# APPENDIX A

*Air Quality and Greenhouse Gas Emissions Analysis*

DUDEK

# MEMORANDUM

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| **To:** | Ross Duenas, Kimley-Horn and Associates |
| **From:** | Caitlin Munson, Dudek |
| **Subject:** | Air Quality and Greenhouse Gas Emissions Analysis for the Proposed Robinson Avenue Bikeway Project, City of San Diego, California |
| **Date:** | June 10, 2015 |
| **cc:** | Brian Grover |
| **Attachment(s):** | Appendix A, CalEEMod Results |

This memorandum evaluates the anticipated air quality and greenhouse gas emission impacts associated with construction of the proposed Robinson Avenue Bikeway (proposed project).

## PROJECT DESCRIPTION

The San Diego Association of Governments (SANDAG) proposes to construct the Robinson Avenue Bikeway (proposed project) within the North Park community of the City of San Diego, San Diego County, California. The proposed project would involve ~~physical~~ improvements to Robinson Avenue, Georgia Street, Florida Street, and Alabama Street between Park Boulevard to the west and Alabama Street to the east. The project would provide a bicycle and pedestrian facility to connect a missing section of Robinson Avenue between Florida Street and Alabama Street.

The proposed project is located in the North Park community of the City of San Diego, along an approximately 0.2 mile segment of the Robinson Avenue public right-of-way (ROW) from just east of Park Boulevard to Alabama Street. The project site also includes the approximately 150-foot long missing segment of Robinson Avenue between Florida Street and Alabama Street. Approximately 2,800 square feet of land would be acquired from a property to the north (Assessor Parcel Number 453-012-15-07 to 14). Residential properties abut the Robinson Avenue ROW on the north and south side of the project site.

The proposed project would construct a bicycle and pedestrian path (Robinson Avenue Elevated Shared-Use Path or bikeway path) (Class I bicycle lanes) to connect a missing section of Robinson Avenue between Florida Street and Alabama Street. The structural components of the proposed bikeway path would be comprised of several different materials. The project also

includes buffered bike lanes, ~~a mini-roundabout,~~ a neighborhood traffic circle, and improvements to the Robinson Avenue/Alabama Street intersection.

Construction is expected to be phased over approximately 11 months, beginning in the fall of 2016 and ending in the summer of 2017. Construction equipment would include bulldozers, backhoes, water trucks, roller(s), concrete mixer truck, pavement scarifier, street sweeper, jackhammer, chainsaw, hand compaction, bobcat, trencher, concrete pump truck, crane, generator, asphalt cold planer, asphalt truck, asphalt paver, asphalt/concrete saw, and a roadway striping machine. Approximately 14 existing ornamental mature trees would be removed during construction. Construction would generally be phased as indicated in Table 1.

**Table 1**
**Estimated Construction Phasing**

| Construction Phase | Duration | Expected Equipment |
|---|---|---|
| Demolition | 1 month | 2 backhoes, 1 bulldozer, street sweeper, jackhammer, 1 sawcut machine |
| Mass Site Grading | 1 month | 1 loader, 2 backhoes, 1 grader, 3 water trucks |
| Trenching/Utilities | 3 months | 1 backhoe, 1 bull dozer, 1 crane |
| Bikeway Bride Construction | 4 months | 1 crane, 2 backhoes, 2 loaders, 1 concrete truck, 1 concrete pump |
| Paving/Striping | 2 months | 1 paving machine, 1 striping machine, 1 pavement scarifier, 1 asphalt cold planer, 1 asphalt truck, 1 concrete truck, 1 sawcut machine, 1 street sweeper |

**Source:** Kimley-Horn and Associates 2015.

## AIR QUALITY

### Relation to Air Quality Plans

The proposed project is located within the San Diego Air Basin (SDAB or basin) and is subject to the San Diego Air Pollution Control District (SDAPCD) guidelines and regulations. The SDAB is one of 15 air basins that geographically divide the State of California. The SDAB lies in the southwest corner of California and comprises the entire San Diego region, covering 4,260 square miles, and is an area of high air pollution potential.

The SDAPCD is responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The County *Regional Air Quality Strategy* (RAQS) was initially adopted in 1991, and is updated on a triennial basis, most recently in 2009 (SDAPCD 2009a). The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for ozone ($O_3$). The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, and information regarding projected growth in the cities and San Diego County, to project future emissions and determine the strategies

necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the cities and San Diego County as part of the development of their general plans.

As described in San Diego Forward: The Regional Plan (2015 Regional Plan)~~the SANDAG 2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)~~, bicycle improvements are part of an adopted regional strategy to achieve per-capita greenhouse gas emissions from on-road transportation sources by decreasing the number of vehicle trips and vehicle miles traveled.

If a project proposes development that is greater than that anticipated in the local plan and SANDAG's growth projections, the project might be in conflict with the RAQS. The proposed project would involve the development of a shared bicycle and pedestrian path along Robinson Avenue between Florida Street and Alabama Street, as well as roadway improvements along Robinson Avenue from east of Park Boulevard to Alabama Street. The proposed project does not include housing or commercial land uses that would directly induce population growth to the area. While the project would be considered the expansion of transportation infrastructure, it would not lead to indirect growth in the area. The expansion of bicycle infrastructure within a highly developed and urbanized area would not typically lead to indirect growth in such a way as a new road to an undeveloped location would. In addition, the proposed project would encourage the use of bicycles in the area as an alternative to vehicles and not conflict with or obstruct implementation of the RAQS, as the proposed project would represent a positive impact on long-term air quality. Therefore, the proposed project would be consistent at a regional level with the underlying growth forecasts in the RAQS.

**Criteria Pollutant Emissions**

***SDAB Attainment Designation.*** An area is designated as in attainment when it is in compliance with the National Ambient Air Quality Standards (NAAQS) and/or the California Ambient Air Quality Standards (CAAQS). These standards are set by the United States Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), respectively, for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. The criteria air pollutants that are considered in this air quality assessment include $O_3$, nitrogen dioxide ($NO_2$), carbon monoxide (CO), sulfur dioxide ($SO_2$), and particulate matter with an aerodynamic diameter less than or equal to 10 microns ($PM_{10}$) and particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$). Although there are no ambient

standards for volatile organic compounds (VOCs) or oxides of nitrogen (NOx), they are important as precursors to the formation of $O_3$.

The portion of the SDAB where the project site is located is designated by the EPA as an attainment area for the 1997 8-hour NAAQS for $O_3$ and as a marginal nonattainment area for the 2008 8-hour NAAQS for $O_3$.The SDAB is designated in attainment for all other criteria pollutants under the NAAQS with the exception of $PM_{10}$, which was determined to be unclassifiable (EPA 2014). The SDAB is currently designated nonattainment for $O_3$ and particulate matter, $PM_{10}$ and $PM_{2.5}$, under the CAAQS. It is designated attainment for the CAAQS for CO, $NO_2$, $SO_2$, lead, and sulfates (CARB 2014).

Table 2 summarizes the SDAB's federal and state attainment designations for each of the criteria pollutants.

**Table 2**
**SDAB Attainment Classification**

| Pollutant | Federal Designation[a] | State Designation[b] |
|---|---|---|
| $O_3$ (1 hour) | Attainment[1] | Nonattainment |
| $O_3$ (8 hour – 1997)<br>(8 hour – 2008) | Attainment (Maintenance)<br>Nonattainment (Marginal) | Nonattainment |
| CO | Unclassifiable/Attainment[2] | Attainment |
| $PM_{10}$ | Unclassifiable[3] | Nonattainment |
| $PM_{2.5}$ | Attainment | Nonattainment |
| $NO_2$ | Unclassifiable/Attainment | Attainment |
| $SO_2$ | Attainment | Attainment |
| Lead | Attainment | Attainment |
| Sulfates | (no federal standard) | Attainment |
| Hydrogen Sulfide | (no federal standard) | Unclassified |
| Visibility-Reducing Particles | (no federal standard) | Unclassified |

**Source:** [a]EPA 2014; [b]CARB 2014.

1 The federal 1-hour standard of 0.12 ppm was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.

2 The western and central portions of the SDAB are designated attainment, while the eastern portion is designated unclassifiable/attainment.

3 At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

***SDAPCD Thresholds.*** Construction and operation of the proposed project would result in emissions of criteria air pollutants for which CARB and the EPA have adopted ambient air quality standards (i.e., the NAAQS and CAAQS). Projects that emit these pollutants have the potential to cause or contribute to violations of these standards. The SDAPCD has adopted significance thresholds, which, if exceeded, would indicate the potential to contribute to violations of the NAAQS or CAAQS.

As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 requiring the preparation of Air Quality Impact Assessments (AQIA) for permitted stationary sources. The SDAPCD sets forth quantitative emission thresholds (presented in Table 3).

**Table 3**
**San Diego Air Pollution Control District Air Quality Significance Thresholds**

| **Construction Emissions** | | | |
|---|---|---|---|
| *Pollutant* | *Total Emissions (Pounds per Day)* | | |
| Respirable Particulate Matter ($PM_{10}$) | 100 | | |
| Fine Particulate Matter ($PM_{2.5}$) | 55 | | |
| Oxides of Nitrogen ($NO_x$) | 250 | | |
| Oxides of Sulfur ($SO_x$) | 250 | | |
| Carbon Monoxide (CO) | 550 | | |
| Volatile Organic Compounds (VOC) | 137* | | |
| **Operational Emissions** | | | |
| *Pollutant* | *Total Emissions* | | |
| | *Pounds per Hour* | *Pounds per Day* | *Tons per Year* |
| Respirable Particulate Matter ($PM_{10}$) | — | 100 | 15 |
| Fine Particulate Matter ($PM_{2.5}$) | — | 55 | 10 |
| Oxides of Nitrogen ($NO_x$) | 25 | 250 | 40 |
| Sulfur Oxides ($SO_x$) | 25 | 250 | 40 |
| Carbon Monoxide (CO) | 100 | 550 | 100 |
| Lead and Lead Compounds | — | 3.2 | 0.6 |
| Volatile Organic Compounds (VOC) | — | 137* | 13.7 |

**Source:** SDAPCD 1998
* VOC threshold based on the significance thresholds recommended by the Monterey Bay Unified Air Pollution Control District for the North Central Coast Air Basin, which has similar federal and state attainment status as the SDAB for $O_3$.

In the event that emissions exceed these thresholds, modeling would be required to demonstrate that the project's total air quality impacts result in ground-level concentrations that are below the CAAQS and NAAQS, including appropriate background levels. For nonattainment pollutants, if emissions exceed the thresholds shown in Table 3, the project could have the potential to result in a cumulatively considerable net increase in these pollutants.

***Construction Emissions.*** Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. Fugitive dust ($PM_{10}$ and $PM_{2.5}$) emissions would primarily result from

grading activities. $NO_x$ and CO emissions would primarily result from the use of construction equipment and motor vehicles.

Emissions resulting from the construction phase of the project were estimated using the California Emissions Estimator Model (CalEEMod), available online (www.caleemod.com). For the purposes of emissions modeling, it was assumed that construction of the proposed project would commence in October 2016. Construction would occur for approximately 11 months and would conclude in September 2017. Construction phasing and a description of the equipment to be used for each phase is described in Table 1. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction.

Demolition activities would involve the removal of existing curbs, asphalt pavement, and concrete pavement, and would result in the generation of approximately 525 tons of demolition waste that would be generated over a total 4-week period and result in approximately 52 haul trips. Soil cut and fill would be balanced on site; therefore, no additional truck trips would be required for soil hauling activities. A more detailed description of the construction schedule—including information regarding subphases and equipment used during each subphase—is included in Appendix A.

The proposed project is subject to SDAPCD Rule 55, Fugitive Dust Control. This rule requires that the project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit fugitive dust ($PM_{10}$ and $PM_{2.5}$) that may be generated during grading and construction activities (SDAPCD 2009b). To account for dust control measures in the calculations, it was assumed that the active sites would be watered at least two times daily, resulting in an approximately 55% reduction of particulate matter. The proposed project is also subject to SDAPCD Rule 67.0, Architectural Coatings. This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (SDAPCD 2001). VOC content restrictions, which include 150 grams per liter for exterior coatings, are reflected in the emissions estimates.

Table 4 shows the estimated maximum daily construction emissions associated with the construction phases of the proposed project. Complete details of the emissions calculations are provided in Appendix A of this document.

**Table 4**
**Estimated Maximum Daily Construction Emissions**
**(pounds/day)**

| | VOC | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| 2016 | 35.82 | 46.04 | 27.93 | 0.04 | 2.80 | 2.48 |
| 2017 | 2.25 | 19.36 | 14.35 | 0.02 | 1.44 | 1.19 |
| *Maximum Daily Emissions* | *35.82* | *46.04* | *27.91* | *0.04* | *2.80* | *2.48* |
| *Emission Threshold* | *137* | *250* | *550* | *250* | *100* | *55* |
| **Threshold Exceeded?** | **No** | **No** | **No** | **No** | **No** | **No** |

**Source:** CalEEMod Version 2013.2.2. See Appendix A for complete results.
VOC = volatile organic compound; $NO_x$ = oxides of nitrogen; CO carbon monoxide = ; SOx = oxides of sulfur; $PM_{10}$ = particulate matter with an aerodynamic diameter equal to or less than 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns

As shown in Table 4, daily construction emissions would not exceed the significance thresholds for VOC, $NO_x$, CO, $SO_x$, $PM_{10}$, or $PM_{2.5}$.

***Operational Emissions*.** Operation of the proposed project would be limited to occasional maintenance and repairs. Maintenance activities would involve occasional cleaning and repainting. The frequency of these trips would be at the discretion of the City of San Diego, and could occur multiple times a year. Repair of the proposed project would occur on an as-needed basis. Operational emissions of criteria pollutants would be associated with maintenance and repair vehicular trips and the operation of equipment used for restriping, cleaning and repair activities. Maintenance and repair activities are anticipated to involve less equipment and would be of a lesser intensity than the construction of the proposed project. Additionally, the proposed project would promote bicycling as an alternative mode of transportation and would reduce vehicle miles traveled, which would indirectly reduce vehicle emissions.

***Cumulative Emissions.*** In analyzing cumulative impacts from the proposed project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SDAB is designated as nonattainment for the CAAQS and NAAQS.

The SDAB has been designated as a federal nonattainment area for $O_3$ and a state nonattainment area for $O_3$, $PM_{10}$, and $PM_{2.5}$. $PM_{10}$ and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the SDAB. As discussed previously, the emissions of all criteria pollutants would be would not exceed the significance thresholds. Construction would be short term and temporary in nature. Once construction is completed, construction-related emissions would cease. The RAQS rely on SANDAG growth projections

based on population, vehicle trends, and land use plans developed by the cities and by the county as part of the development of their general plans. The proposed project does not include housing or commercial land uses that would directly induce population growth to the area. While the project would be considered the expansion of transportation infrastructure, it would not lead to indirect growth in the area. The expansion of bicycle infrastructure within a highly developed and urbanized area would not typically lead to indirect growth in such a way as a new road to an undeveloped location would. In addition, the proposed project would encourage the use of bicycles in the area as an alternative to vehicles. As a result, the proposed project would not result in a cumulatively considerable contribution to regional $O_3$ concentrations.

**Pollutant Concentrations**

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as TACs or hazardous air pollutants (HAPs). State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and is aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal HAPs, and is adopting appropriate control measures for sources of these TACs.

The greatest potential for TAC emissions during construction would be diesel particulate emissions from heavy equipment operations and heavy-duty trucks and the associated health impacts to sensitive receptors. The closest sensitive receptors are single-family and multifamily residences located adjacent to Robinson Avenue, which are located approximately 20 to 30 feet from the project site.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SDAPCD recommends an incremental cancer risk threshold of 10 in a million. "Incremental cancer risk" is the likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 70-year lifetime will contract cancer based on the use of standard risk-assessment methodology. The proposed project would not require the extensive use of heavy-duty construction equipment, which is subject to a CARB Airborne Toxics Control Measure for in-use diesel construction equipment to reduce diesel particulate emissions, and would not involve extensive use of diesel trucks, which are also subject to a CARB Airborne Toxics Control Measure. Total construction of the proposed project would last approximately 11 months, after which project-related TAC emissions would cease. Thus, the proposed project would not result in a long-term (i.e., 70-year) source of TAC emissions. No residual TAC emissions and corresponding cancer risk are anticipated after construction, nor are any long-term sources of TAC emissions anticipated during operation of the proposed project.

### Odor

Odors would be generated from vehicles and/or equipment exhaust emissions during construction of the proposed project. Odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and paint associated with roadway striping. Such odors are temporary and generally occur at magnitudes that would not affect substantial numbers of people.

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project involves the construction of a bikeway and would not result in the creation of a land use that is commonly associated with odors.

## GREENHOUSE GAS EMISSIONS

### Generation of Greenhouse Gases

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. However, neither the State of California nor the SDAPCD has adopted emission-based thresholds for GHG emissions under CEQA. The Office of Planning and Research (OPR) Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review* states, "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008). Furthermore, the advisory document indicates in the third bullet item on page 6 that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice."

***County of San Diego*.** The County's *Recommended Approach to Addressing Climate Change in CEQA Documents* was released on January 21, 2015 (County of San Diego 2015). This document provides guidance on the emissions level that would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions to 1990 levels by the year 2020.

As outlined in detail in the County's *Recommended Approach To Addressing Climate Change in CEQA Documents*, the County includes a 900 metric ton (MT) $CO_2E$ per year screening threshold to be used as a conservative criterion for determine if a project would require further analysis. This screening threshold is based on the threshold referenced in the California Air Pollution Control Offices Association (CAPCOA) published white paper for determining the need for additional analysis and mitigation for GHG-related impacts under CEQA. The document also provides screening criteria for a range of project types and sizes to identify smaller projects that would have less-than-cumulatively considerable impacts from GHG emissions, as shown in Table 5. If a proposed project is the same type and equal to, or smaller than the project size listed, it is presumed that the construction and operational GHG emissions for that project would not exceed 900 MT $CO_2E$ per year (County of San Diego 2015).

**Table 5**
**County of San Diego Project Sizes That Would Typically Require A Climate Change Analysis[1]**

| Project Type[2] | Project Size Equivalency |
|---|---|
| Single Family Residential | 50 units or more |
| Apartments/Condominium | 70 units or more |
| General Commercial Office Space | 35,000 square feet or more |
| Retail Space | 11,000 square feet or more |
| Supermarket/Grocery Space | 6,300 square feet or more |

**Source:** County of San Diego 2015.
**Notes:**
1 A determination on the need for a climate change analysis for project types not included in the table will be made on a case-by-case basis considering the 900 metric ton criterion.
2 A project with a combination of types may demonstrate compliance with the screening threshold through addition of the ratios of each contribution by the associated equivalency threshold.

Projects that exceed the 900 MT $CO_2E$ per year screening threshold would be required to demonstrate a 16% reduction in GHG emissions compared to unmitigated emissions in 2020 through the use of acceptable project design features and/or mitigation measures. Use of the 900 MT $CO_2E$ per year screening threshold and the 16% reduction significance threshold would apply to a project's construction emissions annualized over 20 years and added to the project's operational emissions.

***Construction Impacts.*** GHG emissions would be associated with the construction phase of the proposed project through use of construction equipment and vehicle trips. Emissions of $CO_2$ and other GHGs were estimated using CalEEMod. For the purposes of modeling, it was assumed that construction of the proposed project would commence in October 2016. Construction would occur for approximately 11 months and would conclude in September 2017. Construction phasing and a

description of the equipment to be used for each phase is described in Table 1. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction.

Demolition activities would involve the removal of existing curbs, asphalt pavement, and concrete pavement, and would result in the generation of approximately 525 tons of demolition waste that would be generated over a total 4-week period and result in approximately 52 haul trips. Soil cut and fill would be balanced on site; therefore, no additional truck trips would be required for soil hauling activities. A detailed depiction of the construction schedule—including information regarding subphases, demolition, and equipment used during each subphase—is included in Appendix A.

Table 6, Estimated Construction GHG Emissions, shows the estimated annual GHG construction emissions associated with the proposed project, as well as the annualized construction emissions over a 20-year "project life." GHG gas emissions, as presented in Table 6, are presented as metric tons of "$CO_2$ equivalent" ($CO_2E$).[1]

**Table 6**
**Estimated Construction GHG Emissions**

| Construction Year | GHG Emissions (metric tons CO2E/year) |
|---|---|
| 2016 | 83 |
| 2017 | 165 |
| **Total construction emissions** | **248** |
| **Annualized construction emissions** | **12** |

**Source:** CalEEMod Version 2013.2.2. See Appendix A for complete results.

***Operational Impacts.*** Operation of the proposed project would be limited to occasional maintenance and repairs. Maintenance activities would involve occasional cleaning and repainting. The frequency of these trips would be at the discretion of the City of San Diego, and could occur multiple times a year. Repair of the proposed project would occur on an as-needed basis. Operational emissions of GHGs would be associated with maintenance and repair vehicular trips and the operation of equipment used for restriping, cleaning and repair activities. Maintenance and repair activities are anticipated to involve less equipment and would be of a lesser intensity than the construction of the proposed project. Because maintenance and repair

[1] The $CO_2$ equivalent for a gas is derived by multiplying the mass of the gas by the associated global warming potential (GWP), such that $MTCO_2E$ = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for $CH_4$ is 21. This means that emissions of 1 metric ton of methane are equivalent to emissions of 21 metric tons of $CO_2$.

schedules are not available at this time, operational emissions cannot be quantified; however, it can be assumed that the operation of the proposed project would involve less equipment and vehicle trips when compared to project construction. Therefore, annual GHG emissions associated with maintenance and repair is assumed to be less than 248 MT $CO_2E$ per year.

In addition to occasional maintenance and repair trips, the proposed project would also require lighting that would be provided along the span of the proposed bikeway path and would consist of "shoebox" style lighting in order to minimize light trespass. Four proposed light fixtures would be comprised of LED luminaries. Assuming that the each light fixture would include a 2-array LED system (2 LED bulbs for one light fixture) operating at a total of 48 watts for 12 hours a day and 365 days a year, annual power usage is calculated as follows (U.S. Department of Energy 2008)):

> Annual Power (kilowatt hours per year) = Number of fixtures x Energy x Time x (1 kilowatt/1000 watts)
>
> Annual Power (kilowatt hours per year) = 4 fixtures x 48 watts x 12 hours/day x 365 days/year x (1 kilowatt/1000 watts) = 841 kilowatt hours per year

Using the carbon intensity for San Diego Gas and Electric (SDG&E), as provided in CalEEMod, annual GHG emissions from the LED lights can be calculated as follows:

> Annual GHG Emissions (MT $CO_2$ per year) = Annual Power Usage (kilowatt hours/year) x SDG&E Carbon Intensity (pound $CO_2E$/ megawatt hour) x (1 MT/2,205 pounds) x (1 megawatt/1 x $10^6$ watt) x (1,000 watt/ 1 kilowatt)
>
> Annual GHG Emissions (MT $CO_2$ per year) = 841 kilowatt hours per year x 720.49 (pound $CO_2E$/megawatt hour) x (1 MT/2,205 pounds) x (1 megawatt/1 x $10^6$ watt) x (1,000 watt/1 kilowatt) = 0.27 MT $CO_2$ per year

Because electricity generated by SDG&E would also emit nitrous oxide ($N_2O$) and methane ($CH_4$), the SDG&E carbon intensities of 0.00617 and 0.029 pounds per megawatt hour, respectively, were calculated as above. Therefore, the LED light fixtures would generate approximately 0.27 MT $CO_2$ per year, 2.4 x $10^{-6}$ MT $N_2O$ per year, and 1.1 x $10^{-5}$ MT $CH_4$ per year. Provided that the GWP for $N_2O$, $CH_4$, and $CO_2$ are 310, 21, and 1, respectively (IPCC 1996), the total MT $CO_2E$ per year was calculated as follows:

> Total MT $CO_2E$ per year = MT $N_2O$ per year x ($N_2O$ GWP) + MT $CH_4$ per year x ($CH_4$ GWP) + MT $CO_2$ per year x ($CO_2$ GWP)

Total MT $CO_2E$ per year = (2.4 x $10^{-6}$ MT $N_2O$ per year x 310) + (1.1 x $10^{-5}$ MT $CH_4$ per year x 21) + (0.27 MT $CO_2$ per year x 1) = 0.271 MT $CO_2E$ per year

The proposed bikeway path lighting would generate 0.271 MT $CO_2E$ per year.

Combining the proposed project's annualized construction emissions (8 MT $CO_2E$ per year), the maintenance and repair annual emissions (less than 248 MT $CO_2E$ per year), and the proposed bikeway path lighting emissions (0.271 MT $CO_2E$ per year), the proposed project would not exceed the County of San Diego's 900 MT $CO_2E$ per year screening threshold. Additionally, the proposed project would promote bicycling as an alternative mode of transportation and would reduce vehicle miles traveled, which would indirectly reduce GHG emissions.

**Relation to Greenhouse Gas Emissions Reduction Plans**

The Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the amendments to the CEQA Guidelines, the California Natural Resources Agency observed that "[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others. The proposed project will comply with all applicable regulations adopted in furtherance of the Scoping Plan to the extent required by law.

As discussed above, the project would not exceed the County of San Diego's 900 MT $CO_2E$ per year screening threshold. Therefore, the proposed project would not conflict with the County's *Recommended Approach to Addressing Climate Change in CEQA Documents*.

At the regional level, 2015 Regional Plan~~SANDAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)~~ has been adopted for the purpose of reducing GHG emissions attributable to passenger vehicles in the San Diego region. While the 2015 Regional Plan ~~RTP/SCS~~ does not regulate land use or supersede the exercise of land use authority by

SANDAG's member jurisdictions (i.e., the County of San Diego and cities therein), the 2015 Regional Plan ~~RTP/SCS~~ is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns, and the corresponding GHG emissions. Here, the 2015 Regional Plan ~~RTP/SCS~~ is not directly applicable to the proposed project because the underlying purpose of the 2015 Regional Plan ~~RTP/SCS~~ is to provide direction and guidance on future regional growth (i.e., the location of new residential and non-residential land uses) and transportation patterns throughout San Diego County as stipulated under SB 375. However, the proposed project does not include housing or commercial land uses that would directly induce population growth to the area. Rather, the proposed project involves the construction of a bikeway, which would encourage the use of bicycles as an alternative mode of transportation to vehicles, and would support the goals and policies of the 2015 Regional Plan~~RTP/SCS~~.

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# APPENDIX A

*CalEEMod Results*

# Robinson Avenue Bikeway Project Construction

**San Diego County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Asphalt Surfaces | 51.50 | 1000sqft | 1.18 | 51,500.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.6 | **Precipitation Freq (Days)** | 40 |
| **Climate Zone** | 13 | | | **Operational Year** | 2017 |
| **Utility Company** | San Diego Gas & Electric | | | | |
| **CO2 Intensity (lb/MWhr)** | 720.49 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

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

Project Characteristics -

Land Use - Includes roadway area along Robinson Ave from Crestwood Pace to Alabama Street (50 ft wide x 1030 feet long)

Construction Phase - modified

Off-road Equipment - modified

Off-road Equipment - Other Const Equip = Jackhammer, 15hp and 0.55LF per OFFROAD2007

Off-road Equipment - Other Construction Equipment = water trucks, 175hp and 0.55LF per OFFROAD2007

Off-road Equipment - modified

Off-road Equipment - modified

Demolition - Assuming: Density of asphalt = 150lbs/ft3, asphault/pavement reaches 1 foot deep, sq ft of area to be demolished = 7,000 square feet, then demo material = 525 tons

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Off-road Equipment - modified

Off-road Equipment - modified

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior | 25,750.00 | 5,150.00 |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior | 77,250.00 | 0.00 |
| tblArchitecturalCoating | EF_Nonresidential_Exterior | 250.00 | 150.00 |
| tblConstructionPhase | NumDays | 10.00 | 1.00 |
| tblConstructionPhase | NumDays | 200.00 | 88.00 |
| tblConstructionPhase | NumDays | 20.00 | 22.00 |
| tblConstructionPhase | NumDays | 4.00 | 22.00 |
| tblConstructionPhase | NumDays | 10.00 | 44.00 |
| tblConstructionPhase | NumDays | 2.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 3/1/2016 | 11/1/2016 |
| tblConstructionPhase | PhaseEndDate | 1/4/2016 | 1/29/2016 |
| tblConstructionPhase | PhaseStartDate | 1/30/2016 | 10/1/2016 |
| tblConstructionPhase | PhaseStartDate | 1/2/2016 | 1/29/2016 |
| tblGrading | AcresOfGrading | 8.25 | 0.10 |
| tblOffRoadEquipment | HorsePower | 171.00 | 15.00 |
| tblOffRoadEquipment | HorsePower | 171.00 | 175.00 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.55 |
| tblOffRoadEquipment | LoadFactor | 0.46 | 0.46 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.55 |
| tblOffRoadEquipment | LoadFactor | 0.46 | 0.46 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Sweepers/Scrubbers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Sweepers/Scrubbers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 4.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 3.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2017 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 0.1213 | 1.0461 | 0.6974 | 8.9000e-004 | 9.7800e-003 | 0.0605 | 0.0703 | 1.9500e-003 | 0.0560 | 0.0579 | 0.0000 | 82.9715 | 82.9715 | 0.0225 | 0.0000 | 83.4431 |
| 2017 | 0.1797 | 1.6499 | 1.2132 | 1.8500e-003 | 0.0150 | 0.1004 | 0.1154 | 4.0400e-003 | 0.0944 | 0.0984 | 0.0000 | 164.0188 | 164.0188 | 0.0354 | 0.0000 | 164.7619 |
| **Total** | **0.3010** | **2.6959** | **1.9105** | **2.7400e-003** | **0.0248** | **0.1609** | **0.1857** | **5.9900e-003** | **0.1504** | **0.1563** | **0.0000** | **246.9903** | **246.9903** | **0.0579** | **0.0000** | **248.2050** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2016 | 0.1213 | 1.0461 | 0.6974 | 8.9000e-004 | 6.6300e-003 | 0.0605 | 0.0672 | 1.4700e-003 | 0.0560 | 0.0575 | 0.0000 | 82.9714 | 82.9714 | 0.0225 | 0.0000 | 83.4430 |
| 2017 | 0.1797 | 1.6499 | 1.2132 | 1.8500e-003 | 0.0150 | 0.1004 | 0.1154 | 4.0400e-003 | 0.0944 | 0.0984 | 0.0000 | 164.0187 | 164.0187 | 0.0354 | 0.0000 | 164.7618 |
| **Total** | **0.3010** | **2.6959** | **1.9105** | **2.7400e-003** | **0.0217** | **0.1609** | **0.1825** | **5.5100e-003** | **0.1504** | **0.1559** | **0.0000** | **246.9900** | **246.9900** | **0.0579** | **0.0000** | **248.2047** |

| | 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 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **12.70** | **0.00** | **1.70** | **8.01** | **0.00** | **0.30** | **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 | Architectural Coating | Architectural Coating | 1/1/2016 | 1/1/2016 | 5 | 1 | |
| 2 | Site Preparation | Site Preparation | 1/29/2016 | 1/29/2016 | 5 | 1 | |
| 3 | Demolition | Demolition | 10/1/2016 | 11/1/2016 | 5 | 22 | |
| 4 | Grading | Grading | 11/2/2016 | 12/1/2016 | 5 | 22 | |
| 5 | Trenching/Utilities | Trenching | 12/2/2016 | 3/3/2017 | 5 | 66 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | Bikeway Bridge Construction | Building Construction | 3/4/2017 | 7/5/2017 | 5 | 88 | |
| 7 | Paving/Striping | Paving | 7/6/2017 | 9/5/2017 | 5 | 44 | |

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

**Acres of Grading (Grading Phase): 0.1**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 5,150 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 0 | 8.00 | 174 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 0 | 6.00 | 78 | 0.48 |
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Bikeway Bridge Construction | Generator Sets | 0 | 8.00 | 84 | 0.74 |
| Demolition | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Paving/Striping | Paving Equipment | 0 | 8.00 | 130 | 0.36 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 0 | 7.00 | 255 | 0.40 |
| Grading | Graders | 1 | 6.00 | 174 | 0.41 |
| Bikeway Bridge Construction | Welders | 0 | 8.00 | 46 | 0.45 |
| Grading | Rubber Tired Dozers | 0 | 6.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Demolition | Other Construction Equipment | 1 | 8.00 | 15 | 0.55 |
| Demolition | Sweepers/Scrubbers | 1 | 8.00 | 64 | 0.46 |
| Grading | Other Construction Equipment | 3 | 8.00 | 175 | 0.55 |
| Trenching/Utilities | Cranes | 1 | 6.00 | 226 | 0.29 |
| Bikeway Bridge Construction | Cranes | 1 | 6.00 | 226 | 0.29 |
| Bikeway Bridge Construction | Forklifts | 0 | 6.00 | 89 | 0.20 |
| Trenching/Utilities | Rubber Tired Dozers | 1 | 6.00 | 255 | 0.40 |

| | | | | | |
|---|---|---|---|---|---|
| Bikeway Bridge Construction | Tractors/Loaders/Backhoes | 4 | 6.00 | 97 | 0.37 |
| Trenching/Utilities | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Paving/Striping | Cement and Mortar Mixers | 2 | 6.00 | 9 | 0.56 |
| Bikeway Bridge Construction | Cement and Mortar Mixers | 1 | 6.00 | 9 | 0.56 |
| Paving/Striping | Pavers | 1 | 6.00 | 125 | 0.42 |
| Paving/Striping | Rollers | 1 | 7.00 | 80 | 0.38 |
| Paving/Striping | Rollers | 0 | 7.00 | 80 | 0.38 |
| Bikeway Bridge Construction | Pumps | 1 | 6.00 | 84 | 0.74 |
| Paving/Striping | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Paving/Striping | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving/Striping | Concrete/Industrial Saws | 2 | 6.00 | 81 | 0.73 |
| Paving/Striping | Sweepers/Scrubbers | 1 | 6.00 | 64 | 0.46 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 0 | 4.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 6 | 15.00 | 0.00 | 52.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 7 | 18.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Trenching/Utilities | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Bikeway Bridge Construction | 7 | 22.00 | 8.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving/Striping | 8 | 20.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Architectural Coating - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0179 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0179** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0150 | 0.0150 | 0.0000 | 0.0000 | 0.0150 |
| **Total** | **1.0000e-005** | **1.0000e-005** | **9.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0150** | **0.0150** | **0.0000** | **0.0000** | **0.0150** |

## Mitigated Construction On-Site

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 0.0179 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0179** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0150 | 0.0150 | 0.0000 | 0.0000 | 0.0150 |
| **Total** | **1.0000e-005** | **1.0000e-005** | **9.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0150** | **0.0150** | **0.0000** | **0.0000** | **0.0150** |

## 3.3 Site Preparation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## Mitigated Construction Off-Site

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

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 3.4 Demolition - 2016

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 5.6900e-003 | 0.0000 | 5.6900e-003 | 8.6000e-004 | 0.0000 | 8.6000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0347 | 0.3203 | 0.2420 | 2.7000e-004 | | 0.0205 | 0.0205 | | 0.0191 | 0.0191 | 0.0000 | 25.0212 | 25.0212 | 6.3400e-003 | 0.0000 | 25.1543 |
| **Total** | **0.0347** | **0.3203** | **0.2420** | **2.7000e-004** | **5.6900e-003** | **0.0205** | **0.0261** | **8.6000e-004** | **0.0191** | **0.0200** | **0.0000** | **25.0212** | **25.0212** | **6.3400e-003** | **0.0000** | **25.1543** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 5.4000e-004 | 7.5500e-003 | 6.2200e-003 | 2.0000e-005 | 4.4000e-004 | 1.0000e-004 | 5.4000e-004 | 1.2000e-004 | 9.0000e-005 | 2.1000e-004 | 0.0000 | 1.7759 | 1.7759 | 1.0000e-005 | 0.0000 | 1.7762 |
| 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 | 5.7000e-004 | 7.5000e-004 | 7.1300e-003 | 2.0000e-005 | 1.3200e-003 | 1.0000e-005 | 1.3300e-003 | 3.5000e-004 | 1.0000e-005 | 3.6000e-004 | 0.0000 | 1.2331 | 1.2331 | 7.0000e-005 | 0.0000 | 1.2344 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **1.1100e-003** | **8.3000e-003** | **0.0134** | **4.0000e-005** | **1.7600e-003** | **1.1000e-004** | **1.8700e-003** | **4.7000e-004** | **1.0000e-004** | **5.7000e-004** | **0.0000** | **3.0090** | **3.0090** | **8.0000e-005** | **0.0000** | **3.0106** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 2.5600e-003 | 0.0000 | 2.5600e-003 | 3.9000e-004 | 0.0000 | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0347 | 0.3203 | 0.2420 | 2.7000e-004 | | 0.0205 | 0.0205 | | 0.0191 | 0.0191 | 0.0000 | 25.0212 | 25.0212 | 6.3400e-003 | 0.0000 | 25.1543 |
| **Total** | **0.0347** | **0.3203** | **0.2420** | **2.7000e-004** | **2.5600e-003** | **0.0205** | **0.0230** | **3.9000e-004** | **0.0191** | **0.0195** | **0.0000** | **25.0212** | **25.0212** | **6.3400e-003** | **0.0000** | **25.1543** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 5.4000e-004 | 7.5500e-003 | 6.2200e-003 | 2.0000e-005 | 4.4000e-004 | 1.0000e-004 | 5.4000e-004 | 1.2000e-004 | 9.0000e-005 | 2.1000e-004 | 0.0000 | 1.7759 | 1.7759 | 1.0000e-005 | 0.0000 | 1.7762 |
| 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 | 5.7000e-004 | 7.5000e-004 | 7.1300e-003 | 2.0000e-005 | 1.3200e-003 | 1.0000e-005 | 1.3300e-003 | 3.5000e-004 | 1.0000e-005 | 3.6000e-004 | 0.0000 | 1.2331 | 1.2331 | 7.0000e-005 | 0.0000 | 1.2344 |
| **Total** | **1.1100e-003** | **8.3000e-003** | **0.0134** | **4.0000e-005** | **1.7600e-003** | **1.1000e-004** | **1.8700e-003** | **4.7000e-004** | **1.0000e-004** | **5.7000e-004** | **0.0000** | **3.0090** | **3.0090** | **8.0000e-005** | **0.0000** | **3.0106** |

## 3.5 Grading - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0476 | 0.5055 | 0.2984 | 4.1000e-004 | | 0.0292 | 0.0292 | | 0.0269 | 0.0269 | 0.0000 | 38.9505 | 38.9505 | 0.0118 | 0.0000 | 39.1972 |
| **Total** | **0.0476** | **0.5055** | **0.2984** | **4.1000e-004** | **5.0000e-005** | **0.0292** | **0.0292** | **1.0000e-005** | **0.0269** | **0.0269** | **0.0000** | **38.9505** | **38.9505** | **0.0118** | **0.0000** | **39.1972** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.8000e-004 | 9.0000e-004 | 8.5500e-003 | 2.0000e-005 | 1.5900e-003 | 1.0000e-005 | 1.6000e-003 | 4.2000e-004 | 1.0000e-005 | 4.3000e-004 | 0.0000 | 1.4797 | 1.4797 | 8.0000e-005 | 0.0000 | 1.4813 |
| **Total** | **6.8000e-004** | **9.0000e-004** | **8.5500e-003** | **2.0000e-005** | **1.5900e-003** | **1.0000e-005** | **1.6000e-003** | **4.2000e-004** | **1.0000e-005** | **4.3000e-004** | **0.0000** | **1.4797** | **1.4797** | **8.0000e-005** | **0.0000** | **1.4813** |

## Mitigated Construction On-Site

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0476 | 0.5055 | 0.2984 | 4.1000e-004 | | 0.0292 | 0.0292 | | 0.0269 | 0.0269 | 0.0000 | 38.9505 | 38.9505 | 0.0118 | 0.0000 | 39.1972 |
| **Total** | **0.0476** | **0.5055** | **0.2984** | **4.1000e-004** | **2.0000e-005** | **0.0292** | **0.0292** | **0.0000** | **0.0269** | **0.0269** | **0.0000** | **38.9505** | **38.9505** | **0.0118** | **0.0000** | **39.1972** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.8000e-004 | 9.0000e-004 | 8.5500e-003 | 2.0000e-005 | 1.5900e-003 | 1.0000e-005 | 1.6000e-003 | 4.2000e-004 | 1.0000e-005 | 4.3000e-004 | 0.0000 | 1.4797 | 1.4797 | 8.0000e-005 | 0.0000 | 1.4813 |
| **Total** | **6.8000e-004** | **9.0000e-004** | **8.5500e-003** | **2.0000e-005** | **1.5900e-003** | **1.0000e-005** | **1.6000e-003** | **4.2000e-004** | **1.0000e-005** | **4.3000e-004** | **0.0000** | **1.4797** | **1.4797** | **8.0000e-005** | **0.0000** | **1.4813** |

## 3.6 Trenching/Utilities - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0190 | 0.2106 | 0.1314 | 1.5000e-004 | | 0.0108 | 0.0108 | | 9.9000e-003 | 9.9000e-003 | 0.0000 | 13.8684 | 13.8684 | 4.1800e-003 | 0.0000 | 13.9562 |
| **Total** | **0.0190** | **0.2106** | **0.1314** | **1.5000e-004** | | **0.0108** | **0.0108** | | **9.9000e-003** | **9.9000e-003** | **0.0000** | **13.8684** | **13.8684** | **4.1800e-003** | **0.0000** | **13.9562** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.9000e-004 | 3.8000e-004 | 3.6300e-003 | 1.0000e-005 | 6.7000e-004 | 1.0000e-005 | 6.8000e-004 | 1.8000e-004 | 0.0000 | 1.8000e-004 | 0.0000 | 0.6277 | 0.6277 | 3.0000e-005 | 0.0000 | 0.6284 |
| **Total** | **2.9000e-004** | **3.8000e-004** | **3.6300e-003** | **1.0000e-005** | **6.7000e-004** | **1.0000e-005** | **6.8000e-004** | **1.8000e-004** | **0.0000** | **1.8000e-004** | **0.0000** | **0.6277** | **0.6277** | **3.0000e-005** | **0.0000** | **0.6284** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0190 | 0.2106 | 0.1314 | 1.5000e-004 | | 0.0108 | 0.0108 | | 9.9000e-003 | 9.9000e-003 | 0.0000 | 13.8683 | 13.8683 | 4.1800e-003 | 0.0000 | 13.9562 |
| **Total** | **0.0190** | **0.2106** | **0.1314** | **1.5000e-004** | | **0.0108** | **0.0108** | | **9.9000e-003** | **9.9000e-003** | **0.0000** | **13.8683** | **13.8683** | **4.1800e-003** | **0.0000** | **13.9562** |

## Mitigated Construction Off-Site

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

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.9000e-004 | 3.8000e-004 | 3.6300e-003 | 1.0000e-005 | 6.7000e-004 | 1.0000e-005 | 6.8000e-004 | 1.8000e-004 | 0.0000 | 1.8000e-004 | 0.0000 | 0.6277 | 0.6277 | 3.0000e-005 | 0.0000 | 0.6284 |
| **Total** | **2.9000e-004** | **3.8000e-004** | **3.6300e-003** | **1.0000e-005** | **6.7000e-004** | **1.0000e-005** | **6.8000e-004** | **1.8000e-004** | **0.0000** | **1.8000e-004** | **0.0000** | **0.6277** | **0.6277** | **3.0000e-005** | **0.0000** | **0.6284** |

## 3.6 Trenching/Utilities - 2017

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0382 | 0.4209 | 0.2681 | 3.2000e-004 | | 0.0213 | 0.0213 | | 0.0196 | 0.0196 | 0.0000 | 29.2642 | 29.2642 | 8.9700e-003 | 0.0000 | 29.4525 |
| **Total** | **0.0382** | **0.4209** | **0.2681** | **3.2000e-004** | | **0.0213** | **0.0213** | | **0.0196** | **0.0196** | **0.0000** | **29.2642** | **29.2642** | **8.9700e-003** | **0.0000** | **29.4525** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.6000e-004 | 7.4000e-004 | 7.0100e-003 | 2.0000e-005 | 1.4400e-003 | 1.0000e-005 | 1.4500e-003 | 3.8000e-004 | 1.0000e-005 | 3.9000e-004 | 0.0000 | 1.2932 | 1.2932 | 7.0000e-005 | 0.0000 | 1.2946 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **5.6000e-004** | **7.4000e-004** | **7.0100e-003** | **2.0000e-005** | **1.4400e-003** | **1.0000e-005** | **1.4500e-003** | **3.8000e-004** | **1.0000e-005** | **3.9000e-004** | **0.0000** | **1.2932** | **1.2932** | **7.0000e-005** | **0.0000** | **1.2946** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0382 | 0.4209 | 0.2681 | 3.2000e-004 | | 0.0213 | 0.0213 | | 0.0196 | 0.0196 | 0.0000 | 29.2642 | 29.2642 | 8.9700e-003 | 0.0000 | 29.4525 |
| **Total** | **0.0382** | **0.4209** | **0.2681** | **3.2000e-004** | | **0.0213** | **0.0213** | | **0.0196** | **0.0196** | **0.0000** | **29.2642** | **29.2642** | **8.9700e-003** | **0.0000** | **29.4525** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.6000e-004 | 7.4000e-004 | 7.0100e-003 | 2.0000e-005 | 1.4400e-003 | 1.0000e-005 | 1.4500e-003 | 3.8000e-004 | 1.0000e-005 | 3.9000e-004 | 0.0000 | 1.2932 | 1.2932 | 7.0000e-005 | 0.0000 | 1.2946 |
| **Total** | **5.6000e-004** | **7.4000e-004** | **7.0100e-003** | **2.0000e-005** | **1.4400e-003** | **1.0000e-005** | **1.4500e-003** | **3.8000e-004** | **1.0000e-005** | **3.9000e-004** | **0.0000** | **1.2932** | **1.2932** | **7.0000e-005** | **0.0000** | **1.2946** |

## 3.7 Bikeway Bridge Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0849 | 0.8174 | 0.5436 | 8.4000e-004 | | 0.0524 | 0.0524 | | 0.0491 | 0.0491 | 0.0000 | 75.5567 | 75.5567 | 0.0187 | 0.0000 | 75.9502 |
| **Total** | **0.0849** | **0.8174** | **0.5436** | **8.4000e-004** | | **0.0524** | **0.0524** | | **0.0491** | **0.0491** | **0.0000** | **75.5567** | **75.5567** | **0.0187** | **0.0000** | **75.9502** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.6700e-003 | 0.0307 | 0.0455 | 8.0000e-005 | 2.2900e-003 | 4.4000e-004 | 2.7300e-003 | 6.6000e-004 | 4.0000e-004 | 1.0600e-003 | 0.0000 | 7.4659 | 7.4659 | 6.0000e-005 | 0.0000 | 7.4671 |
| Worker | 3.0100e-003 | 3.9900e-003 | 0.0377 | 1.0000e-004 | 7.7600e-003 | 6.0000e-005 | 7.8200e-003 | 2.0600e-003 | 5.0000e-005 | 2.1200e-003 | 0.0000 | 6.9545 | 6.9545 | 3.5000e-004 | 0.0000 | 6.9619 |
| **Total** | **6.6800e-003** | **0.0347** | **0.0832** | **1.8000e-004** | **0.0101** | **5.0000e-004** | **0.0106** | **2.7200e-003** | **4.5000e-004** | **3.1800e-003** | **0.0000** | **14.4204** | **14.4204** | **4.1000e-004** | **0.0000** | **14.4290** |

## Mitigated Construction On-Site

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.0849 | 0.8174 | 0.5436 | 8.4000e-004 | | 0.0524 | 0.0524 | | 0.0491 | 0.0491 | 0.0000 | 75.5566 | 75.5566 | 0.0187 | 0.0000 | 75.9501 |
| **Total** | **0.0849** | **0.8174** | **0.5436** | **8.4000e-004** | | **0.0524** | **0.0524** | | **0.0491** | **0.0491** | **0.0000** | **75.5566** | **75.5566** | **0.0187** | **0.0000** | **75.9501** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.6700e-003 | 0.0307 | 0.0455 | 8.0000e-005 | 2.2900e-003 | 4.4000e-004 | 2.7300e-003 | 6.6000e-004 | 4.0000e-004 | 1.0600e-003 | 0.0000 | 7.4659 | 7.4659 | 6.0000e-005 | 0.0000 | 7.4671 |
| Worker | 3.0100e-003 | 3.9900e-003 | 0.0377 | 1.0000e-004 | 7.7600e-003 | 6.0000e-005 | 7.8200e-003 | 2.0600e-003 | 5.0000e-005 | 2.1200e-003 | 0.0000 | 6.9545 | 6.9545 | 3.5000e-004 | 0.0000 | 6.9619 |
| **Total** | **6.6800e-003** | **0.0347** | **0.0832** | **1.8000e-004** | **0.0101** | **5.0000e-004** | **0.0106** | **2.7200e-003** | **4.5000e-004** | **3.1800e-003** | **0.0000** | **14.4204** | **14.4204** | **4.1000e-004** | **0.0000** | **14.4290** |

## 3.8 Paving/Striping - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0465 | 0.3743 | 0.2941 | 4.6000e-004 | | 0.0262 | 0.0262 | | 0.0252 | 0.0252 | 0.0000 | 40.3233 | 40.3233 | 7.0500e-003 | 0.0000 | 40.4712 |
| Paving | 1.5500e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0480** | **0.3743** | **0.2941** | **4.6000e-004** | | **0.0262** | **0.0262** | | **0.0252** | **0.0252** | **0.0000** | **40.3233** | **40.3233** | **7.0500e-003** | **0.0000** | **40.4712** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.3700e-003 | 1.8100e-003 | 0.0171 | 4.0000e-005 | 3.5300e-003 | 3.0000e-005 | 3.5500e-003 | 9.4000e-004 | 2.0000e-005 | 9.6000e-004 | 0.0000 | 3.1611 | 3.1611 | 1.6000e-004 | 0.0000 | 3.1645 |
| **Total** | **1.3700e-003** | **1.8100e-003** | **0.0171** | **4.0000e-005** | **3.5300e-003** | **3.0000e-005** | **3.5500e-003** | **9.4000e-004** | **2.0000e-005** | **9.6000e-004** | **0.0000** | **3.1611** | **3.1611** | **1.6000e-004** | **0.0000** | **3.1645** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0465 | 0.3743 | 0.2941 | 4.6000e-004 | | 0.0262 | 0.0262 | | 0.0252 | 0.0252 | 0.0000 | 40.3232 | 40.3232 | 7.0500e-003 | 0.0000 | 40.4712 |
| Paving | 1.5500e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0480** | **0.3743** | **0.2941** | **4.6000e-004** | | **0.0262** | **0.0262** | | **0.0252** | **0.0252** | **0.0000** | **40.3232** | **40.3232** | **7.0500e-003** | **0.0000** | **40.4712** |

## Mitigated Construction Off-Site

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

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.3700e-003 | 1.8100e-003 | 0.0171 | 4.0000e-005 | 3.5300e-003 | 3.0000e-005 | 3.5500e-003 | 9.4000e-004 | 2.0000e-005 | 9.6000e-004 | 0.0000 | 3.1611 | 3.1611 | 1.6000e-004 | 0.0000 | 3.1645 |
| **Total** | **1.3700e-003** | **1.8100e-003** | **0.0171** | **4.0000e-005** | **3.5300e-003** | **3.0000e-005** | **3.5500e-003** | **9.4000e-004** | **2.0000e-005** | **9.6000e-004** | **0.0000** | **3.1611** | **3.1611** | **1.6000e-004** | **0.0000** | **3.1645** |

# Robinson Avenue Bikeway Project Construction

**San Diego County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Asphalt Surfaces | 51.50 | 1000sqft | 1.18 | 51,500.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.6 | **Precipitation Freq (Days)** | 40 |
| **Climate Zone** | 13 | | | **Operational Year** | 2017 |
| **Utility Company** | San Diego Gas & Electric | | | | |
| **CO2 Intensity (lb/MWhr)** | 720.49 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

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

Project Characteristics -

Land Use - Includes roadway area along Robinson Ave from Crestwood Pace to Alabama Street (50 ft wide x 1030 feet long)

Construction Phase - modified

Off-road Equipment - modified

Off-road Equipment - Other Const Equip = Jackhammer, 15hp and 0.55LF per OFFROAD2007

Off-road Equipment - Other Construction Equipment = water trucks, 175hp and 0.55LF per OFFROAD2007

Off-road Equipment - modified

Off-road Equipment - modified

Demolition - Assuming: Density of asphalt = 150lbs/ft3, asphault/pavement reaches 1 foot deep, sq ft of area to be demolished = 7,000 square feet, then demo material = 525 tons

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Off-road Equipment - modified

Off-road Equipment - modified

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior | 25,750.00 | 5,150.00 |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior | 77,250.00 | 0.00 |
| tblArchitecturalCoating | EF_Nonresidential_Exterior | 250.00 | 150.00 |
| tblConstructionPhase | NumDays | 10.00 | 1.00 |
| tblConstructionPhase | NumDays | 200.00 | 88.00 |
| tblConstructionPhase | NumDays | 20.00 | 22.00 |
| tblConstructionPhase | NumDays | 4.00 | 22.00 |
| tblConstructionPhase | NumDays | 10.00 | 44.00 |
| tblConstructionPhase | NumDays | 2.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 3/1/2016 | 11/1/2016 |
| tblConstructionPhase | PhaseEndDate | 1/4/2016 | 1/29/2016 |
| tblConstructionPhase | PhaseStartDate | 1/30/2016 | 10/1/2016 |
| tblConstructionPhase | PhaseStartDate | 1/2/2016 | 1/29/2016 |
| tblGrading | AcresOfGrading | 8.25 | 0.10 |
| tblOffRoadEquipment | HorsePower | 171.00 | 15.00 |
| tblOffRoadEquipment | HorsePower | 171.00 | 175.00 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.55 |
| tblOffRoadEquipment | LoadFactor | 0.46 | 0.46 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.55 |
| tblOffRoadEquipment | LoadFactor | 0.46 | 0.46 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Sweepers/Scrubbers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Sweepers/Scrubbers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 4.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 3.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2017 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 35.8202 | 46.0396 | 27.9058 | 0.0393 | 0.6814 | 2.6544 | 2.8071 | 0.1223 | 2.4420 | 2.4818 | 0.0000 | 4,050.0558 | 4,050.0558 | 1.1852 | 0.0000 | 4,074.9447 |
| 2017 | 2.2492 | 19.3629 | 14.3488 | 0.0231 | 0.2338 | 1.2023 | 1.4362 | 0.0631 | 1.1470 | 1.1906 | 0.0000 | 2,251.6022 | 2,251.6022 | 0.4797 | 0.0000 | 2,261.6761 |
| **Total** | **38.0694** | **65.4025** | **42.2545** | **0.0624** | **0.9153** | **3.8567** | **4.2432** | **0.1854** | **3.5891** | **3.6724** | **0.0000** | **6,301.6580** | **6,301.6580** | **1.6649** | **0.0000** | **6,336.6208** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 35.8202 | 46.0396 | 27.9058 | 0.0393 | 0.3971 | 2.6544 | 2.8044 | 0.0792 | 2.4420 | 2.4815 | 0.0000 | 4,050.0558 | 4,050.0558 | 1.1852 | 0.0000 | 4,074.9447 |
| 2017 | 2.2492 | 19.3629 | 14.3488 | 0.0231 | 0.2338 | 1.2023 | 1.4362 | 0.0631 | 1.1470 | 1.1906 | 0.0000 | 2,251.6022 | 2,251.6022 | 0.4797 | 0.0000 | 2,261.6761 |
| **Total** | **38.0694** | **65.4025** | **42.2545** | **0.0624** | **0.6309** | **3.8567** | **4.2406** | **0.1423** | **3.5891** | **3.6721** | **0.0000** | **6,301.6580** | **6,301.6580** | **1.6649** | **0.0000** | **6,336.6208** |

| | 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 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **31.07** | **0.00** | **0.06** | **23.24** | **0.00** | **0.01** | **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 | Architectural Coating | Architectural Coating | 1/1/2016 | 1/1/2016 | 5 | 1 | |
| 2 | Site Preparation | Site Preparation | 1/29/2016 | 1/29/2016 | 5 | 1 | |
| 3 | Demolition | Demolition | 10/1/2016 | 11/1/2016 | 5 | 22 | |
| 4 | Grading | Grading | 11/2/2016 | 12/1/2016 | 5 | 22 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | Trenching/Utilities | Trenching | 12/2/2016 | 3/3/2017 | 5 | 66 | |
| 6 | Bikeway Bridge Construction | Building Construction | 3/4/2017 | 7/5/2017 | 5 | 88 | |
| 7 | Paving/Striping | Paving | 7/6/2017 | 9/5/2017 | 5 | 44 | |

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

**Acres of Grading (Grading Phase): 0.1**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 5,150 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 0 | 8.00 | 174 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 0 | 6.00 | 78 | 0.48 |
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Bikeway Bridge Construction | Generator Sets | 0 | 8.00 | 84 | 0.74 |
| Demolition | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Paving/Striping | Paving Equipment | 0 | 8.00 | 130 | 0.36 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 0 | 7.00 | 255 | 0.40 |
| Grading | Graders | 1 | 6.00 | 174 | 0.41 |
| Bikeway Bridge Construction | Welders | 0 | 8.00 | 46 | 0.45 |
| Grading | Rubber Tired Dozers | 0 | 6.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Demolition | Other Construction Equipment | 1 | 8.00 | 15 | 0.55 |
| Demolition | Sweepers/Scrubbers | 1 | 8.00 | 64 | 0.46 |
| Grading | Other Construction Equipment | 3 | 8.00 | 175 | 0.55 |
| Trenching/Utilities | Cranes | 1 | 6.00 | 226 | 0.29 |
| Bikeway Bridge Construction | Cranes | 1 | 6.00 | 226 | 0.29 |
| Bikeway Bridge Construction | Forklifts | 0 | 6.00 | 89 | 0.20 |

| | | | | | |
|---|---|---|---|---|---|
| Trenching/Utilities | Rubber Tired Dozers | 1 | 6.00 | 255 | 0.40 |
| Bikeway Bridge Construction | Tractors/Loaders/Backhoes | 4 | 6.00 | 97 | 0.37 |
| Trenching/Utilities | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Paving/Striping | Cement and Mortar Mixers | 2 | 6.00 | 9 | 0.56 |
| Bikeway Bridge Construction | Cement and Mortar Mixers | 1 | 6.00 | 9 | 0.56 |
| Paving/Striping | Pavers | 1 | 6.00 | 125 | 0.42 |
| Paving/Striping | Rollers | 1 | 7.00 | 80 | 0.38 |
| Paving/Striping | Rollers | 0 | 7.00 | 80 | 0.38 |
| Bikeway Bridge Construction | Pumps | 1 | 6.00 | 84 | 0.74 |
| Paving/Striping | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Paving/Striping | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving/Striping | Concrete/Industrial Saws | 2 | 6.00 | 81 | 0.73 |
| Paving/Striping | Sweepers/Scrubbers | 1 | 6.00 | 64 | 0.46 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 0 | 4.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 6 | 15.00 | 0.00 | 52.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 7 | 18.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Trenching/Utilities | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Bikeway Bridge Construction | 7 | 22.00 | 8.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving/Striping | 8 | 20.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Architectural Coating - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 35.8054 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **35.8054** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 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 | | | | | | | | | | 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 | 0.0148 | 0.0184 | 0.1739 | 3.9000e-004 | 0.0329 | 2.5000e-004 | 0.0331 | 8.7200e-003 | 2.3000e-004 | 8.9400e-003 | | 32.6269 | 32.6269 | 1.7400e-003 | | 32.6634 |
| **Total** | **0.0148** | **0.0184** | **0.1739** | **3.9000e-004** | **0.0329** | **2.5000e-004** | **0.0331** | **8.7200e-003** | **2.3000e-004** | **8.9400e-003** | | **32.6269** | **32.6269** | **1.7400e-003** | | **32.6634** |

## 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 | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 35.8054 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **35.8054** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0148 | 0.0184 | 0.1739 | 3.9000e-004 | 0.0329 | 2.5000e-004 | 0.0331 | 8.7200e-003 | 2.3000e-004 | 8.9400e-003 | | 32.6269 | 32.6269 | 1.7400e-003 | | 32.6634 |
| **Total** | **0.0148** | **0.0184** | **0.1739** | **3.9000e-004** | **0.0329** | **2.5000e-004** | **0.0331** | **8.7200e-003** | **2.3000e-004** | **8.9400e-003** | | **32.6269** | **32.6269** | **1.7400e-003** | | **32.6634** |

## 3.3 Site Preparation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 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 | | | | | | | | | | 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 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 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 | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## Mitigated Construction Off-Site

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

| Category | lb/day | | | | | | | | | | | 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 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 3.4 Demolition - 2016

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.5170 | 0.0000 | 0.5170 | 0.0783 | 0.0000 | 0.0783 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1548 | 29.1221 | 21.9989 | 0.0247 | | 1.8590 | 1.8590 | | 1.7381 | 1.7381 | | 2,507.3815 | 2,507.3815 | 0.6349 | | 2,520.7145 |
| **Total** | **3.1548** | **29.1221** | **21.9989** | **0.0247** | **0.5170** | **1.8590** | **2.3760** | **0.0783** | **1.7381** | **1.8164** | | **2,507.3815** | **2,507.3815** | **0.6349** | | **2,520.7145** |

### 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 | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0516 | 0.6837 | 0.6108 | 1.7700e-003 | 0.0412 | 9.0800e-003 | 0.0503 | 0.0113 | 8.3500e-003 | 0.0196 | | 177.7241 | 177.7241 | 1.2800e-003 | | 177.7511 |
| 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 | 0.0556 | 0.0690 | 0.6519 | 1.4700e-003 | 0.1232 | 9.2000e-004 | 0.1242 | 0.0327 | 8.5000e-004 | 0.0335 | | 122.3507 | 122.3507 | 6.5300e-003 | | 122.4878 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.1071** | **0.7528** | **1.2628** | **3.2400e-003** | **0.1644** | **0.0100** | **0.1744** | **0.0440** | **9.2000e-003** | **0.0532** | | **300.0748** | **300.0748** | **7.8100e-003** | | **300.2389** |

**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 | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.2327 | 0.0000 | 0.2327 | 0.0352 | 0.0000 | 0.0352 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1548 | 29.1221 | 21.9989 | 0.0247 | | 1.8590 | 1.8590 | | 1.7381 | 1.7381 | 0.0000 | 2,507.3815 | 2,507.3815 | 0.6349 | | 2,520.7145 |
| **Total** | **3.1548** | **29.1221** | **21.9989** | **0.0247** | **0.2327** | **1.8590** | **2.0917** | **0.0352** | **1.7381** | **1.7733** | **0.0000** | **2,507.3815** | **2,507.3815** | **0.6349** | | **2,520.7145** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0516 | 0.6837 | 0.6108 | 1.7700e-003 | 0.0412 | 9.0800e-003 | 0.0503 | 0.0113 | 8.3500e-003 | 0.0196 | | 177.7241 | 177.7241 | 1.2800e-003 | | 177.7511 |
| 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 | 0.0556 | 0.0690 | 0.6519 | 1.4700e-003 | 0.1232 | 9.2000e-004 | 0.1242 | 0.0327 | 8.5000e-004 | 0.0335 | | 122.3507 | 122.3507 | 6.5300e-003 | | 122.4878 |
| **Total** | **0.1071** | **0.7528** | **1.2628** | **3.2400e-003** | **0.1644** | **0.0100** | **0.1744** | **0.0440** | **9.2000e-003** | **0.0532** | | **300.0748** | **300.0748** | **7.8100e-003** | | **300.2389** |

## 3.5 Grading - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.8200e-003 | 0.0000 | 4.8200e-003 | 5.2000e-004 | 0.0000 | 5.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3289 | 45.9568 | 27.1235 | 0.0375 | | 2.6533 | 2.6533 | | 2.4410 | 2.4410 | | 3,903.2349 | 3,903.2349 | 1.1774 | | 3,927.9594 |
| **Total** | **4.3289** | **45.9568** | **27.1235** | **0.0375** | **4.8200e-003** | **2.6533** | **2.6581** | **5.2000e-004** | **2.4410** | **2.4415** | | **3,903.2349** | **3,903.2349** | **1.1774** | | **3,927.9594** |

## 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 | | | | | | | | | | 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 | 0.0667 | 0.0829 | 0.7823 | 1.7600e-003 | 0.1479 | 1.1100e-003 | 0.1490 | 0.0392 | 1.0200e-003 | 0.0402 | | 146.8209 | 146.8209 | 7.8300e-003 | | 146.9854 |
| **Total** | **0.0667** | **0.0829** | **0.7823** | **1.7600e-003** | **0.1479** | **1.1100e-003** | **0.1490** | **0.0392** | **1.0200e-003** | **0.0402** | | **146.8209** | **146.8209** | **7.8300e-003** | | **146.9854** |

## 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 | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 2.1700e-003 | 0.0000 | 2.1700e-003 | 2.3000e-004 | 0.0000 | 2.3000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3289 | 45.9568 | 27.1235 | 0.0375 | | 2.6533 | 2.6533 | | 2.4410 | 2.4410 | 0.0000 | 3,903.2349 | 3,903.2349 | 1.1774 | | 3,927.9594 |
| **Total** | **4.3289** | **45.9568** | **27.1235** | **0.0375** | **2.1700e-003** | **2.6533** | **2.6554** | **2.3000e-004** | **2.4410** | **2.4412** | **0.0000** | **3,903.2349** | **3,903.2349** | **1.1774** | | **3,927.9594** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0667 | 0.0829 | 0.7823 | 1.7600e-003 | 0.1479 | 1.1100e-003 | 0.1490 | 0.0392 | 1.0200e-003 | 0.0402 | | 146.8209 | 146.8209 | 7.8300e-003 | | 146.9854 |
| **Total** | **0.0667** | **0.0829** | **0.7823** | **1.7600e-003** | **0.1479** | **1.1100e-003** | **0.1490** | **0.0392** | **1.0200e-003** | **0.0402** | | **146.8209** | **146.8209** | **7.8300e-003** | | **146.9854** |

## 3.6 Trenching/Utilities - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8093 | 20.0567 | 12.5149 | 0.0140 | | 1.0250 | 1.0250 | | 0.9430 | 0.9430 | | 1,455.9274 | 1,455.9274 | 0.4392 | | 1,465.1497 |
| **Total** | **1.8093** | **20.0567** | **12.5149** | **0.0140** | | **1.0250** | **1.0250** | | **0.9430** | **0.9430** | | **1,455.9274** | **1,455.9274** | **0.4392** | | **1,465.1497** |

## 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 | | | | | | | | | | 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 | 0.0296 | 0.0368 | 0.3477 | 7.8000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 65.2537 | 65.2537 | 3.4800e-003 | | 65.3268 |
| **Total** | **0.0296** | **0.0368** | **0.3477** | **7.8000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **65.2537** | **65.2537** | **3.4800e-003** | | **65.3268** |

## 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 | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8093 | 20.0567 | 12.5149 | 0.0140 | | 1.0250 | 1.0250 | | 0.9430 | 0.9430 | 0.0000 | 1,455.9274 | 1,455.9274 | 0.4392 | | 1,465.1497 |
| **Total** | **1.8093** | **20.0567** | **12.5149** | **0.0140** | | **1.0250** | **1.0250** | | **0.9430** | **0.9430** | **0.0000** | **1,455.9274** | **1,455.9274** | **0.4392** | | **1,465.1497** |

## Mitigated Construction Off-Site

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

| Category | lb/day | | | | | | | | | | | 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 | 0.0296 | 0.0368 | 0.3477 | 7.8000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 65.2537 | 65.2537 | 3.4800e-003 | | 65.3268 |
| **Total** | **0.0296** | **0.0368** | **0.3477** | **7.8000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **65.2537** | **65.2537** | **3.4800e-003** | | **65.3268** |

## 3.6 Trenching/Utilities - 2017

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6955 | 18.7081 | 11.9165 | 0.0140 | | 0.9458 | 0.9458 | | 0.8701 | 0.8701 | | 1,433.7000 | 1,433.7000 | 0.4393 | | 1,442.9249 |
| **Total** | **1.6955** | **18.7081** | **11.9165** | **0.0140** | | **0.9458** | **0.9458** | | **0.8701** | **0.8701** | | **1,433.7000** | **1,433.7000** | **0.4393** | | **1,442.9249** |

### 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 | | | | | | | | | | 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 | 0.0269 | 0.0335 | 0.3129 | 7.8000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 62.7319 | 62.7319 | 3.2200e-003 | | 62.7995 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0269** | **0.0335** | **0.3129** | **7.8000e-004** | **0.0657** | **4.8000e-004** | **0.0662** | **0.0174** | **4.4000e-004** | **0.0179** | | **62.7319** | **62.7319** | **3.2200e-003** | | **62.7995** |

**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 | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6955 | 18.7081 | 11.9165 | 0.0140 | | 0.9458 | 0.9458 | | 0.8701 | 0.8701 | 0.0000 | 1,433.7000 | 1,433.7000 | 0.4393 | | 1,442.9249 |
| **Total** | **1.6955** | **18.7081** | **11.9165** | **0.0140** | | **0.9458** | **0.9458** | | **0.8701** | **0.8701** | **0.0000** | **1,433.7000** | **1,433.7000** | **0.4393** | | **1,442.9249** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0269 | 0.0335 | 0.3129 | 7.8000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 62.7319 | 62.7319 | 3.2200e-003 | | 62.7995 |
| **Total** | **0.0269** | **0.0335** | **0.3129** | **7.8000e-004** | **0.0657** | **4.8000e-004** | **0.0662** | **0.0174** | **4.4000e-004** | **0.0179** | | **62.7319** | **62.7319** | **3.2200e-003** | | **62.7995** |

## 3.7 Bikeway Bridge Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9294 | 18.5768 | 12.3538 | 0.0190 | | 1.1910 | 1.1910 | | 1.1154 | 1.1154 | | 1,892.8865 | 1,892.8865 | 0.4694 | | 1,902.7443 |
| **Total** | **1.9294** | **18.5768** | **12.3538** | **0.0190** | | **1.1910** | **1.1910** | | **1.1154** | **1.1154** | | **1,892.8865** | **1,892.8865** | **0.4694** | | **1,902.7443** |

## 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 | | | | | | | | | | 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 | 0.0882 | 0.6941 | 1.1344 | 1.8900e-003 | 0.0531 | 0.0101 | 0.0632 | 0.0152 | 9.2500e-003 | 0.0244 | | 186.2031 | 186.2031 | 1.4300e-003 | | 186.2332 |
| Worker | 0.0739 | 0.0920 | 0.8606 | 2.1500e-003 | 0.1807 | 1.3100e-003 | 0.1820 | 0.0479 | 1.2100e-003 | 0.0492 | | 172.5126 | 172.5126 | 8.8600e-003 | | 172.6986 |
| **Total** | **0.1621** | **0.7861** | **1.9950** | **4.0400e-003** | **0.2338** | **0.0114** | **0.2452** | **0.0631** | **0.0105** | **0.0736** | | **358.7157** | **358.7157** | **0.0103** | | **358.9318** |

## 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 | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.9294 | 18.5768 | 12.3538 | 0.0190 | | 1.1910 | 1.1910 | | 1.1154 | 1.1154 | 0.0000 | 1,892.8865 | 1,892.8865 | 0.4694 | | 1,902.7443 |
| **Total** | **1.9294** | **18.5768** | **12.3538** | **0.0190** | | **1.1910** | **1.1910** | | **1.1154** | **1.1154** | **0.0000** | **1,892.8865** | **1,892.8865** | **0.4694** | | **1,902.7443** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0882 | 0.6941 | 1.1344 | 1.8900e-003 | 0.0531 | 0.0101 | 0.0632 | 0.0152 | 9.2500e-003 | 0.0244 | | 186.2031 | 186.2031 | 1.4300e-003 | | 186.2332 |
| Worker | 0.0739 | 0.0920 | 0.8606 | 2.1500e-003 | 0.1807 | 1.3100e-003 | 0.1820 | 0.0479 | 1.2100e-003 | 0.0492 | | 172.5126 | 172.5126 | 8.8600e-003 | | 172.6986 |
| **Total** | **0.1621** | **0.7861** | **1.9950** | **4.0400e-003** | **0.2338** | **0.0114** | **0.2452** | **0.0631** | **0.0105** | **0.0736** | | **358.7157** | **358.7157** | **0.0103** | | **358.9318** |

## 3.8 Paving/Striping - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1118 | 17.0133 | 13.3700 | 0.0210 | | 1.1886 | 1.1886 | | 1.1459 | 1.1459 | | 2,020.3991 | 2,020.3991 | 0.3530 | | 2,027.8121 |
| Paving | 0.0703 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **2.1820** | **17.0133** | **13.3700** | **0.0210** | | **1.1886** | **1.1886** | | **1.1459** | **1.1459** | | **2,020.3991** | **2,020.3991** | **0.3530** | | **2,027.8121** |

## 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 | | | | | | | | | | 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 | 0.0671 | 0.0837 | 0.7823 | 1.9500e-003 | 0.1643 | 1.1900e-003 | 0.1655 | 0.0436 | 1.1000e-003 | 0.0447 | | 156.8296 | 156.8296 | 8.0500e-003 | | 156.9987 |
| **Total** | **0.0671** | **0.0837** | **0.7823** | **1.9500e-003** | **0.1643** | **1.1900e-003** | **0.1655** | **0.0436** | **1.1000e-003** | **0.0447** | | **156.8296** | **156.8296** | **8.0500e-003** | | **156.9987** |

## 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 | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1118 | 17.0133 | 13.3700 | 0.0210 | | 1.1886 | 1.1886 | | 1.1459 | 1.1459 | 0.0000 | 2,020.3991 | 2,020.3991 | 0.3530 | | 2,027.8121 |
| Paving | 0.0703 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **2.1820** | **17.0133** | **13.3700** | **0.0210** | | **1.1886** | **1.1886** | | **1.1459** | **1.1459** | **0.0000** | **2,020.3991** | **2,020.3991** | **0.3530** | | **2,027.8121** |

## Mitigated Construction Off-Site

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

| Category | lb/day | | | | | | | | | | | 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 | 0.0671 | 0.0837 | 0.7823 | 1.9500e-003 | 0.1643 | 1.1900e-003 | 0.1655 | 0.0436 | 1.1000e-003 | 0.0447 | | 156.8296 | 156.8296 | 8.0500e-003 | | 156.9987 | |
| **Total** | **0.0671** | **0.0837** | **0.7823** | **1.9500e-003** | **0.1643** | **1.1900e-003** | **0.1655** | **0.0436** | **1.1000e-003** | **0.0447** | | **156.8296** | **156.8296** | **8.0500e-003** | | **156.9987** | |

# Robinson Avenue Bikeway Project Construction

**San Diego County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Asphalt Surfaces | 51.50 | 1000sqft | 1.18 | 51,500.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.6 | **Precipitation Freq (Days)** | 40 |
| **Climate Zone** | 13 | | | **Operational Year** | 2017 |
| **Utility Company** | San Diego Gas & Electric | | | | |
| **CO2 Intensity (lb/MWhr)** | 720.49 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

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

Project Characteristics -

Land Use - Includes roadway area along Robinson Ave from Crestwood Pace to Alabama Street (50 ft wide x 1030 feet long)

Construction Phase - modified

Off-road Equipment - modified

Off-road Equipment - Other Const Equip = Jackhammer, 15hp and 0.55LF per OFFROAD2007

Off-road Equipment - Other Construction Equipment = water trucks, 175hp and 0.55LF per OFFROAD2007

Off-road Equipment - modified

Off-road Equipment - modified

Demolition - Assuming: Density of asphalt = 150lbs/ft3, asphault/pavement reaches 1 foot deep, sq ft of area to be demolished = 7,000 square feet, then demo material = 525 tons

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Off-road Equipment - modified

Off-road Equipment - modified

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior | 25,750.00 | 5,150.00 |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior | 77,250.00 | 0.00 |
| tblArchitecturalCoating | EF_Nonresidential_Exterior | 250.00 | 150.00 |
| tblConstructionPhase | NumDays | 10.00 | 1.00 |
| tblConstructionPhase | NumDays | 200.00 | 88.00 |
| tblConstructionPhase | NumDays | 20.00 | 22.00 |
| tblConstructionPhase | NumDays | 4.00 | 22.00 |
| tblConstructionPhase | NumDays | 10.00 | 44.00 |
| tblConstructionPhase | NumDays | 2.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 3/1/2016 | 11/1/2016 |
| tblConstructionPhase | PhaseEndDate | 1/4/2016 | 1/29/2016 |
| tblConstructionPhase | PhaseStartDate | 1/30/2016 | 10/1/2016 |
| tblConstructionPhase | PhaseStartDate | 1/2/2016 | 1/29/2016 |
| tblGrading | AcresOfGrading | 8.25 | 0.10 |
| tblOffRoadEquipment | HorsePower | 171.00 | 15.00 |
| tblOffRoadEquipment | HorsePower | 171.00 | 175.00 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.55 |
| tblOffRoadEquipment | LoadFactor | 0.46 | 0.46 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.55 |
| tblOffRoadEquipment | LoadFactor | 0.46 | 0.46 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Sweepers/Scrubbers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Sweepers/Scrubbers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 4.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 3.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2017 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 35.8194 | 46.0306 | 27.9287 | 0.0394 | 0.6814 | 2.6544 | 2.8071 | 0.1223 | 2.4420 | 2.4818 | 0.0000 | 4,059.5707 | 4,059.5707 | 1.1852 | 0.0000 | 4,084.4596 |
| 2017 | 2.2456 | 19.3368 | 14.1793 | 0.0232 | 0.2338 | 1.2022 | 1.4361 | 0.0631 | 1.1470 | 1.1906 | 0.0000 | 2,264.2366 | 2,264.2366 | 0.4797 | 0.0000 | 2,274.3097 |
| **Total** | **38.0650** | **65.3675** | **42.1080** | **0.0626** | **0.9153** | **3.8566** | **4.2431** | **0.1854** | **3.5891** | **3.6724** | **0.0000** | **6,323.8073** | **6,323.8073** | **1.6649** | **0.0000** | **6,358.7693** |

## Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 35.8194 | 46.0306 | 27.9287 | 0.0394 | 0.3971 | 2.6544 | 2.8044 | 0.0792 | 2.4420 | 2.4815 | 0.0000 | 4,059.5707 | 4,059.5707 | 1.1852 | 0.0000 | 4,084.4596 |
| 2017 | 2.2456 | 19.3368 | 14.1793 | 0.0232 | 0.2338 | 1.2022 | 1.4361 | 0.0631 | 1.1470 | 1.1906 | 0.0000 | 2,264.2366 | 2,264.2366 | 0.4797 | 0.0000 | 2,274.3097 |
| **Total** | **38.0650** | **65.3675** | **42.1080** | **0.0626** | **0.6309** | **3.8566** | **4.2405** | **0.1423** | **3.5891** | **3.6721** | **0.0000** | **6,323.8073** | **6,323.8073** | **1.6649** | **0.0000** | **6,358.7693** |

| | 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 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **31.07** | **0.00** | **0.06** | **23.24** | **0.00** | **0.01** | **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 | Architectural Coating | Architectural Coating | 1/1/2016 | 1/1/2016 | 5 | 1 | |
| 2 | Site Preparation | Site Preparation | 1/29/2016 | 1/29/2016 | 5 | 1 | |
| 3 | Demolition | Demolition | 10/1/2016 | 11/1/2016 | 5 | 22 | |
| 4 | Grading | Grading | 11/2/2016 | 12/1/2016 | 5 | 22 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | Trenching/Utilities | Trenching | 12/2/2016 | 3/3/2017 | 5 | 66 | |
| 6 | Bikeway Bridge Construction | Building Construction | 3/4/2017 | 7/5/2017 | 5 | 88 | |
| 7 | Paving/Striping | Paving | 7/6/2017 | 9/5/2017 | 5 | 44 | |

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

**Acres of Grading (Grading Phase): 0.1**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 5,150 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 0 | 8.00 | 174 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 0 | 6.00 | 78 | 0.48 |
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Bikeway Bridge Construction | Generator Sets | 0 | 8.00 | 84 | 0.74 |
| Demolition | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Paving/Striping | Paving Equipment | 0 | 8.00 | 130 | 0.36 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 0 | 7.00 | 255 | 0.40 |
| Grading | Graders | 1 | 6.00 | 174 | 0.41 |
| Bikeway Bridge Construction | Welders | 0 | 8.00 | 46 | 0.45 |
| Grading | Rubber Tired Dozers | 0 | 6.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Demolition | Other Construction Equipment | 1 | 8.00 | 15 | 0.55 |
| Demolition | Sweepers/Scrubbers | 1 | 8.00 | 64 | 0.46 |
| Grading | Other Construction Equipment | 3 | 8.00 | 175 | 0.55 |
| Trenching/Utilities | Cranes | 1 | 6.00 | 226 | 0.29 |
| Bikeway Bridge Construction | Cranes | 1 | 6.00 | 226 | 0.29 |
| Bikeway Bridge Construction | Forklifts | 0 | 6.00 | 89 | 0.20 |

| | | | | | |
|---|---|---|---|---|---|
| Trenching/Utilities | Rubber Tired Dozers | 1 | 6.00 | 255 | 0.40 |
| Bikeway Bridge Construction | Tractors/Loaders/Backhoes | 4 | 6.00 | 97 | 0.37 |
| Trenching/Utilities | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Paving/Striping | Cement and Mortar Mixers | 2 | 6.00 | 9 | 0.56 |
| Bikeway Bridge Construction | Cement and Mortar Mixers | 1 | 6.00 | 9 | 0.56 |
| Paving/Striping | Pavers | 1 | 6.00 | 125 | 0.42 |
| Paving/Striping | Rollers | 1 | 7.00 | 80 | 0.38 |
| Paving/Striping | Rollers | 0 | 7.00 | 80 | 0.38 |
| Bikeway Bridge Construction | Pumps | 1 | 6.00 | 84 | 0.74 |
| Paving/Striping | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Paving/Striping | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving/Striping | Concrete/Industrial Saws | 2 | 6.00 | 81 | 0.73 |
| Paving/Striping | Sweepers/Scrubbers | 1 | 6.00 | 64 | 0.46 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 0 | 4.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 6 | 15.00 | 0.00 | 52.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 7 | 18.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Trenching/Utilities | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Bikeway Bridge Construction | 7 | 22.00 | 8.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving/Striping | 8 | 20.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Architectural Coating - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 35.8054 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **35.8054** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 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 | | | | | | | | | | 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 | 0.0140 | 0.0164 | 0.1790 | 4.2000e-004 | 0.0329 | 2.5000e-004 | 0.0331 | 8.7200e-003 | 2.3000e-004 | 8.9400e-003 | | 34.7413 | 34.7413 | 1.7400e-003 | | 34.7778 |
| **Total** | **0.0140** | **0.0164** | **0.1790** | **4.2000e-004** | **0.0329** | **2.5000e-004** | **0.0331** | **8.7200e-003** | **2.3000e-004** | **8.9400e-003** | | **34.7413** | **34.7413** | **1.7400e-003** | | **34.7778** |

## 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 | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 35.8054 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **35.8054** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0140 | 0.0164 | 0.1790 | 4.2000e-004 | 0.0329 | 2.5000e-004 | 0.0331 | 8.7200e-003 | 2.3000e-004 | 8.9400e-003 | | 34.7413 | 34.7413 | 1.7400e-003 | | 34.7778 |
| **Total** | **0.0140** | **0.0164** | **0.1790** | **4.2000e-004** | **0.0329** | **2.5000e-004** | **0.0331** | **8.7200e-003** | **2.3000e-004** | **8.9400e-003** | | **34.7413** | **34.7413** | **1.7400e-003** | | **34.7778** |

## 3.3 Site Preparation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 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 | | | | | | | | | | 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 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 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 | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## Mitigated Construction Off-Site

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

| Category | lb/day | | | | | | | | | | | 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 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 3.4 Demolition - 2016

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.5170 | 0.0000 | 0.5170 | 0.0783 | 0.0000 | 0.0783 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1548 | 29.1221 | 21.9989 | 0.0247 | | 1.8590 | 1.8590 | | 1.7381 | 1.7381 | | 2,507.3815 | 2,507.3815 | 0.6349 | | 2,520.7145 |
| **Total** | **3.1548** | **29.1221** | **21.9989** | **0.0247** | **0.5170** | **1.8590** | **2.3760** | **0.0783** | **1.7381** | **1.8164** | | **2,507.3815** | **2,507.3815** | **0.6349** | | **2,520.7145** |

### 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 | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0463 | 0.6624 | 0.4728 | 1.7700e-003 | 0.0412 | 9.0500e-003 | 0.0502 | 0.0113 | 8.3200e-003 | 0.0196 | | 178.1419 | 178.1419 | 1.2700e-003 | | 178.1685 |
| 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 | 0.0524 | 0.0615 | 0.6711 | 1.5600e-003 | 0.1232 | 9.2000e-004 | 0.1242 | 0.0327 | 8.5000e-004 | 0.0335 | | 130.2798 | 130.2798 | 6.5300e-003 | | 130.4169 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0988** | **0.7239** | **1.1439** | **3.3300e-003** | **0.1644** | **9.9700e-003** | **0.1744** | **0.0440** | **9.1700e-003** | **0.0531** | | **308.4217** | **308.4217** | **7.8000e-003** | | **308.5854** |

**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 | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.2327 | 0.0000 | 0.2327 | 0.0352 | 0.0000 | 0.0352 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1548 | 29.1221 | 21.9989 | 0.0247 | | 1.8590 | 1.8590 | | 1.7381 | 1.7381 | 0.0000 | 2,507.3815 | 2,507.3815 | 0.6349 | | 2,520.7145 |
| **Total** | **3.1548** | **29.1221** | **21.9989** | **0.0247** | **0.2327** | **1.8590** | **2.0917** | **0.0352** | **1.7381** | **1.7733** | **0.0000** | **2,507.3815** | **2,507.3815** | **0.6349** | | **2,520.7145** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0463 | 0.6624 | 0.4728 | 1.7700e-003 | 0.0412 | 9.0500e-003 | 0.0502 | 0.0113 | 8.3200e-003 | 0.0196 | | 178.1419 | 178.1419 | 1.2700e-003 | | 178.1685 |
| 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 | 0.0524 | 0.0615 | 0.6711 | 1.5600e-003 | 0.1232 | 9.2000e-004 | 0.1242 | 0.0327 | 8.5000e-004 | 0.0335 | | 130.2798 | 130.2798 | 6.5300e-003 | | 130.4169 |
| **Total** | **0.0988** | **0.7239** | **1.1439** | **3.3300e-003** | **0.1644** | **9.9700e-003** | **0.1744** | **0.0440** | **9.1700e-003** | **0.0531** | | **308.4217** | **308.4217** | **7.8000e-003** | | **308.5854** |

## 3.5 Grading - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.8200e-003 | 0.0000 | 4.8200e-003 | 5.2000e-004 | 0.0000 | 5.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3289 | 45.9568 | 27.1235 | 0.0375 | | 2.6533 | 2.6533 | | 2.4410 | 2.4410 | | 3,903.2349 | 3,903.2349 | 1.1774 | | 3,927.9594 |
| **Total** | **4.3289** | **45.9568** | **27.1235** | **0.0375** | **4.8200e-003** | **2.6533** | **2.6581** | **5.2000e-004** | **2.4410** | **2.4415** | | **3,903.2349** | **3,903.2349** | **1.1774** | | **3,927.9594** |

## 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 | | | | | | | | | | 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 | 0.0629 | 0.0738 | 0.8053 | 1.8700e-003 | 0.1479 | 1.1100e-003 | 0.1490 | 0.0392 | 1.0200e-003 | 0.0402 | | 156.3358 | 156.3358 | 7.8300e-003 | | 156.5002 |
| **Total** | **0.0629** | **0.0738** | **0.8053** | **1.8700e-003** | **0.1479** | **1.1100e-003** | **0.1490** | **0.0392** | **1.0200e-003** | **0.0402** | | **156.3358** | **156.3358** | **7.8300e-003** | | **156.5002** |

## 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 | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 2.1700e-003 | 0.0000 | 2.1700e-003 | 2.3000e-004 | 0.0000 | 2.3000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.3289 | 45.9568 | 27.1235 | 0.0375 | | 2.6533 | 2.6533 | | 2.4410 | 2.4410 | 0.0000 | 3,903.2349 | 3,903.2349 | 1.1774 | | 3,927.9594 |
| **Total** | **4.3289** | **45.9568** | **27.1235** | **0.0375** | **2.1700e-003** | **2.6533** | **2.6554** | **2.3000e-004** | **2.4410** | **2.4412** | **0.0000** | **3,903.2349** | **3,903.2349** | **1.1774** | | **3,927.9594** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0629 | 0.0738 | 0.8053 | 1.8700e-003 | 0.1479 | 1.1100e-003 | 0.1490 | 0.0392 | 1.0200e-003 | 0.0402 | | 156.3358 | 156.3358 | 7.8300e-003 | | 156.5002 |
| **Total** | **0.0629** | **0.0738** | **0.8053** | **1.8700e-003** | **0.1479** | **1.1100e-003** | **0.1490** | **0.0392** | **1.0200e-003** | **0.0402** | | **156.3358** | **156.3358** | **7.8300e-003** | | **156.5002** |

## 3.6 Trenching/Utilities - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8093 | 20.0567 | 12.5149 | 0.0140 | | 1.0250 | 1.0250 | | 0.9430 | 0.9430 | | 1,455.9274 | 1,455.9274 | 0.4392 | | 1,465.1497 |
| **Total** | **1.8093** | **20.0567** | **12.5149** | **0.0140** | | **1.0250** | **1.0250** | | **0.9430** | **0.9430** | | **1,455.9274** | **1,455.9274** | **0.4392** | | **1,465.1497** |

## 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 | | | | | | | | | | 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 | 0.0280 | 0.0328 | 0.3579 | 8.3000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 69.4826 | 69.4826 | 3.4800e-003 | | 69.5557 |
| **Total** | **0.0280** | **0.0328** | **0.3579** | **8.3000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **69.4826** | **69.4826** | **3.4800e-003** | | **69.5557** |

## 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 | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8093 | 20.0567 | 12.5149 | 0.0140 | | 1.0250 | 1.0250 | | 0.9430 | 0.9430 | 0.0000 | 1,455.9274 | 1,455.9274 | 0.4392 | | 1,465.1497 |
| **Total** | **1.8093** | **20.0567** | **12.5149** | **0.0140** | | **1.0250** | **1.0250** | | **0.9430** | **0.9430** | **0.0000** | **1,455.9274** | **1,455.9274** | **0.4392** | | **1,465.1497** |

## Mitigated Construction Off-Site

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

| Category | lb/day | | | | | | | | | | | 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 | 0.0280 | 0.0328 | 0.3579 | 8.3000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 69.4826 | 69.4826 | 3.4800e-003 | | 69.5557 |
| **Total** | **0.0280** | **0.0328** | **0.3579** | **8.3000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **69.4826** | **69.4826** | **3.4800e-003** | | **69.5557** |

## 3.6 Trenching/Utilities - 2017

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6955 | 18.7081 | 11.9165 | 0.0140 | | 0.9458 | 0.9458 | | 0.8701 | 0.8701 | | 1,433.7000 | 1,433.7000 | 0.4393 | | 1,442.9249 |
| **Total** | **1.6955** | **18.7081** | **11.9165** | **0.0140** | | **0.9458** | **0.9458** | | **0.8701** | **0.8701** | | **1,433.7000** | **1,433.7000** | **0.4393** | | **1,442.9249** |

### 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 | | | | | | | | | | 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 | 0.0254 | 0.0298 | 0.3237 | 8.3000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 66.8014 | 66.8014 | 3.2200e-003 | | 66.8690 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0254** | **0.0298** | **0.3237** | **8.3000e-004** | **0.0657** | **4.8000e-004** | **0.0662** | **0.0174** | **4.4000e-004** | **0.0179** | | **66.8014** | **66.8014** | **3.2200e-003** | | **66.8690** |

**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 | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6955 | 18.7081 | 11.9165 | 0.0140 | | 0.9458 | 0.9458 | | 0.8701 | 0.8701 | 0.0000 | 1,433.7000 | 1,433.7000 | 0.4393 | | 1,442.9249 |
| **Total** | **1.6955** | **18.7081** | **11.9165** | **0.0140** | | **0.9458** | **0.9458** | | **0.8701** | **0.8701** | **0.0000** | **1,433.7000** | **1,433.7000** | **0.4393** | | **1,442.9249** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0254 | 0.0298 | 0.3237 | 8.3000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 66.8014 | 66.8014 | 3.2200e-003 | | 66.8690 |
| **Total** | **0.0254** | **0.0298** | **0.3237** | **8.3000e-004** | **0.0657** | **4.8000e-004** | **0.0662** | **0.0174** | **4.4000e-004** | **0.0179** | | **66.8014** | **66.8014** | **3.2200e-003** | | **66.8690** |

## 3.7 Bikeway Bridge Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9294 | 18.5768 | 12.3538 | 0.0190 | | 1.1910 | 1.1910 | | 1.1154 | 1.1154 | | 1,892.8865 | 1,892.8865 | 0.4694 | | 1,902.7443 |
| **Total** | **1.9294** | **18.5768** | **12.3538** | **0.0190** | | **1.1910** | **1.1910** | | **1.1154** | **1.1154** | | **1,892.8865** | **1,892.8865** | **0.4694** | | **1,902.7443** |

## 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 | | | | | | | | | | 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 | 0.0765 | 0.6780 | 0.8353 | 1.9000e-003 | 0.0531 | 9.9500e-003 | 0.0631 | 0.0152 | 9.1500e-003 | 0.0243 | | 187.6463 | 187.6463 | 1.3900e-003 | | 187.6756 |
| Worker | 0.0699 | 0.0820 | 0.8902 | 2.2900e-003 | 0.1807 | 1.3100e-003 | 0.1820 | 0.0479 | 1.2100e-003 | 0.0492 | | 183.7038 | 183.7038 | 8.8600e-003 | | 183.8899 |
| **Total** | **0.1464** | **0.7600** | **1.7255** | **4.1900e-003** | **0.2338** | **0.0113** | **0.2451** | **0.0631** | **0.0104** | **0.0735** | | **371.3502** | **371.3502** | **0.0103** | | **371.5654** |

## 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 | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.9294 | 18.5768 | 12.3538 | 0.0190 | | 1.1910 | 1.1910 | | 1.1154 | 1.1154 | 0.0000 | 1,892.8865 | 1,892.8865 | 0.4694 | | 1,902.7443 |
| **Total** | **1.9294** | **18.5768** | **12.3538** | **0.0190** | | **1.1910** | **1.1910** | | **1.1154** | **1.1154** | **0.0000** | **1,892.8865** | **1,892.8865** | **0.4694** | | **1,902.7443** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | 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 | 0.0765 | 0.6780 | 0.8353 | 1.9000e-003 | 0.0531 | 9.9500e-003 | 0.0631 | 0.0152 | 9.1500e-003 | 0.0243 | | 187.6463 | 187.6463 | 1.3900e-003 | | 187.6756 |
| Worker | 0.0699 | 0.0820 | 0.8902 | 2.2900e-003 | 0.1807 | 1.3100e-003 | 0.1820 | 0.0479 | 1.2100e-003 | 0.0492 | | 183.7038 | 183.7038 | 8.8600e-003 | | 183.8899 |
| **Total** | **0.1464** | **0.7600** | **1.7255** | **4.1900e-003** | **0.2338** | **0.0113** | **0.2451** | **0.0631** | **0.0104** | **0.0735** | | **371.3502** | **371.3502** | **0.0103** | | **371.5654** |

## 3.8 Paving/Striping - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1118 | 17.0133 | 13.3700 | 0.0210 | | 1.1886 | 1.1886 | | 1.1459 | 1.1459 | | 2,020.3991 | 2,020.3991 | 0.3530 | | 2,027.8121 |
| Paving | 0.0703 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **2.1820** | **17.0133** | **13.3700** | **0.0210** | | **1.1886** | **1.1886** | | **1.1459** | **1.1459** | | **2,020.3991** | **2,020.3991** | **0.3530** | | **2,027.8121** |

## 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 | | | | | | | | | | 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 | 0.0635 | 0.0746 | 0.8093 | 2.0800e-003 | 0.1643 | 1.1900e-003 | 0.1655 | 0.0436 | 1.1000e-003 | 0.0447 | | 167.0035 | 167.0035 | 8.0500e-003 | | 167.1726 |
| **Total** | **0.0635** | **0.0746** | **0.8093** | **2.0800e-003** | **0.1643** | **1.1900e-003** | **0.1655** | **0.0436** | **1.1000e-003** | **0.0447** | | **167.0035** | **167.0035** | **8.0500e-003** | | **167.1726** |

## 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 | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1118 | 17.0133 | 13.3700 | 0.0210 | | 1.1886 | 1.1886 | | 1.1459 | 1.1459 | 0.0000 | 2,020.3991 | 2,020.3991 | 0.3530 | | 2,027.8121 |
| Paving | 0.0703 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **2.1820** | **17.0133** | **13.3700** | **0.0210** | | **1.1886** | **1.1886** | | **1.1459** | **1.1459** | **0.0000** | **2,020.3991** | **2,020.3991** | **0.3530** | | **2,027.8121** |

## Mitigated Construction Off-Site

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

| Category | lb/day | | | | | | | | | | | 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 | 0.0635 | 0.0746 | 0.8093 | 2.0800e-003 | 0.1643 | 1.1900e-003 | 0.1655 | 0.0436 | 1.1000e-003 | 0.0447 | | 167.0035 | 167.0035 | 8.0500e-003 | | 167.1726 | |
| **Total** | **0.0635** | **0.0746** | **0.8093** | **2.0800e-003** | **0.1643** | **1.1900e-003** | **0.1655** | **0.0436** | **1.1000e-003** | **0.0447** | | **167.0035** | **167.0035** | **8.0500e-003** | | **167.1726** | |