1.0738		0.9879	0.9879	0.0000	4,931.5827	4,931.5827	1.5603		4,970.5902

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0156	0.4544	0.1317	9.8000e-004	0.0256	3.1200e-003	0.0287	7.3500e-003	2.9900e-003	0.0103	106.5421	106.5421	106.5421	9.7000e-003		106.7847
Worker	0.0419	0.0267	0.2973	9.6000e-004	0.1006	6.7000e-004	0.1013	0.0267	6.2000e-004	0.0273	95.9196	95.9196	95.9196	2.3600e-003		95.9787
Total	0.0575	0.4811	0.4290	1.9400e-003	0.1262	3.7900e-003	0.1300	0.0340	3.6100e-003	0.0376	202.4617	202.4617	202.4617	0.0121		202.7634

3.5 3 - Saddle Apron Embankment and Finish Grading - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					10.2641	0.0000	10.2641	3.7683	0.0000	3.7683			0.0000			0.0000
Off-Road	7.9854	92.8137	53.8515	0.1109	3.7210	3.7210	3.7210	3.4233	3.4233	3.4233	10,980.0966	66	10,980.0966	3.4740		11,066.9462
Total	7.9854	92.8137	53.8515	0.1109	10.2641	3.7210	13.9851	3.7683	3.4233	7.1915	10,980.0966	66	10,980.0966	3.4740		11,066.9462

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0930	0.0594	0.6606	2.1400e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	213.1547	213.1547	213.1547	5.2500e-003		213.2860
Total	0.0930	0.0594	0.6606	2.1400e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	213.1547	213.1547	213.1547	5.2500e-003		213.2860

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Fugitive Dust					4.0030	0.0000	4.0030	1.4696	0.0000	1.4696			0.0000			0.0000
Off-Road	7.9854	92.8137	53.8515	0.1109		3.7210	3.7210		3.4233	3.4233	0.0000	10,980.0966	10,980.0966	3.4740		11,066.9462
Total	7.9854	92.8137	53.8515	0.1109	4.0030	3.7210	7.7240	1.4696	3.4233	4.8929	0.0000	10,980.0966	10,980.0966	3.4740		11,066.9462

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0930	0.0594	0.6606	2.1400e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607	213.1547	213.1547	213.1547	5.2500e-003		213.2860
Total	0.0930	0.0594	0.6606	2.1400e-003	0.2236	1.4900e-003	0.2251	0.0593	1.3800e-003	0.0607		213.1547	213.1547	5.2500e-003		213.2860

3.6 4 - Vegetation Restoration - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Off-Road	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047		569.2861	569.2861	0.1801		573.7890
Total	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047		569.2861	569.2861	0.1801		573.7890

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9900e-003	9.7000e-004	0.0140	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005	0.6868	0.6868	0.6868	7.0000e-005		0.6886
Total	2.9900e-003	9.7000e-004	0.0140	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005	0.6868	0.6868	0.6868	7.0000e-005		0.6886

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
lb/day																
Off-Road	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047	0.0000	569.2861	569.2861	0.1801		573.7890
Total	0.3090	3.1298	1.7399	5.7500e-003		0.1138	0.1138		0.1047	0.1047	0.0000	569.2861	569.2861	0.1801		573.7890

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9900e-003	9.7000e-004	0.0140	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005	0.6868	0.6868	7.0000e-005	0.6868	0.6868	0.6886
Total	2.9900e-003	9.7000e-004	0.0140	1.0000e-005	3.0000e-005	2.0000e-005	5.0000e-005	1.0000e-005	2.0000e-005	3.0000e-005	0.6868	0.6868	7.0000e-005	0.6868	0.6868	0.6886

OCWD Santiago Basins Saddle Improvement Project - Orange County, Annual

OCWD Santiago Basins Saddle Improvement Project Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.50	Acres	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8	Operational Year	2019		

Utility Company Southern California Edison

CO2 Intensity (lb/MW/hr)	702.44	CH4 Intensity (lb/MW/hr)	0.029	N2O Intensity (lb/MW/hr)	0.006
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1.3 User Entered Comments & Non-Default Data

Project Characteristics - Opening Year 2019

Land Use - 0.5 AC Other Non-Asphalt Surfaces

Construction Phase - Construction phases and schedule provided by applicant.

Off-road Equipment - Clearing equipment provided by applicant.

Off-road Equipment - Remedial Excavation equipment provided by applicant.

Off-road Equipment - Culvert Installation and Backfill equipment provided by applicant.

Off-road Equipment - Saddle Apron Embankment and Finish Grading equipment provided by applicant.

Off-road Equipment - Vegetation Restoration equipment provided by applicant.

Grading -
Energy Use -

Construction Off-road Equipment Mitigation - Per SCAQMD Rule 403 minimum requirements, water exposure 3x per day selected.

Table Name	Column Name	Default Value	New Value
tbiConstructionPhase	NumDays	100.00	20.00
tbiConstructionPhase	NumDays	2.00	10.00
tbiConstructionPhase	NumDays	1.00	5.00
tbiConstructionPhase	NumDays	2.00	20.00
tbiConstructionPhase	PhaseEndDate	1/6/2020	9/27/2019
tbiConstructionPhase	PhaseEndDate	8/19/2019	8/21/2019
tbiConstructionPhase	PhaseEndDate	8/15/2019	8/7/2019
tbiConstructionPhase	PhaseStartDate	8/20/2019	9/1/2019
tbiConstructionPhase	PhaseStartDate	8/16/2019	8/8/2019
tbiConstructionPhase	PhaseStartDate	8/15/2019	8/1/2019
tbiOffRoadEquipment	HorsePower	402.00	350.00
tbiOffRoadEquipment	HorsePower	158.00	200.00
tbiOffRoadEquipment	HorsePower	231.00	300.00
tbiOffRoadEquipment	HorsePower	367.00	490.00
tbiOffRoadEquipment	HorsePower	367.00	490.00
tbiOffRoadEquipment	HorsePower	247.00	250.00
tbiOffRoadEquipment	HorsePower	158.00	200.00
tbiOffRoadEquipment	HorsePower	402.00	350.00
tbiOffRoadEquipment	HorsePower	203.00	250.00
tbiOffRoadEquipment	HorsePower	247.00	250.00
tbiOffRoadEquipment	HorsePower	402.00	300.00
tbiOffRoadEquipment	HorsePower	8.00	200.00
tbiOffRoadEquipment	HorsePower	247.00	250.00
tbiOffRoadEquipment	HorsePower	8.00	200.00
tbiOffRoadEquipment	HorsePower	402.00	350.00
tbiOffRoadEquipment	HorsePower	402.00	300.00

tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	8.00	200.00
tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers

tblOffRoadEquipment	OffRoadEquipmentType	Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Off-Highway Trucks
tblOffRoadEquipment	UsageHours	8.00
tblOffRoadEquipment	UsageHours	8.00
tblOffRoadEquipment	UsageHours	8.00

2.0 Emissions Summary

2.1 Overall Construction Unmitigated Construction

Year	MTR/yr															
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
2019	0.1532	1.7218	0.9788	2.3400e-003	0.1634	0.0672	0.2306	0.0650	0.0618	0.1268	0.0000	210.2354	210.2354	0.0651	0.0000	211.8620
Maximum	0.1532	1.7218	0.9788	2.3400e-003	0.1634	0.0672	0.2306	0.0650	0.0618	0.1268	0.0000	210.2354	210.2354	0.0651	0.0000	211.8620

Mitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
2019	0.1532	1.7218	0.9788	2.3400e-003	0.0667	0.0672	0.1339	0.0261	0.0618	0.0880	0.0000	210.2351	210.2351	0.0651	0.0000	211.8618
Maximum	0.1532	1.7218	0.9788	2.3400e-003	0.0667	0.0672	0.1339	0.0261	0.0618	0.0880	0.0000	210.2351	210.2351	0.0651	0.0000	211.8618

ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
0.00	0.00	0.00	0.00	59.15	0.00	41.91	59.77	0.00	30.62	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOx (tons/quarter)	Maximum Mitigated ROG + NOx (tons/quarter)
1	8-1-2019	9-30-2019	0.8188	0.8188
		Highest	0.8188	0.8188

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	A - Clearing	Site Preparation	8/1/2019	8/7/2019	5	5	
2	B - Remedial Excavation	Grading	8/8/2019	8/21/2019	5	10	
3	C - Culvert Installation and Backfill	Building Construction	9/1/2019	9/27/2019	5	20	
4	3 - Saddle Apron Embankment and Finish Grading	Grading	10/1/2019	10/28/2019	5	20	
5	4 - Vegetation Restoration	Trenching	11/1/2019	11/28/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
4 - Vegetation Restoration	Off-Highway Trucks	1	4.00	350	0.38
2 - Culvert Installation and Backfill	Excavators	2	8.00	200	0.38
2 - Culvert Installation and Backfill	Cranes	1	8.00	300	0.29
3 - Saddle Apron Embankment and Finish Grading	Scrapers	4	8.00	490	0.48
1B - Remedial Excavation	Scrapers	2	8.00	490	0.48
1A - Clearing	Rubber Tired Dozers	1	8.00	250	0.40
1A - Clearing	Excavators	1	8.00	200	0.38
1A - Clearing	Off-Highway Trucks	7	8.00	350	0.38
2 - Culvert Installation and Backfill	Rubber Tired Loaders	1	8.00	250	0.36
3 - Saddle Apron Embankment and Finish Grading	Rubber Tired Dozers	1	8.00	250	0.40
1A - Clearing	Off-Highway Trucks	1	8.00	300	0.38
2 - Culvert Installation and Backfill	Plate Compactors	1	8.00	200	0.43
1B - Remedial Excavation	Rubber Tired Dozers	1	8.00	250	0.40
1B - Remedial Excavation	Plate Compactors	1	8.00	200	0.43
1B - Remedial Excavation	Off-Highway Trucks	1	8.00	350	0.38
1B - Remedial Excavation	Off-Highway Trucks	1	8.00	300	0.38
2 - Culvert Installation and Backfill	Off-Highway Trucks	1	8.00	350	0.38
2 - Culvert Installation and Backfill	Off-Highway Trucks	1	8.00	300	0.38
3 - Saddle Apron Embankment and Finish Grading	Plate Compactors	1	8.00	200	0.43
3 - Saddle Apron Embankment and Finish Grading	Off-Highway Trucks	1	8.00	350	0.38
3 - Saddle Apron Embankment and Finish Grading	Off-Highway Trucks	1	8.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
3 - Saddle Apron Embankment and 1A - Clearing	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
1B - Remedial Excavation and Backfill	10	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
2 - Culvert Installation	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
4 - Vegetation Restoration	7	9.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
	1	3.00	0.00	0.00			20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 1A - Clearing - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0157	0.1613	0.0832	2.6000e-004	6.1900e-003	6.1900e-003	6.1900e-003	5.7000e-003	5.7000e-003	5.7000e-003	0.0000	23.7817	23.7817	7.5200e-003	0.0000	23.9698
Total	0.0157	0.1613	0.0832	2.6000e-004	0.0151	6.1900e-003	0.0213	8.2800e-003	5.7000e-003	0.0140	0.0000	23.7817	23.7817	7.5200e-003	0.0000	23.9698

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
	tons/yr																
	MT/yr																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	2.1100e-003	1.0000e-005	6.9000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.6135	0.6135	2.0000e-005	0.0000	0.0000	0.6139
Total	2.6000e-004	1.9000e-004	2.1100e-003	1.0000e-005	6.9000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.6135	0.6135	2.0000e-005	0.0000	0.0000	0.6139

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
	tons/yr																
	MT/yr																
Fugitive Dust					5.8700e-003	0.0000	5.8700e-003	3.2300e-003	0.0000	3.2300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0157	0.1613	0.0832	2.6000e-004	6.1900e-003	6.1900e-003	6.1900e-003	5.7000e-003	5.7000e-003	5.7000e-003	0.0000	23.7817	23.7817	7.5200e-003	0.0000	0.0000	23.9698
Total	0.0157	0.1613	0.0832	2.6000e-004	5.8700e-003	6.1900e-003	0.0121	3.2300e-003	5.7000e-003	8.9300e-003	0.0000	23.7817	23.7817	7.5200e-003	0.0000	0.0000	23.9698

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	2.1100e-003	1.0000e-005	6.9000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.6135	0.6135	2.0000e-005	0.0000	0.6139
Total	2.6000e-004	1.9000e-004	2.1100e-003	1.0000e-005	6.9000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.6135	0.6135	2.0000e-005	0.0000	0.6139

3.3 1B - Remedial Excavation - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Fugitive Dust					0.0407	0.0000	0.0407	0.0177	0.0000	0.0177	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0257	0.2921	0.1621	3.5000e-004		0.0119	0.0119	0.0109	0.0109	0.0109	0.0000	31.7319	31.7319	0.0100	0.0000	31.9629
Total	0.0257	0.2921	0.1621	3.5000e-004	0.0407	0.0119	0.0526	0.0177	0.0109	0.0286	0.0000	31.7319	31.7319	0.0100	0.0000	31.9629

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.3000e-004	2.5400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7362	0.7362	2.0000e-005	0.0000	0.7367
Total	3.1000e-004	2.3000e-004	2.5400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7362	0.7362	2.0000e-005	0.0000	0.7367

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Fugitive Dust					0.0159	0.0000	0.0159	6.9000e-003	0.0000	6.9000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0257	0.2921	0.1621	3.5000e-004	0.0119	0.0119	0.0119	0.0109	0.0109	0.0109	0.0000	31.7319	31.7319	0.0100	0.0000	31.9829
Total	0.0257	0.2921	0.1621	3.5000e-004	0.0159	0.0119	0.0277	6.9000e-003	0.0109	0.0178	0.0000	31.7319	31.7319	0.0100	0.0000	31.9829

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.3000e-004	2.5400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7362	0.7362	2.0000e-005	0.0000	0.7367
Total	3.1000e-004	2.3000e-004	2.5400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7362	0.7362	2.0000e-005	0.0000	0.7367

3.4.2 - Culvert Installation and Backfill - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Off-Road	0.0268	0.3029	0.1616	5.0000e-004	0.0107	0.0107	0.0107	9.8800e-003	9.8800e-003	9.8800e-003	0.0000	44.7386	44.7386	0.0142	0.0000	45.0924
Total	0.0268	0.3029	0.1616	5.0000e-004	0.0107	0.0107	0.0107	9.8800e-003	9.8800e-003	9.8800e-003	0.0000	44.7386	44.7386	0.0142	0.0000	45.0924

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	4.6300e-003	1.2600e-003	1.0000e-005	2.5000e-004	3.0000e-005	2.8000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	0.9805	0.9805	9.0000e-005	0.0000	0.9826
Worker	3.8000e-004	2.7000e-004	3.0400e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8835	0.8835	2.0000e-005	0.0000	0.8840
Total	5.3000e-004	4.9000e-003	4.3000e-003	2.0000e-005	1.2400e-003	4.0000e-005	1.2700e-003	3.3000e-004	4.0000e-005	3.7000e-004	0.0000	1.8639	1.8639	1.1000e-004	0.0000	1.8666

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Off-Road	0.0268	0.3029	0.1616	5.0000e-004	0.0107	0.0107	0.0107	9.8800e-003	9.8800e-003	9.8800e-003	0.0000	44.7385	44.7385	0.0142	0.0000	45.0924
Total	0.0268	0.3029	0.1616	5.0000e-004	0.0107	0.0107	0.0107	9.8800e-003	9.8800e-003	9.8800e-003	0.0000	44.7385	44.7385	0.0142	0.0000	45.0924

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	4.6300e-003	1.2600e-003	1.0000e-005	2.5000e-004	3.0000e-005	2.8000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	0.9805	0.9805	9.0000e-005	0.0000	0.9826
Worker	3.8000e-004	2.7000e-004	3.0400e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8835	0.8835	2.0000e-005	0.0000	0.8840
Total	5.3000e-004	4.9000e-003	4.3000e-003	2.0000e-005	1.2400e-003	4.0000e-005	1.2700e-003	3.3000e-004	4.0000e-005	3.7000e-004	0.0000	1.8639	1.8639	1.1000e-004	0.0000	1.8666

3.5 3 - Saddle Apron Embankment and Finish Grading - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Fugitive Dust					0.1026	0.0000	0.1026	0.0377	0.0000	0.0377	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0799	0.9281	0.5385	1.1100e-003		0.0372	0.0372		0.0342	0.0342	0.0000	99.6098	99.6098	0.0315	0.0000	100.3977
Total	0.0799	0.9281	0.5385	1.1100e-003	0.1026	0.0372	0.1399	0.0377	0.0342	0.0719	0.0000	99.6098	99.6098	0.0315	0.0000	100.3977

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	6.1000e-004	6.7700e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9632	1.9632	5.0000e-005	0.0000	1.9645
Total	8.4000e-004	6.1000e-004	6.7700e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9632	1.9632	5.0000e-005	0.0000	1.9645

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Fugitive Dust					0.0400	0.0000	0.0400	0.0147	0.0000	0.0147	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0799	0.9281	0.5385	1.1100e-003		0.0372	0.0372	0.0342	0.0342	0.0342	0.0000	99.6096	99.6096	0.0315	0.0000	100.3975
Total	0.0799	0.9281	0.5385	1.1100e-003	0.0400	0.0372	0.0772	0.0147	0.0342	0.0489	0.0000	99.6096	99.6096	0.0315	0.0000	100.3975

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	6.1000e-004	6.7700e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9632	1.9632	5.0000e-005	0.0000	1.9645
Total	8.4000e-004	6.1000e-004	6.7700e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9632	1.9632	5.0000e-005	0.0000	1.9645

3.6 4 - Vegetation Restoration - 2019

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr															
	MT/yr															
Off-Road	3.1100e-003	0.0315	0.0175	6.0000e-005	1.1400e-003	1.1400e-003	1.1400e-003	1.0500e-003	1.0500e-003	1.0500e-003	0.0000	5.1903	5.1903	1.6400e-003	0.0000	5.2314
Total	3.1100e-003	0.0315	0.0175	6.0000e-005	1.1400e-003	1.1400e-003	1.1400e-003	1.0500e-003	1.0500e-003	1.0500e-003	0.0000	5.1903	5.1903	1.6400e-003	0.0000	5.2314

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
	tons/yr																
	MT/yr																
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	1.0000e-005	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.2600e-003	6.2600e-003	0.0000	0.0000	0.0000	6.2800e-003
Total	3.0000e-005	1.0000e-005	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.2600e-003	6.2600e-003	0.0000	0.0000	0.0000	6.2800e-003

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
	tons/yr																
	MT/yr																
Off-Road	3.1100e-003	0.0315	0.0175	6.0000e-005	1.1400e-003	1.1400e-003	1.1400e-003	1.0500e-003	1.0500e-003	1.0500e-003	0.0000	5.1903	5.1903	1.6400e-003	0.0000	0.0000	5.2314
Total	3.1100e-003	0.0315	0.0175	6.0000e-005	1.1400e-003	1.1400e-003	1.1400e-003	1.0500e-003	1.0500e-003	1.0500e-003	0.0000	5.1903	5.1903	1.6400e-003	0.0000	0.0000	5.2314

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										Mt/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	1.0000e-005	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.2600e-003	6.2600e-003	0.0000	0.0000	6.2800e-003
Total	3.0000e-005	1.0000e-005	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.2600e-003	6.2600e-003	0.0000	0.0000	6.2800e-003