# Appendix A. Hydraulic Analysis

MBK ENGINEERS

Water Resources ◆ Flood Control ◆ Water Rights

# TECHNICAL MEMORANDUM

**DATE:** October 31, 2019

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**REVIEWED BY:** Patrick Ho, P.E., MBK Engineers

**SUBJECT:** Sacramento Weir Widening Project, Initial Hydraulic Impact Analysis

## Purpose

The Sacramento Weir Widening Project (Project) is a component of the American River Common Features (ARCF) General Reevaluation Report Selected Plan (USACE, 2015), and was authorized in the Water Resources Development Act (WRDA) of 2016. The purpose of the Project is to divert additional flood waters from the Sacramento River into the Yolo Bypass, away from urban areas. This report presents the results of an initial hydraulic impact analysis of the Project as presented in the draft 35% review design plan.

## Existing Sacramento Weir

The existing Sacramento Weir is located on the right bank of the Sacramento River, approximately 2 miles upstream of the mouth of the American River (Figure 1). The Sacramento Weir consists of 48 gates, each of which is approximately 38.25 feet wide. The gates are made up of 6 feet long vertical plank “needles”, which are hinged at the bottom and retained at the top by a metal beam (Figure 2). Releasing the beam allows the “needles” to drop, thereby opening the gate (DWR, 2015).

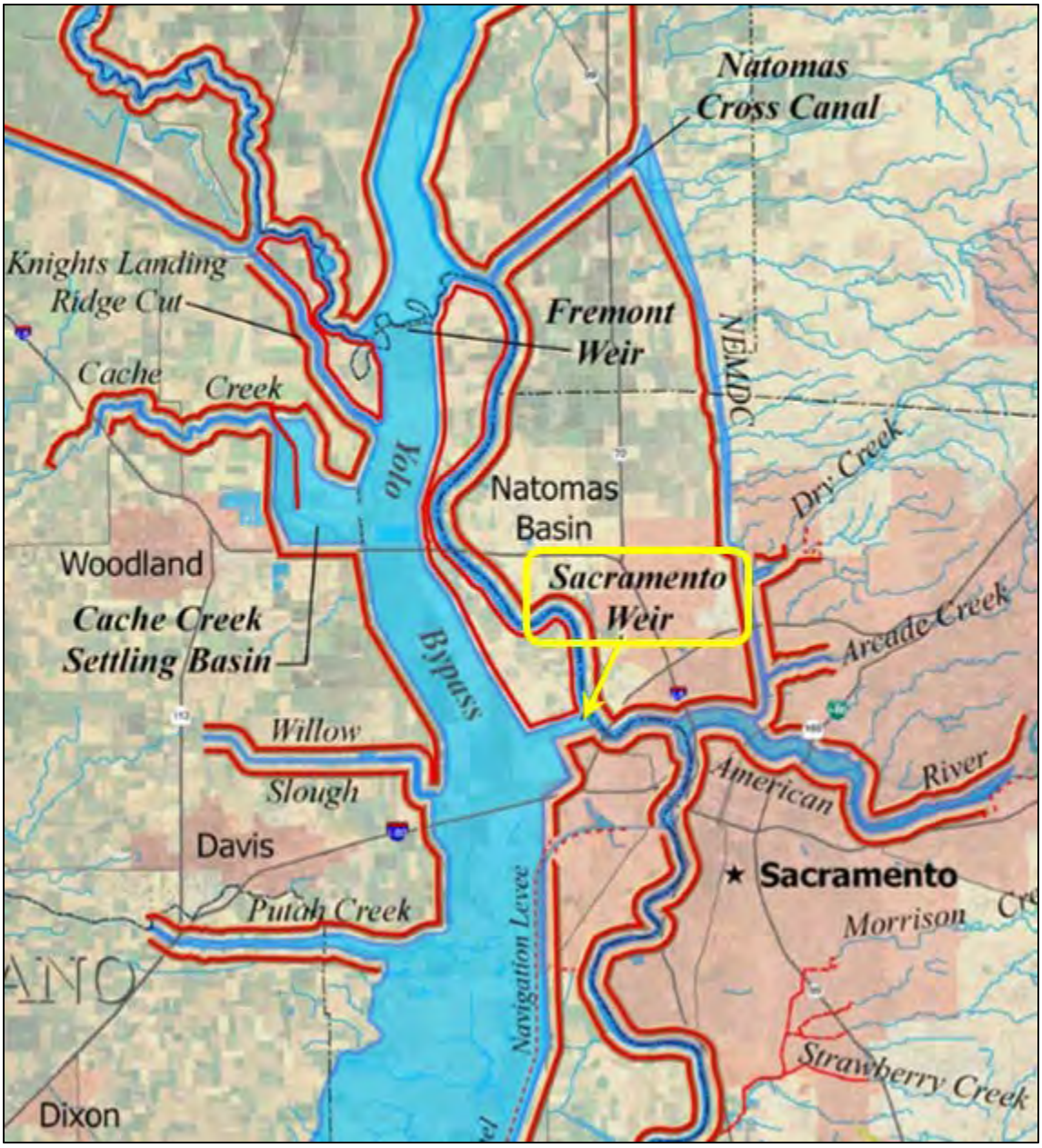



**Figure 1. Location Map**

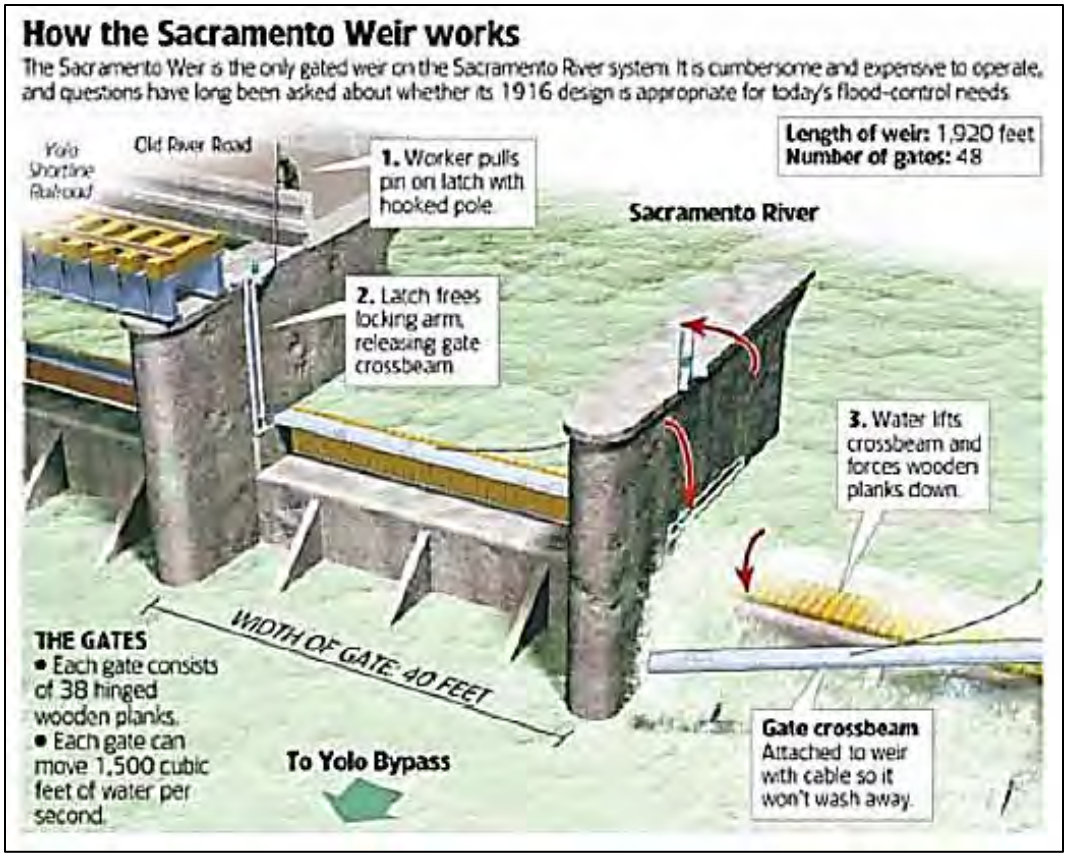



**Figure 2. Sacramento Weir Gate Detail and Opening Process (DWR, 2015)**

The operation schedule for the Sacramento Weir, adopted in 1975, is specified in the *Sacramento River Flood Control Project Operation and Maintenance Manual for the Sacramento Weir*, (USACE, 2016) as follows:

> The operational objectives of the Sacramento Weir are to limit flood stages in the Sacramento River to the project floodplain, insofar as possible, with maximum feasible utilization of the flood capacity of the Sacramento River Channel below the weir. In order to accomplish these objectives, the following schedule of operation shall be used.
>
> 1. Opening of the weir gates will not be initiated until a stage of 27.5 feet msl datum [29.9 feet NAVD88 datum] is exceeded at I Street gage, Sacramento.
> 2. As many gates as necessary shall be opened so that the stage at I Street does not exceed 29.0 feet msl datum [31.4 feet NAVD88], insofar as possible.
> 3. Subject to provisions 1 and 2 above, the stage at the Sacramento Weir shall be maintained during the gate opening period at 27.5 feet msl datum [29.8 ft NAVD88], insofar as practicable.
> 4. Gates shall be closed as the stage drops below 25.0 feet msl datum [27.3 ft NAVD88] at the Sacramento Weir. The gate closing shall be prosecuted with dispatch so that all gates are closed within as short a period as practicable.

It is not possible to exactly represent the weir operation in a hydraulic model due to the complexity of the operation. For hydraulic modeling purposes, the U.S. Army Corps of Engineers (USACE) has developed operation criteria that reasonably represents the real operation of the Sacramento Weir (USACE, 2015). The hydraulic model parameters that define this operation criteria are summarized in Table 1.

**Table 1. Existing Sacramento Weir Hydraulic Model Parameters**

| Gate Group | Gates | Gate Height (feet) | Sill Elev., Gate Open (feet, NAVD88) | Trigger Elevation [1] (feet, NAVD88) | | Rate (feet/min.) | |
|---|---|---|---|---|---|---|---|
| | | | | Opening | Closing | Opening | Closing |
| 1 | 1 | 5.7 | 23.5 | 29.87 | 26.05 | 1.3 | 0.087 |
| 2 | 2 | 5.7 | 23.5 | 29.91 | 26.15 | 1.3 | 0.087 |
| 3 | 3 | 5.7 | 23.5 | 29.94 | 26.25 | 1.3 | 0.087 |
| 4 | 4 | 5.7 | 23.5 | 29.98 | 26.35 | 1.3 | 0.087 |
| 5 | 5 | 5.7 | 23.5 | 30.01 | 26.45 | 1.3 | 0.087 |
| 6 | 6 | 5.7 | 23.5 | 30.05 | 26.55 | 1.3 | 0.087 |
| 7 | 7-12 | 5.7 | 23.5 | 30.08 | 26.80 | 0.22 | 0.014 |
| 8 | 13-18 | 5.7 | 23.5 | 30.30 | 26.95 | 0.22 | 0.014 |
| 9 | 19-24 | 5.7 | 23.5 | 30.51 | 27.06 | 0.22 | 0.014 |
| 9 | 25-30 | 5.7 | 23.5 | 30.73 | 27.15 | 0.22 | 0.014 |
| 6 | 31-36 | 5.7 | 23.5 | 30.94 | 27.22 | 0.22 | 0.014 |
| 7 | 37-42 | 5.7 | 23.5 | 31.16 | 27.29 | 0.22 | 0.014 |
| 8 | 43-48 | 5.7 | 23.5 | 31.37 | 27.35 | 0.22 | 0.014 |

[1] Sacramento River at I Street gage

## Sacramento Weir Widening Project

The 35% review conceptual design for the Sacramento Weir Widening Project is shown in Figure 3. The main components of the project are:

- Weir extension
  - 1,520 feet long
  - Un-gated fixed crest ogee weir
  - Crest elevation in 35% design plan is 26 feet (NAVD88), but a crest elevation of 29.2 feet (NAVD88) will also be evaluated
- Set back of Sacramento Bypass north levee, approximately 1,500 feet, as per the 95% design submittal for the Lower Elkhorn Basin Levee Setback (LEBLS) Project
- Realignment of Old River Road, with new bridge above weir extension
- New railroad bridge to replace railroad embankment immediately downstream of the weir extension

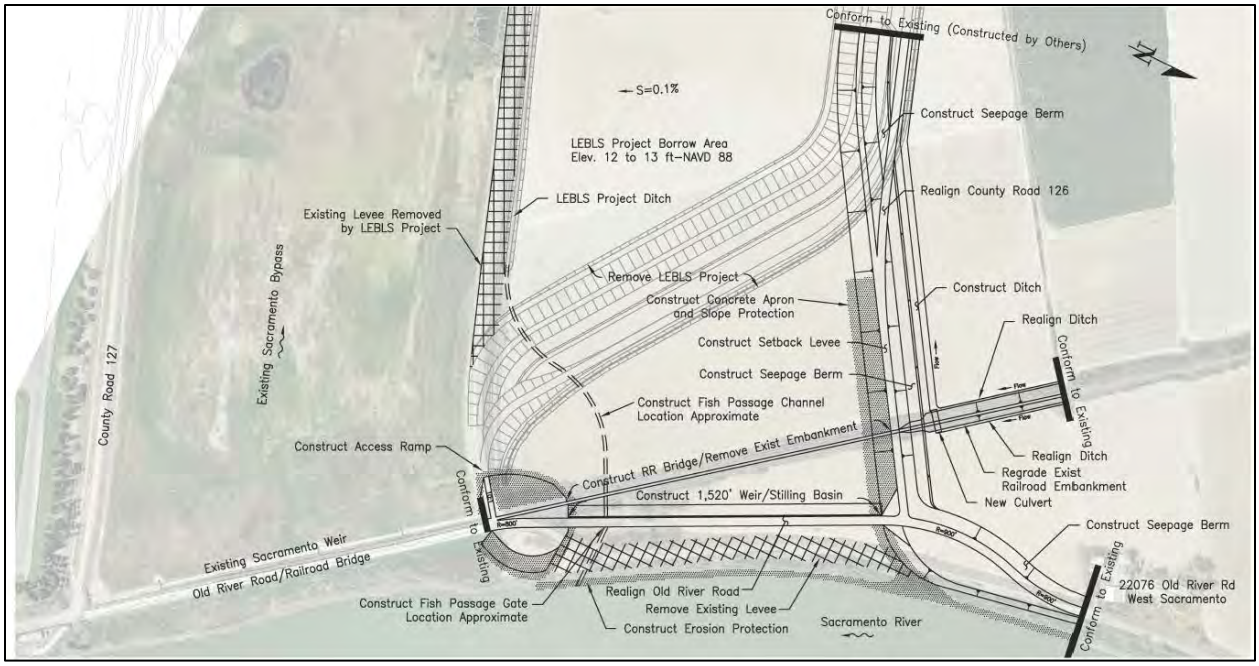



**Figure 3. Sacramento Weir Widening Project, from draft 35% design submittal.**

## Evaluation Scenarios

The analysis evaluated the hydraulic impacts of two scenarios relative to two different baselines. The two baseline conditions are:

1. Baseline 1: Describes the physical conditions as they existed prior to the construction of the Natomas Levee Improvement Program and the Southport Levee Improvement Project. Includes the Folsom Dam Joint Federal Project (JFP) and forecast based releases.

2. Baseline 2: Represents how the system performs today.

The two evaluation scenarios are:

1. Future With Project (2024): Baseline plus ARCF 2016, to evaluate the effects solely due to ARCF 2016.

2. Future Cumulative (2024): Expected future condition accounting for known projects which may affect system hydraulics by 2024.

The key features in each of the evaluation scenarios are summarized in Table 2. These features are described in the following sections.

**Table 2. Summary Comparison of Evaluation Scenario Features**

| Feature | Baseline 1 | Baseline 2 | Future With Project (2024) | Future Cumulative (2024) |
|---|---|---|---|---|
| Folsom Joint Federal Project & forecast based releases | ✓ | ✓ | ✓ | ✓ |
| Natomas Levee Improvement Program | ✗ | ✓ | ✓ | ✓ |
| Southport Levee Improvement Project | ✗ | ✓ | ✓ | ✓ |
| Sacramento Weir widening | ✗ | ✗ | ✓ | ✓ |
| Sacramento Bypass expansion | ✗ | ✗ | ✓ | ✓ |
| Arcade Creek, Dry Creek and Magpie Creek improvements | ✗ | ✗ | ✓ | ✓ |
| Folsom Dam Raise Project | ✗ | ✗ | ✗ | ✓ |
| Yolo Bypass Lower Elkhorn levee setback | ✗ | ✗ | ✗ | ✓ |
| Yolo Bypass Salmonid Habitat/Fish Passage | ✗ | ✗ | ✗ | ✓ |

✓ Included
✗ Not included

## Folsom Joint Federal Project & Forecast Based Releases

The Folsom Dam Joint Federal Project (JFP) and forecast based releases are a combination of physical and operational changes that increase the capability and flexibility of Folsom Dam in order to increase the size of floods that can be regulated. That is, the JFP will reduce the peak flow released from Folsom Dam during very large flood events. The effect of the JFP on the peak Folsom Dam flow releases, as specified in the Draft Engineering Report for the Folsom Dam Water Control Manual Update, are shown in Table 3 (USACE, 2018).

**Table 3. Peak Folsom Dam Releases Without and With JFP**

| Annual Chance of Exceedance (ACE) | Peak Folsom Dam Release (cfs) | |
|---|---|---|
| | Without JFP | With JFP |
| 1/10 | 56,700 | 70,400 |
| 1/25 | 109,000 | 102,000 |
| 1/50 | 111,000 | 115,000 |
| 1/100 | 115,000 | 115,000 |
| 1/200 | 238,000 | 116,000 |
| 1/500 | 460,000 | 358,000 |

## Natomas Levee Improvement Program

The Natomas Levee Improvement Program (NLIP) is a project that consists of strengthening and raising, where necessary, the levees protecting the Natomas Basin (Figure 4).

**Figure 4. Natomas Basin Location Map**

## Southport Levee Improvement Project

The main component of the Southport Levee Improvement Project is the setting back of about 4 miles of the Sacramento River west levee in West Sacramento downstream of Stone Lock, as shown in Figure 5 (HDR, 2015).

**Figure 5. Southport Levee Improvement Project**

## Sacramento Weir Widening

The Sacramento Weir Widening was previously described on page 4.

## Sacramento Bypass Expansion

The Sacramento Bypass Expansion is a widening of the Sacramento Bypass accomplished by setting back the north levee by approximately 1,500 feet, as per the 95% design submittal for the

LEBLS Project (Figure 6) (DWR, 2019). The LEBLS 95% design plans indicate that some of the area between the existing and the setback levees may be degraded as a source of borrow material. However, the analysis presented herein assumed the existing grade for the area between the levees.

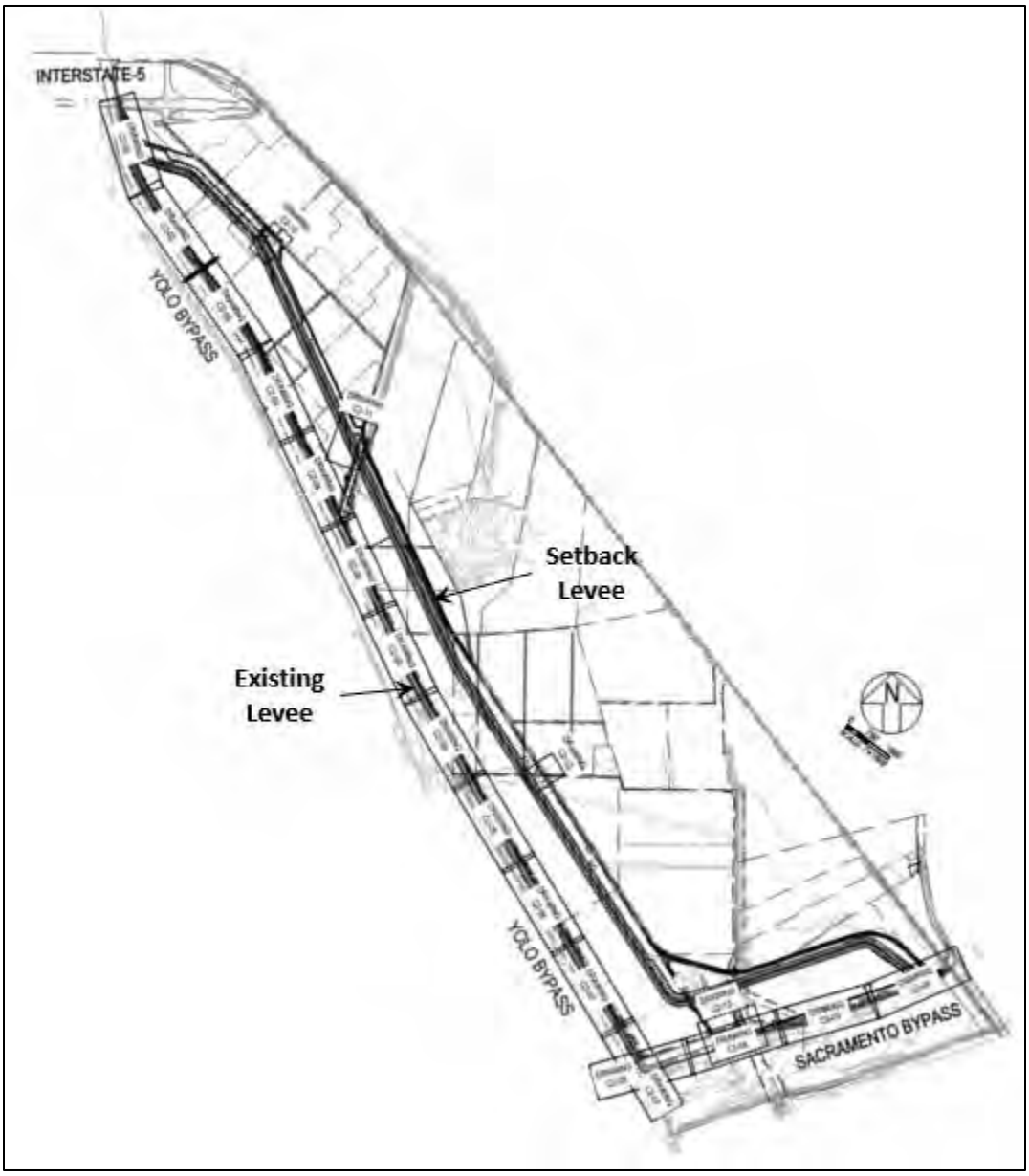



**Figure 6. LEBLS Levee Setback, 95% Design Submittal**

### Arcade Creek, Dry Creek, and Magpie Creek Improvements

This component consists of levee improvements and floodplain preservation along Arcade Creek, Dry Creek, and Magpie Creek in the North Sacramento area.

### Folsom Dam Raise Project

The Folsom Dam Raise Project includes the following authorized components:

- A 3.5-foot raise of the Folsom Facility dikes, the Mormon Island Auxiliary Dam, the Left Wing Dam, and the Right Wing Dam
- Modifications to the main dam's Tainter gates

The Folsom Dam Raise Project does not affect the Folsom Dam releases for flood events up to and including the 1/200 ACE. For the 1/325 ACE flood event the peak Folsom Dam release would be reduced from 201,000 cfs to 160,000 cfs.

### Yolo Bypass Lower Elkhorn Levee Setback

This component is the LEBLS Yolo Bypass east levee setback, as per LEBLS 95% design submittal (Figure 6). The LEBLS 95% design plans indicate that some of the area between the existing and the setback levees may be degraded as a source of borrow material. However, the analysis presented herein assumed existing grade for the area between the levees.

### Yolo Bypass Salmonid Habitat/Fish Passage Project

The Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project, which is expected to be constructed in 2020 or 2021, would modify the Fremont Weir by constructing three gates at the east end of the Fremont Weir (USBR & DWR, 2019). The gate dimensions are provided in Table 4. According to the Final EIS/EIR, when the Fremont Weir is overtopping, the most likely configuration would have Gate 1 fully open, and Gates 2 and 3 closed. In the hydraulic model, this is represented by a notch in the weir with an equivalent area to Gate 1.

**Table 4. Fremont Weir Fish Passage Project Gate Dimensions**

| Gate | Height (feet) | Width (feet) | Invert Elevation (feet, NAVD88) |
|---|---|---|---|
| 1 | 18 | 34 | 14.0 |
| 2 and 3 | 14 | 27 | 18.0 |

## Hydraulic Model

The hydraulic impact analysis was performed using a modified version of the Central Valley Floodplain Evaluation and Delineation (CVFED) TO34 Sacramento River Basin HEC-RAS model, MBK version 201908, which runs in HEC-RAS version 5.0.7. The model extent was reduced, and refinements were made to improve calibration, improve efficiency and reduce execution time (MBK Engineers, 2019). The model includes the Sacramento River, from Colusa to Suisun Bay; the Feather River and its tributaries below Oroville Dam; and the American River below Folsom Dam. A schematic of the model extent is shown in Figure 7. Two-dimensional (2-D) flow areas were used to model the Fremont Weir area (Figure 8) and the Southport Levee

Improvement Project area (Figure 9). The model was calibrated with the January 1997 flood, and verified with the January 2006 flood event.

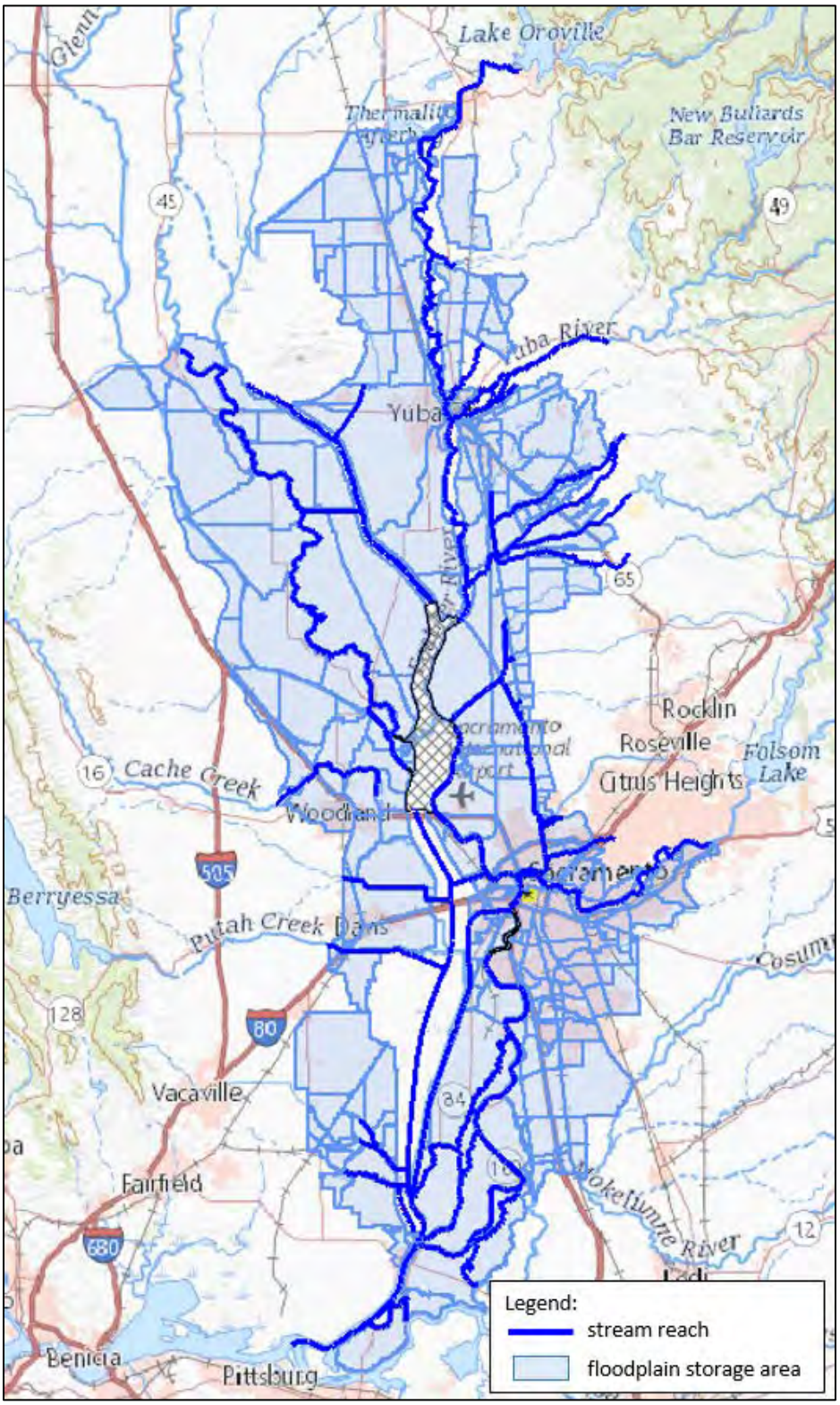



**Figure 7. Hydraulic Model Schematic**

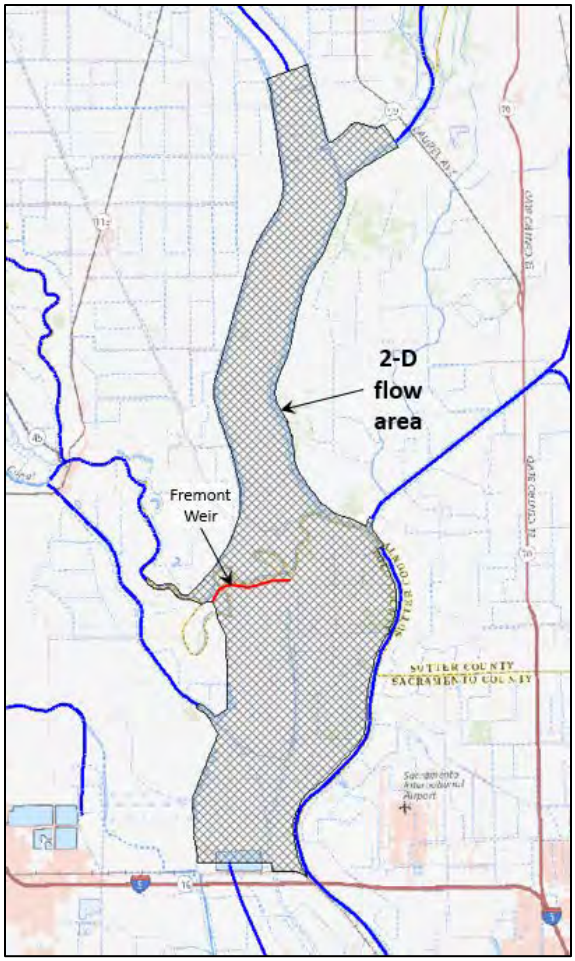



**Figure 9. Fremont Weir 2-D flow area**

**Figure 8. Southport 2-D flow area**

## Hydrology

The hydrology used for this analysis is from the Central Valley Hydrology Study (CVHS), which was commissioned by DWR and prepared by the USACE (USACE, 2015). The CVHS defines a procedure in which a scaled flood event with a pattern based on a historical flood event is selected to represent the flood of a specific frequency at a specific location. This specific location is also referred to as the "centering" of the flood event. The analysis presented herein used hydrology based on a CVHS event selection performed by USACE (USACE, 2019). This event selection determined flood events for two centerings:

1. Sacramento River at Verona
2. American River at Fair Oaks and Sacramento River at the latitude of Sacramento

The flood events simulated in the analysis presented herein, and the corresponding CVHS pattern and scaling factor, are summarized in Table 5.

**Table 5. CVHS Flood Patterns and Scaling Factors**

| Flood Frequency (Annual Exceedance Probability) | Sacramento River at Verona centering | | Sacramento River at latitude of Sacramento and American River at Fair Oaks centering | |
|---|---|---|---|---|
| | CVHS Pattern | CVHS Scale Factor | CVHS Pattern | CVHS Scale Factor |
| 1/10 | 1997 | 50% with 20% on American R. | 1986 | 55% with 40% on American R. |
| 1/25 | 1997 | 60% with 40% on American R. | 1986 | 80% with 55% on American R. |
| 1/50 | 1997 | 80% with 60% on American R. | 1986 | 85% with 80% on American R. |
| 1/100 | 1997 | 90% | 1986 | 95% with 100% on American R. |
| 1/200 | 1997 | 100% | 1986 | 110% with 125% on American R. |
| 1/325 | 1997 | 110% | 1986 | 104% with 135% on American R. |

The Folsom Dam releases used in the analysis were provided by USACE in the following data files:

- CVHS2019_Current_ULDC.dss
  - Folsom Dam JFP (Existing scenario)
- CVHS2019_Future_ULDC.dss
  - Folsom Dam JFP and Folsom Dam Raise Project (Future With Project and Future Cumulative scenarios)

## Results

As noted above, two flood centerings were simulated. The final maximum water surface elevation and peak flow for a particular AEP is the greater of the values computed for the two centering. The effects of the evaluation scenarios on the maximum water surface elevations have been determined for several locations throughout the system, which are shown in Figure 10. The effects relative to Baseline 1 are provided in Tables 6 through 11; the effects relative to Baseline 2 are provided in Tables 12 through 17. The effects on peak flows throughout the system are provided in Table 18 for Baseline 1 and in Table 19 for Baseline 2.

**Table 6. Maximum Water Surface Elevation and Change from Baseline 1, 1/10 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 42.59 | 42.43 | 42.50 | 42.44 | 42.50 | -0.16 | -0.09 | -0.15 | -0.09 |
| 2 | American R. at H Street (6.580) | 37.85 | 37.56 | 37.69 | 37.57 | 37.69 | -0.29 | -0.16 | -0.28 | -0.16 |
| 3 | American R. at CA-160 (2.036) | 32.21 | 31.46 | 31.81 | 31.47 | 31.82 | -0.75 | -0.40 | -0.74 | -0.39 |
| 4 | Cache Slough at Miner Slough (18.557) | 12.21 | 12.26 | 12.24 | 12.25 | 12.24 | +0.05 | +0.03 | +0.04 | +0.03 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 10.06 | 10.06 | 10.06 | 10.06 | 10.06 | 0 | 0 | 0 | 0 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 12.65 | 12.72 | 12.69 | 12.71 | 12.69 | +0.07 | +0.04 | +0.06 | +0.04 |
| 7 | Ship Channel at Cache Slough (18.854) | 12.21 | 12.26 | 12.24 | 12.25 | 12.24 | +0.05 | +0.03 | +0.04 | +0.03 |
| 8 | Feather R. at Yuba R. (107.463) | 69.59 | 69.59 | 69.59 | 69.59 | 69.59 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 59.79 | 59.79 | 59.79 | 59.79 | 59.79 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 51.01 | 51.00 | 51.01 | 51.00 | 51.01 | -0.01 | 0 | -0.01 | 0 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 39.04 | 38.93 | 39.02 | 38.91 | 39.00 | -0.11 | -0.02 | -0.13 | -0.04 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 39.03 | 38.92 | 39.01 | 38.91 | 38.99 | -0.11 | -0.02 | -0.12 | -0.04 |
| 13 | NEMDC below Robla Creek (6.288) | 33.64 | 33.22 | 33.47 | 33.22 | 33.47 | -0.42 | -0.17 | -0.42 | -0.17 |
| 14 | NEMDC at Arcade Creek (3.598) | 32.61 | 32.02 | 32.39 | 32.01 | 32.39 | -0.59 | -0.22 | -0.60 | -0.22 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 28.28 | 27.32 | 27.22 | 27.22 | 27.14 | -0.96 | -1.06 | -1.06 | -1.14 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 66.72 | 66.72 | 66.72 | 66.72 | 66.72 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 60.32 | 60.32 | 60.32 | 60.32 | 60.32 | 0 | 0 | 0 | 0 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 51.42 | 51.41 | 51.42 | 51.41 | 51.41 | -0.01 | 0 | -0.01 | -0.01 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 40.20 | 40.15 | 40.19 | 40.13 | 40.17 | -0.05 | -0.01 | -0.07 | -0.03 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 38.76 | 38.69 | 38.74 | 38.67 | 38.72 | -0.07 | -0.02 | -0.09 | -0.04 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 38.98 | 38.90 | 38.95 | 38.87 | 38.93 | -0.08 | -0.03 | -0.11 | -0.05 |
| 22 | Sacramento R. at Verona gage (78.741) | 38.87 | 38.74 | 38.83 | 38.73 | 38.81 | -0.13 | -0.04 | -0.14 | -0.06 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 34.56 | 33.96 | 34.42 | 33.95 | 34.41 | -0.60 | -0.14 | -0.61 | -0.15 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 31.40 | 30.52 | 31.01 | 30.51 | 31.00 | -0.88 | -0.39 | -0.89 | -0.40 |
| 25 | Sacramento R. at I Street gage (59.789) | 30.94 | 30.08 | 30.50 | 30.08 | 30.50 | -0.86 | -0.44 | -0.86 | -0.44 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 26.46 | 25.74 | 26.13 | 25.74 | 26.13 | -0.72 | -0.33 | -0.72 | -0.33 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 24.89 | 24.21 | 24.58 | 24.22 | 24.58 | -0.68 | -0.31 | -0.67 | -0.31 |
| 28 | Sacramento R. at Clarksburg (42.446) | 23.21 | 22.59 | 22.93 | 22.59 | 22.93 | -0.62 | -0.28 | -0.62 | -0.28 |

**Table 6. Maximum Water Surface Elevation and Change from Baseline 1, 1/10 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 29 | Sacramento R. at Hood (38.701) | 21.47 | 20.91 | 21.21 | 20.92 | 21.21 | -0.56 | -0.26 | -0.55 | -0.26 |
| 30 | Sacramento R. at Courtland (34.733) | 19.70 | 19.20 | 19.46 | 19.21 | 19.47 | -0.50 | -0.24 | -0.49 | -0.23 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 15.91 | 15.57 | 15.74 | 15.57 | 15.74 | -0.34 | -0.17 | -0.34 | -0.17 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 10.06 | 10.07 | 10.07 | 10.07 | 10.07 | +0.01 | +0.01 | +0.01 | +0.01 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 14.08 | 13.84 | 13.96 | 13.84 | 13.96 | -0.24 | -0.12 | -0.24 | -0.12 |
| 34 | Sutter Bypass at CA-20 (87.642) | 52.06 | 52.05 | 52.06 | 52.05 | 52.06 | -0.01 | 0 | -0.01 | 0 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 50.18 | 50.18 | 50.18 | 50.17 | 50.18 | 0 | 0 | -0.01 | 0 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 46.53 | 46.52 | 46.53 | 46.51 | 46.53 | -0.01 | 0 | -0.02 | 0 |
| 37 | Sutter Bypass at CA-113 (71.442) | 45.31 | 45.29 | 45.30 | 45.28 | 45.30 | -0.02 | -0.01 | -0.03 | -0.01 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 44.24 | 44.20 | 44.23 | 44.20 | 44.22 | -0.04 | -0.01 | -0.04 | -0.02 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 39.51 | 39.43 | 39.48 | 39.41 | 39.46 | -0.08 | -0.03 | -0.10 | -0.05 |
| 40 | Sutter Slough at Miner Slough (2.336) | 15.32 | 15.05 | 15.19 | 15.05 | 15.19 | -0.27 | -0.13 | -0.27 | -0.13 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 33.35 | 33.28 | 33.33 | 33.11 | 33.15 | -0.07 | -0.02 | -0.24 | -0.20 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 30.56 | 30.53 | 30.55 | 30.08 | 30.10 | -0.03 | -0.01 | -0.48 | -0.46 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 26.65 | 26.70 | 26.62 | 26.70 | 26.62 | +0.05 | -0.03 | +0.05 | -0.03 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 26.15 | 26.20 | 26.13 | 26.20 | 26.12 | +0.05 | -0.02 | +0.05 | -0.03 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 25.99 | 26.04 | 25.96 | 26.03 | 25.96 | +0.05 | -0.03 | +0.04 | -0.03 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 23.55 | 23.60 | 23.53 | 23.59 | 23.53 | +0.05 | -0.02 | +0.04 | -0.02 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 21.13 | 21.17 | 21.12 | 21.17 | 21.11 | +0.04 | -0.01 | +0.04 | -0.02 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 16.85 | 16.89 | 16.86 | 16.89 | 16.86 | +0.04 | +0.01 | +0.04 | +0.01 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 14.59 | 14.67 | 14.64 | 14.67 | 14.64 | +0.08 | +0.05 | +0.08 | +0.05 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 13.02 | 13.08 | 13.06 | 13.08 | 13.05 | +0.06 | +0.04 | +0.06 | +0.03 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 7. Maximum Water Surface Elevation and Change from Baseline 1, 1/25 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 46.70 | 46.58 | 46.62 | 46.58 | 46.62 | -0.12 | -0.08 | -0.12 | -0.08 |
| 2 | American R. at H Street (6.580) | 40.96 | 40.68 | 40.78 | 40.68 | 40.78 | -0.28 | -0.18 | -0.28 | -0.18 |
| 3 | American R. at CA-160 (2.036) | 33.95 | 32.79 | 33.13 | 32.79 | 33.12 | -1.16 | -0.82 | -1.16 | -0.83 |
| 4 | Cache Slough at Miner Slough (18.557) | 14.94 | 15.03 | 15.02 | 15.04 | 15.02 | +0.09 | +0.08 | +0.10 | +0.08 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 11.39 | 11.44 | 11.44 | 11.45 | 11.44 | +0.05 | +0.05 | +0.06 | +0.05 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 15.59 | 15.66 | 15.65 | 15.67 | 15.65 | +0.07 | +0.06 | +0.08 | +0.06 |
| 7 | Ship Channel at Cache Slough (18.854) | 14.94 | 15.03 | 15.02 | 15.04 | 15.02 | +0.09 | +0.08 | +0.10 | +0.08 |
| 8 | Feather R. at Yuba R. (107.463) | 71.56 | 71.56 | 71.56 | 71.56 | 71.56 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 62.01 | 62.01 | 62.01 | 62.01 | 62.01 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 52.90 | 52.90 | 52.90 | 52.89 | 52.90 | 0 | 0 | -0.01 | 0 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 40.67 | 40.56 | 40.58 | 40.52 | 40.54 | -0.11 | -0.09 | -0.15 | -0.13 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 40.52 | 40.42 | 40.43 | 40.37 | 40.40 | -0.10 | -0.09 | -0.15 | -0.12 |
| 13 | NEMDC below Robla Creek (6.288) | 36.41 | 35.99 | 36.17 | 35.99 | 36.17 | -0.42 | -0.24 | -0.42 | -0.24 |
| 14 | NEMDC at Arcade Creek (3.598) | 35.03 | 34.39 | 34.66 | 34.39 | 34.65 | -0.64 | -0.37 | -0.64 | -0.38 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 30.98 | 29.97 | 29.93 | 29.88 | 29.84 | -1.01 | -1.05 | -1.10 | -1.14 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.45 | 67.45 | 67.45 | 67.45 | 67.45 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.09 | 61.09 | 61.09 | 61.09 | 61.09 | 0 | 0 | 0 | 0 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 52.25 | 52.24 | 52.24 | 52.24 | 52.24 | -0.01 | -0.01 | -0.01 | -0.01 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 41.45 | 41.41 | 41.42 | 41.36 | 41.37 | -0.04 | -0.03 | -0.09 | -0.08 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 40.03 | 39.97 | 39.98 | 39.92 | 39.93 | -0.06 | -0.05 | -0.11 | -0.10 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 40.31 | 40.24 | 40.25 | 40.19 | 40.20 | -0.07 | -0.06 | -0.12 | -0.11 |
| 22 | Sacramento R. at Verona gage (78.741) | 40.30 | 40.18 | 40.20 | 40.14 | 40.16 | -0.12 | -0.10 | -0.16 | -0.14 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 35.82 | 35.11 | 35.24 | 35.06 | 35.20 | -0.71 | -0.58 | -0.76 | -0.62 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 32.61 | 31.23 | 31.44 | 31.16 | 31.42 | -1.38 | -1.17 | -1.45 | -1.19 |
| 25 | Sacramento R. at I Street gage (59.789) | 32.23 | 30.85 | 31.08 | 30.79 | 31.05 | -1.38 | -1.15 | -1.44 | -1.18 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 27.64 | 26.52 | 26.70 | 26.47 | 26.68 | -1.12 | -0.94 | -1.17 | -0.96 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 26.04 | 25.01 | 25.16 | 24.96 | 25.14 | -1.03 | -0.88 | -1.08 | -0.90 |
| 28 | Sacramento R. at Clarksburg (42.446) | 24.32 | 23.40 | 23.54 | 23.35 | 23.51 | -0.92 | -0.78 | -0.97 | -0.81 |
| 29 | Sacramento R. at Hood (38.701) | 22.55 | 21.74 | 21.87 | 21.70 | 21.84 | -0.81 | -0.68 | -0.85 | -0.71 |

**Table 7. Maximum Water Surface Elevation and Change from Baseline 1, 1/25 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 30 | Sacramento R. at Courtland (34.733) | 20.73 | 20.06 | 20.17 | 20.03 | 20.15 | -0.67 | -0.56 | -0.70 | -0.58 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 16.89 | 16.44 | 16.51 | 16.42 | 16.50 | -0.45 | -0.38 | -0.47 | -0.39 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 11.41 | 11.46 | 11.45 | 11.46 | 11.45 | +0.05 | +0.04 | +0.05 | +0.04 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 15.27 | 14.98 | 15.03 | 14.97 | 15.02 | -0.29 | -0.24 | -0.30 | -0.25 |
| 34 | Sutter Bypass at CA-20 (87.642) | 53.90 | 53.89 | 53.89 | 53.89 | 53.89 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 51.98 | 51.97 | 51.97 | 51.97 | 51.97 | -0.01 | -0.01 | -0.01 | -0.01 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 48.34 | 48.33 | 48.33 | 48.32 | 48.32 | -0.01 | -0.01 | -0.02 | -0.02 |
| 37 | Sutter Bypass at CA-113 (71.442) | 46.98 | 46.97 | 46.97 | 46.95 | 46.96 | -0.01 | -0.01 | -0.03 | -0.02 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 45.86 | 45.83 | 45.84 | 45.82 | 45.83 | -0.03 | -0.02 | -0.04 | -0.03 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 40.86 | 40.79 | 40.80 | 40.74 | 40.76 | -0.07 | -0.06 | -0.12 | -0.10 |
| 40 | Sutter Slough at Miner Slough (2.336) | 16.71 | 16.44 | 16.48 | 16.43 | 16.48 | -0.27 | -0.23 | -0.28 | -0.23 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 35.17 | 35.11 | 35.12 | 34.88 | 34.89 | -0.06 | -0.05 | -0.29 | -0.28 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 32.48 | 32.46 | 32.47 | 32.06 | 32.06 | -0.02 | -0.01 | -0.42 | -0.42 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 29.12 | 29.26 | 29.25 | 29.27 | 29.25 | +0.14 | +0.13 | +0.15 | +0.13 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 28.53 | 28.67 | 28.65 | 28.67 | 28.66 | +0.14 | +0.12 | +0.14 | +0.13 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 28.33 | 28.46 | 28.44 | 28.47 | 28.45 | +0.13 | +0.11 | +0.14 | +0.12 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 25.71 | 25.83 | 25.82 | 25.84 | 25.82 | +0.12 | +0.11 | +0.13 | +0.11 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 23.16 | 23.26 | 23.25 | 23.27 | 23.25 | +0.10 | +0.09 | +0.11 | +0.09 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 19.74 | 19.85 | 19.84 | 19.86 | 19.84 | +0.11 | +0.10 | +0.12 | +0.10 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 17.56 | 17.65 | 17.64 | 17.66 | 17.65 | +0.09 | +0.08 | +0.10 | +0.09 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 15.98 | 16.06 | 16.04 | 16.06 | 16.05 | +0.08 | +0.06 | +0.08 | +0.07 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 8. Maximum Water Surface Elevation and Change from Baseline1, 1/50 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 48.78 | 48.56 | 48.57 | 48.55 | 48.56 | -0.22 | -0.21 | -0.23 | -0.22 |
| 2 | American R. at H Street (6.580) | 42.89 | 42.43 | 42.44 | 42.40 | 42.42 | -0.46 | -0.45 | -0.49 | -0.47 |
| 3 | American R. at CA-160 (2.036) | 35.88 | 34.41 | 34.47 | 34.33 | 34.40 | -1.47 | -1.41 | -1.55 | -1.48 |
| 4 | Cache Slough at Miner Slough (18.557) | 16.27 | 16.36 | 16.36 | 16.36 | 16.36 | +0.09 | +0.09 | +0.09 | +0.09 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 12.32 | 12.33 | 12.33 | 12.33 | 12.33 | +0.01 | +0.01 | +0.01 | +0.01 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 16.90 | 16.98 | 16.98 | 16.99 | 16.99 | +0.08 | +0.08 | +0.09 | +0.09 |
| 7 | Ship Channel at Cache Slough (18.854) | 16.27 | 16.36 | 16.36 | 16.36 | 16.36 | +0.09 | +0.09 | +0.09 | +0.09 |
| 8 | Feather R. at Yuba R. (107.463) | 73.62 | 73.62 | 73.62 | 73.62 | 73.62 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 64.35 | 64.34 | 64.34 | 64.34 | 64.34 | -0.01 | -0.01 | -0.01 | -0.01 |
| 10 | Feather R. at Bear R. (92.334) | 54.98 | 54.97 | 54.97 | 54.97 | 54.97 | -0.01 | -0.01 | -0.01 | -0.01 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 41.85 | 41.71 | 41.72 | 41.67 | 41.68 | -0.14 | -0.13 | -0.18 | -0.17 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 41.85 | 41.71 | 41.72 | 41.67 | 41.68 | -0.14 | -0.13 | -0.18 | -0.17 |
| 13 | NEMDC below Robla Creek (6.288) | 37.64 | 36.65 | 36.79 | 36.61 | 36.79 | -0.99 | -0.85 | -1.03 | -0.85 |
| 14 | NEMDC at Arcade Creek (3.598) | 36.66 | 35.40 | 35.46 | 35.34 | 35.40 | -1.26 | -1.20 | -1.32 | -1.26 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 32.55 | 31.31 | 31.30 | 31.20 | 31.19 | -1.24 | -1.25 | -1.35 | -1.36 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.56 | 67.56 | 67.56 | 67.56 | 67.56 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.23 | 61.22 | 61.23 | 61.22 | 61.22 | -0.01 | 0 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 52.67 | 52.66 | 52.66 | 52.65 | 52.65 | -0.01 | -0.01 | -0.02 | -0.02 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 42.61 | 42.55 | 42.55 | 42.50 | 42.51 | -0.06 | -0.06 | -0.11 | -0.10 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 41.34 | 41.26 | 41.27 | 41.21 | 41.21 | -0.08 | -0.07 | -0.13 | -0.13 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 41.70 | 41.61 | 41.61 | 41.56 | 41.56 | -0.09 | -0.09 | -0.14 | -0.14 |
| 22 | Sacramento R. at Verona gage (78.741) | 41.68 | 41.53 | 41.54 | 41.49 | 41.49 | -0.15 | -0.14 | -0.19 | -0.19 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 37.27 | 36.39 | 36.43 | 36.33 | 36.37 | -0.88 | -0.84 | -0.94 | -0.90 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 34.23 | 32.36 | 32.43 | 32.26 | 32.34 | -1.87 | -1.80 | -1.97 | -1.89 |
| 25 | Sacramento R. at I Street gage (59.789) | 33.86 | 32.04 | 32.10 | 31.94 | 32.02 | -1.82 | -1.76 | -1.92 | -1.84 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 28.99 | 27.59 | 27.65 | 27.52 | 27.57 | -1.40 | -1.34 | -1.47 | -1.42 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 27.35 | 26.05 | 26.10 | 25.98 | 26.03 | -1.30 | -1.25 | -1.37 | -1.32 |
| 28 | Sacramento R. at Clarksburg (42.446) | 25.56 | 24.40 | 24.45 | 24.34 | 24.38 | -1.16 | -1.11 | -1.22 | -1.18 |
| 29 | Sacramento R. at Hood (38.701) | 23.72 | 22.70 | 22.75 | 22.66 | 22.69 | -1.02 | -0.97 | -1.06 | -1.03 |

**Table 8. Maximum Water Surface Elevation and Change from Baseline1, 1/50 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 30 | Sacramento R. at Courtland (34.733) | 21.84 | 20.98 | 21.02 | 20.94 | 20.97 | -0.86 | -0.82 | -0.90 | -0.87 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 17.81 | 17.25 | 17.28 | 17.23 | 17.25 | -0.56 | -0.53 | -0.58 | -0.56 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 12.27 | 12.28 | 12.28 | 12.28 | 12.28 | +0.01 | +0.01 | +0.01 | +0.01 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 16.25 | 15.92 | 15.94 | 15.91 | 15.92 | -0.33 | -0.31 | -0.34 | -0.33 |
| 34 | Sutter Bypass at CA-20 (87.642) | 54.88 | 54.87 | 54.87 | 54.87 | 54.87 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 53.03 | 53.02 | 53.02 | 53.02 | 53.02 | -0.01 | -0.01 | -0.01 | -0.01 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 49.79 | 49.76 | 49.77 | 49.75 | 49.75 | -0.03 | -0.02 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 48.61 | 48.58 | 48.58 | 48.57 | 48.57 | -0.03 | -0.03 | -0.04 | -0.04 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 47.62 | 47.58 | 47.58 | 47.56 | 47.56 | -0.04 | -0.04 | -0.06 | -0.06 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 42.30 | 42.20 | 42.21 | 42.16 | 42.17 | -0.10 | -0.09 | -0.14 | -0.13 |
| 40 | Sutter Slough at Miner Slough (2.336) | 17.74 | 17.48 | 17.50 | 17.47 | 17.48 | -0.26 | -0.24 | -0.27 | -0.26 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 36.52 | 36.47 | 36.48 | 36.26 | 36.27 | -0.05 | -0.04 | -0.26 | -0.25 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 33.67 | 33.69 | 33.69 | 33.29 | 33.30 | +0.02 | +0.02 | -0.38 | -0.37 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 30.36 | 30.51 | 30.51 | 30.52 | 30.52 | +0.15 | +0.15 | +0.16 | +0.16 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 29.71 | 29.85 | 29.85 | 29.86 | 29.86 | +0.14 | +0.14 | +0.15 | +0.15 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 29.48 | 29.62 | 29.62 | 29.62 | 29.62 | +0.14 | +0.14 | +0.14 | +0.14 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 26.77 | 26.91 | 26.91 | 26.92 | 26.92 | +0.14 | +0.14 | +0.15 | +0.15 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 24.20 | 24.33 | 24.33 | 24.34 | 24.34 | +0.13 | +0.13 | +0.14 | +0.14 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 21.04 | 21.18 | 21.17 | 21.19 | 21.19 | +0.14 | +0.13 | +0.15 | +0.15 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 18.84 | 18.96 | 18.95 | 18.97 | 18.96 | +0.12 | +0.11 | +0.13 | +0.12 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 17.26 | 17.35 | 17.35 | 17.36 | 17.36 | +0.09 | +0.09 | +0.10 | +0.10 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 9. Maximum Water Surface Elevation and Change from Baseline 1, 1/100 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 48.85 | 48.63 | 48.63 | 48.62 | 48.62 | -0.22 | -0.22 | -0.23 | -0.23 |
| 2 | American R. at H Street (6.580) | 43.05 | 42.57 | 42.58 | 42.55 | 42.56 | -0.48 | -0.47 | -0.50 | -0.49 |
| 3 | American R. at CA-160 (2.036) | 36.33 | 34.89 | 34.93 | 34.81 | 34.86 | -1.44 | -1.40 | -1.52 | -1.47 |
| 4 | Cache Slough at Miner Slough (18.557) | 16.99 | 17.07 | 17.06 | 17.07 | 17.07 | +0.08 | +0.07 | +0.08 | +0.08 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 12.87 | 12.88 | 12.88 | 12.88 | 12.88 | +0.01 | +0.01 | +0.01 | +0.01 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 17.62 | 17.70 | 17.69 | 17.70 | 17.70 | +0.08 | +0.07 | +0.08 | +0.08 |
| 7 | Ship Channel at Cache Slough (18.854) | 16.99 | 17.07 | 17.06 | 17.07 | 17.07 | +0.08 | +0.07 | +0.08 | +0.08 |
| 8 | Feather R. at Yuba R. (107.463) | 74.33 | 74.33 | 74.33 | 74.33 | 74.33 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 65.13 | 65.12 | 65.13 | 65.12 | 65.12 | -0.01 | 0 | -0.01 | -0.01 |
| 10 | Feather R. at Bear R. (92.334) | 55.64 | 55.63 | 55.63 | 55.63 | 55.63 | -0.01 | -0.01 | -0.01 | -0.01 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 42.33 | 42.20 | 42.21 | 42.16 | 42.17 | -0.13 | -0.12 | -0.17 | -0.16 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 42.36 | 42.22 | 42.23 | 42.17 | 42.18 | -0.14 | -0.13 | -0.19 | -0.18 |
| 13 | NEMDC below Robla Creek (6.288) | 38.79 | 38.13 | 38.24 | 38.12 | 38.23 | -0.66 | -0.55 | -0.67 | -0.56 |
| 14 | NEMDC at Arcade Creek (3.598) | 37.48 | 36.34 | 36.37 | 36.28 | 36.32 | -1.14 | -1.11 | -1.20 | -1.16 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 33.07 | 31.89 | 31.89 | 31.78 | 31.78 | -1.18 | -1.18 | -1.29 | -1.29 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.77 | 67.77 | 67.77 | 67.77 | 67.77 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.47 | 61.46 | 61.46 | 61.46 | 61.46 | -0.01 | -0.01 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 53.03 | 53.01 | 53.02 | 53.00 | 53.01 | -0.02 | -0.01 | -0.03 | -0.02 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 43.10 | 43.03 | 43.03 | 42.98 | 42.98 | -0.07 | -0.07 | -0.12 | -0.12 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 41.83 | 41.75 | 41.76 | 41.70 | 41.70 | -0.08 | -0.07 | -0.13 | -0.13 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 42.22 | 42.12 | 42.12 | 42.06 | 42.07 | -0.10 | -0.10 | -0.16 | -0.15 |
| 22 | Sacramento R. at Verona gage (78.741) | 42.20 | 42.04 | 42.04 | 41.99 | 42.00 | -0.16 | -0.16 | -0.21 | -0.20 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 37.77 | 36.91 | 36.94 | 36.85 | 36.88 | -0.86 | -0.83 | -0.92 | -0.89 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 34.72 | 32.93 | 32.97 | 32.83 | 32.88 | -1.79 | -1.75 | -1.89 | -1.84 |
| 25 | Sacramento R. at I Street gage (59.789) | 34.34 | 32.59 | 32.63 | 32.50 | 32.54 | -1.75 | -1.71 | -1.84 | -1.80 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 29.44 | 28.10 | 28.13 | 28.03 | 28.06 | -1.34 | -1.31 | -1.41 | -1.38 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 27.79 | 26.56 | 26.58 | 26.49 | 26.52 | -1.23 | -1.21 | -1.30 | -1.27 |
| 28 | Sacramento R. at Clarksburg (42.446) | 26.00 | 24.89 | 24.91 | 24.83 | 24.86 | -1.11 | -1.09 | -1.17 | -1.14 |
| 29 | Sacramento R. at Hood (38.701) | 24.17 | 23.19 | 23.21 | 23.13 | 23.16 | -0.98 | -0.96 | -1.04 | -1.01 |

**Table 9. Maximum Water Surface Elevation and Change from Baseline 1, 1/100 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 30 | Sacramento R. at Courtland (34.733) | 22.27 | 21.46 | 21.47 | 21.41 | 21.43 | -0.81 | -0.80 | -0.86 | -0.84 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 18.20 | 17.69 | 17.70 | 17.66 | 17.68 | -0.51 | -0.50 | -0.54 | -0.52 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 12.78 | 12.79 | 12.79 | 12.79 | 12.79 | +0.01 | +0.01 | +0.01 | +0.01 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 16.73 | 16.44 | 16.45 | 16.43 | 16.43 | -0.29 | -0.28 | -0.30 | -0.30 |
| 34 | Sutter Bypass at CA-20 (87.642) | 55.73 | 55.72 | 55.72 | 55.72 | 55.72 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 53.85 | 53.84 | 53.84 | 53.84 | 53.84 | -0.01 | -0.01 | -0.01 | -0.01 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 50.53 | 50.50 | 50.51 | 50.49 | 50.49 | -0.03 | -0.02 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 49.28 | 49.25 | 49.25 | 49.24 | 49.24 | -0.03 | -0.03 | -0.04 | -0.04 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 48.25 | 48.21 | 48.21 | 48.19 | 48.19 | -0.04 | -0.04 | -0.06 | -0.06 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 42.82 | 42.72 | 42.72 | 42.67 | 42.68 | -0.10 | -0.10 | -0.15 | -0.14 |
| 40 | Sutter Slough at Miner Slough (2.336) | 18.27 | 18.07 | 18.07 | 18.06 | 18.06 | -0.20 | -0.20 | -0.21 | -0.21 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 37.13 | 37.08 | 37.08 | 36.87 | 36.87 | -0.05 | -0.05 | -0.26 | -0.26 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 34.26 | 34.27 | 34.27 | 33.88 | 33.89 | +0.01 | +0.01 | -0.38 | -0.37 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 31.00 | 31.15 | 31.15 | 31.17 | 31.17 | +0.15 | +0.15 | +0.17 | +0.17 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 30.32 | 30.47 | 30.47 | 30.48 | 30.48 | +0.15 | +0.15 | +0.16 | +0.16 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 30.08 | 30.22 | 30.22 | 30.23 | 30.23 | +0.14 | +0.14 | +0.15 | +0.15 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 27.40 | 27.53 | 27.53 | 27.54 | 27.54 | +0.13 | +0.13 | +0.14 | +0.14 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 24.83 | 24.95 | 24.95 | 24.96 | 24.96 | +0.12 | +0.12 | +0.13 | +0.13 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 21.76 | 21.89 | 21.88 | 21.90 | 21.89 | +0.13 | +0.12 | +0.14 | +0.13 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 19.52 | 19.62 | 19.61 | 19.62 | 19.62 | +0.10 | +0.09 | +0.10 | +0.10 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 17.94 | 18.02 | 18.02 | 18.02 | 18.02 | +0.08 | +0.08 | +0.08 | +0.08 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 10. Maximum Water Surface Elevation and Change from Baseline 1, 1/200 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 49.09 | 48.88 | 48.89 | 48.87 | 48.88 | -0.21 | -0.20 | -0.22 | -0.21 |
| 2 | American R. at H Street (6.580) | 43.23 | 42.79 | 42.80 | 42.77 | 42.78 | -0.44 | -0.43 | -0.46 | -0.45 |
| 3 | American R. at CA-160 (2.036) | 36.81 | 35.42 | 35.44 | 35.34 | 35.37 | -1.39 | -1.37 | -1.47 | -1.44 |
| 4 | Cache Slough at Miner Slough (18.557) | 17.86 | 17.93 | 17.93 | 17.94 | 17.94 | +0.07 | +0.07 | +0.08 | +0.08 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 13.59 | 13.60 | 13.60 | 13.61 | 13.61 | +0.01 | +0.01 | +0.02 | +0.02 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 18.51 | 18.59 | 18.58 | 18.60 | 18.60 | +0.08 | +0.07 | +0.09 | +0.09 |
| 7 | Ship Channel at Cache Slough (18.854) | 17.86 | 17.93 | 17.93 | 17.94 | 17.94 | +0.07 | +0.07 | +0.08 | +0.08 |
| 8 | Feather R. at Yuba R. (107.463) | 74.95 | 74.95 | 74.95 | 74.95 | 74.95 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 65.82 | 65.82 | 65.82 | 65.82 | 65.82 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 56.25 | 56.24 | 56.24 | 56.24 | 56.24 | -0.01 | -0.01 | -0.01 | -0.01 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 43.06 | 42.91 | 42.91 | 42.85 | 42.86 | -0.15 | -0.15 | -0.21 | -0.20 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 42.92 | 42.75 | 42.76 | 42.69 | 42.70 | -0.17 | -0.16 | -0.23 | -0.22 |
| 13 | NEMDC below Robla Creek (6.288) | 39.93 | 39.37 | 39.43 | 39.35 | 39.43 | -0.56 | -0.50 | -0.58 | -0.50 |
| 14 | NEMDC at Arcade Creek (3.598) | 38.30 | 37.24 | 37.25 | 37.18 | 37.20 | -1.06 | -1.05 | -1.12 | -1.10 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 33.62 | 32.50 | 32.49 | 32.40 | 32.40 | -1.12 | -1.13 | -1.22 | -1.22 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.98 | 67.97 | 67.97 | 67.97 | 67.97 | -0.01 | -0.01 | -0.01 | -0.01 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.74 | 61.73 | 61.73 | 61.73 | 61.73 | -0.01 | -0.01 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 53.41 | 53.39 | 53.39 | 53.39 | 53.39 | -0.02 | -0.02 | -0.02 | -0.02 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 43.57 | 43.49 | 43.50 | 43.44 | 43.44 | -0.08 | -0.07 | -0.13 | -0.13 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 42.32 | 42.23 | 42.24 | 42.17 | 42.17 | -0.09 | -0.08 | -0.15 | -0.15 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 42.73 | 42.61 | 42.62 | 42.55 | 42.56 | -0.12 | -0.11 | -0.18 | -0.17 |
| 22 | Sacramento R. at Verona gage (78.741) | 42.75 | 42.56 | 42.57 | 42.51 | 42.51 | -0.19 | -0.18 | -0.24 | -0.24 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 38.32 | 37.42 | 37.42 | 37.34 | 37.36 | -0.90 | -0.90 | -0.98 | -0.96 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 35.24 | 33.52 | 33.54 | 33.43 | 33.45 | -1.72 | -1.70 | -1.81 | -1.79 |
| 25 | Sacramento R. at I Street gage (59.789) | 34.86 | 33.18 | 33.19 | 33.09 | 33.11 | -1.68 | -1.67 | -1.77 | -1.75 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 29.93 | 28.64 | 28.65 | 28.57 | 28.59 | -1.29 | -1.28 | -1.36 | -1.34 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 28.29 | 27.09 | 27.10 | 27.03 | 27.05 | -1.20 | -1.19 | -1.26 | -1.24 |
| 28 | Sacramento R. at Clarksburg (42.446) | 26.50 | 25.43 | 25.43 | 25.37 | 25.39 | -1.07 | -1.07 | -1.13 | -1.11 |
| 29 | Sacramento R. at Hood (38.701) | 24.65 | 23.73 | 23.73 | 23.68 | 23.71 | -0.92 | -0.92 | -0.97 | -0.94 |

**Table 10. Maximum Water Surface Elevation and Change from Baseline 1, 1/200 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 30 | Sacramento R. at Courtland (34.733) | 22.75 | 22.01 | 22.01 | 21.97 | 21.99 | -0.74 | -0.74 | -0.78 | -0.76 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 18.69 | 18.23 | 18.23 | 18.20 | 18.22 | -0.46 | -0.46 | -0.49 | -0.47 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 13.44 | 13.45 | 13.45 | 13.45 | 13.46 | +0.01 | +0.01 | +0.01 | +0.02 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 17.35 | 17.10 | 17.10 | 17.09 | 17.10 | -0.25 | -0.25 | -0.26 | -0.25 |
| 34 | Sutter Bypass at CA-20 (87.642) | 56.56 | 56.55 | 56.55 | 56.55 | 56.55 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 54.67 | 54.65 | 54.65 | 54.65 | 54.65 | -0.02 | -0.02 | -0.02 | -0.02 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 51.29 | 51.26 | 51.26 | 51.25 | 51.25 | -0.03 | -0.03 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 49.98 | 49.94 | 49.95 | 49.93 | 49.93 | -0.04 | -0.03 | -0.05 | -0.05 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 48.88 | 48.84 | 48.84 | 48.82 | 48.82 | -0.04 | -0.04 | -0.06 | -0.06 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 43.33 | 43.23 | 43.23 | 43.17 | 43.18 | -0.10 | -0.10 | -0.16 | -0.15 |
| 40 | Sutter Slough at Miner Slough (2.336) | 18.96 | 18.81 | 18.81 | 18.80 | 18.81 | -0.15 | -0.15 | -0.16 | -0.15 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 37.69 | 37.62 | 37.62 | 37.41 | 37.41 | -0.07 | -0.07 | -0.28 | -0.28 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 34.82 | 34.83 | 34.83 | 34.45 | 34.45 | +0.01 | +0.01 | -0.37 | -0.37 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 31.66 | 31.80 | 31.80 | 31.82 | 31.82 | +0.14 | +0.14 | +0.16 | +0.16 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 30.98 | 31.12 | 31.11 | 31.13 | 31.13 | +0.14 | +0.13 | +0.15 | +0.15 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 30.72 | 30.84 | 30.84 | 30.85 | 30.86 | +0.12 | +0.12 | +0.13 | +0.14 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 28.07 | 28.19 | 28.19 | 28.20 | 28.20 | +0.12 | +0.12 | +0.13 | +0.13 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 25.51 | 25.62 | 25.62 | 25.64 | 25.64 | +0.11 | +0.11 | +0.13 | +0.13 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 22.53 | 22.65 | 22.65 | 22.66 | 22.66 | +0.12 | +0.12 | +0.13 | +0.13 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 20.26 | 20.35 | 20.35 | 20.36 | 20.36 | +0.09 | +0.09 | +0.10 | +0.10 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 18.73 | 18.81 | 18.81 | 18.82 | 18.82 | +0.08 | +0.08 | +0.09 | +0.09 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 11. Maximum Water Surface Elevation and Change from Baseline 1, 1/325 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 55.96 | 55.93 | 55.93 | 53.91 | 53.91 | -0.03 | -0.03 | -2.05 | -2.05 |
| 2 | American R. at H Street (6.580) | 48.14 | 47.85 | 47.85 | 46.48 | 46.48 | -0.29 | -0.29 | -1.66 | -1.66 |
| 3 | American R. at CA-160 (2.036) | 39.34 | 37.90 | 37.92 | 36.89 | 36.91 | -1.44 | -1.42 | -2.45 | -2.43 |
| 4 | Cache Slough at Miner Slough (18.557) | 18.33 | 18.44 | 18.44 | 18.12 | 18.12 | +0.11 | +0.11 | -0.21 | -0.21 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 13.92 | 13.95 | 13.95 | 13.78 | 13.79 | +0.03 | +0.03 | -0.14 | -0.13 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 19.01 | 19.12 | 19.12 | 18.79 | 18.79 | +0.11 | +0.11 | -0.22 | -0.22 |
| 7 | Ship Channel at Cache Slough (18.854) | 18.33 | 18.44 | 18.44 | 18.12 | 18.12 | +0.11 | +0.11 | -0.21 | -0.21 |
| 8 | Feather R. at Yuba R. (107.463) | 75.42 | 75.42 | 75.42 | 75.42 | 75.42 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 66.33 | 66.33 | 66.33 | 66.33 | 66.33 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 56.70 | 56.69 | 56.69 | 56.68 | 56.68 | -0.01 | -0.01 | -0.02 | -0.02 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 43.52 | 43.37 | 43.37 | 43.29 | 43.30 | -0.15 | -0.15 | -0.23 | -0.22 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 43.52 | 43.36 | 43.36 | 43.29 | 43.29 | -0.16 | -0.16 | -0.23 | -0.23 |
| 13 | NEMDC below Robla Creek (6.288) | 41.00 | 39.87 | 39.89 | 38.90 | 39.00 | -1.13 | -1.11 | -2.10 | -2.00 |
| 14 | NEMDC at Arcade Creek (3.598) | 39.91 | 38.51 | 38.54 | 36.83 | 36.86 | -1.40 | -1.37 | -3.08 | -3.05 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 34.97 | 33.53 | 33.53 | 32.91 | 32.90 | -1.44 | -1.44 | -2.06 | -2.07 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 68.25 | 68.25 | 68.25 | 68.25 | 68.25 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 62.06 | 62.05 | 62.05 | 62.05 | 62.05 | -0.01 | -0.01 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 53.84 | 53.82 | 53.82 | 53.81 | 53.81 | -0.02 | -0.02 | -0.03 | -0.03 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 44.08 | 44.01 | 44.01 | 43.94 | 43.94 | -0.07 | -0.07 | -0.14 | -0.14 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 42.86 | 42.78 | 42.78 | 42.70 | 42.70 | -0.08 | -0.08 | -0.16 | -0.16 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 43.29 | 43.18 | 43.18 | 43.10 | 43.10 | -0.11 | -0.11 | -0.19 | -0.19 |
| 22 | Sacramento R. at Verona gage (78.741) | 43.35 | 43.17 | 43.18 | 43.10 | 43.10 | -0.18 | -0.17 | -0.25 | -0.25 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 39.15 | 38.02 | 38.03 | 37.85 | 37.86 | -1.13 | -1.12 | -1.30 | -1.29 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 36.76 | 34.50 | 34.53 | 33.93 | 33.97 | -2.26 | -2.23 | -2.83 | -2.79 |
| 25 | Sacramento R. at I Street gage (59.789) | 36.62 | 34.62 | 34.65 | 33.89 | 33.92 | -2.00 | -1.97 | -2.73 | -2.70 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 31.46 | 29.86 | 29.89 | 29.21 | 29.24 | -1.60 | -1.57 | -2.25 | -2.22 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 29.74 | 28.25 | 28.28 | 27.64 | 27.66 | -1.49 | -1.46 | -2.10 | -2.08 |
| 28 | Sacramento R. at Clarksburg (42.446) | 27.86 | 26.51 | 26.54 | 25.93 | 25.95 | -1.35 | -1.32 | -1.93 | -1.91 |
| 29 | Sacramento R. at Hood (38.701) | 25.91 | 24.72 | 24.75 | 24.19 | 24.21 | -1.19 | -1.16 | -1.72 | -1.70 |

**Table 11. Maximum Water Surface Elevation and Change from Baseline 1, 1/325 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 1 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 30 | Sacramento R. at Courtland (34.733) | 23.88 | 22.88 | 22.90 | 22.40 | 22.42 | -1.00 | -0.98 | -1.48 | -1.46 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 19.49 | 18.86 | 18.87 | 18.49 | 18.50 | -0.63 | -0.62 | -1.00 | -0.99 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 13.73 | 13.75 | 13.75 | 13.62 | 13.62 | +0.02 | +0.02 | -0.11 | -0.11 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 17.99 | 17.65 | 17.66 | 17.31 | 17.32 | -0.34 | -0.33 | -0.68 | -0.67 |
| 34 | Sutter Bypass at CA-20 (87.642) | 57.36 | 57.35 | 57.35 | 57.35 | 57.35 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 55.46 | 55.45 | 55.45 | 55.44 | 55.44 | -0.01 | -0.01 | -0.02 | -0.02 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 52.06 | 52.03 | 52.03 | 52.01 | 52.01 | -0.03 | -0.03 | -0.05 | -0.05 |
| 37 | Sutter Bypass at CA-113 (71.442) | 50.68 | 50.64 | 50.65 | 50.62 | 50.62 | -0.04 | -0.03 | -0.06 | -0.06 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 49.48 | 49.44 | 49.44 | 49.41 | 49.41 | -0.04 | -0.04 | -0.07 | -0.07 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 43.91 | 43.79 | 43.80 | 43.73 | 43.73 | -0.12 | -0.11 | -0.18 | -0.18 |
| 40 | Sutter Slough at Miner Slough (2.336) | 19.59 | 19.38 | 19.38 | 19.03 | 19.03 | -0.21 | -0.21 | -0.56 | -0.56 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 38.29 | 38.23 | 38.23 | 37.99 | 37.99 | -0.06 | -0.06 | -0.30 | -0.30 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 35.35 | 35.38 | 35.38 | 34.92 | 34.92 | +0.03 | +0.03 | -0.43 | -0.43 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 32.16 | 32.45 | 32.46 | 32.19 | 32.19 | +0.29 | +0.30 | +0.03 | +0.03 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 31.44 | 31.64 | 31.65 | 31.45 | 31.45 | +0.20 | +0.21 | +0.01 | +0.01 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 31.14 | 31.33 | 31.33 | 31.14 | 31.14 | +0.19 | +0.19 | 0 | 0 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 28.46 | 28.63 | 28.64 | 28.38 | 28.38 | +0.17 | +0.18 | -0.08 | -0.08 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 25.91 | 26.08 | 26.08 | 25.82 | 25.81 | +0.17 | +0.17 | -0.09 | -0.10 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 22.96 | 23.13 | 23.13 | 22.84 | 22.84 | +0.17 | +0.17 | -0.12 | -0.12 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 20.66 | 20.78 | 20.78 | 20.52 | 20.52 | +0.12 | +0.12 | -0.14 | -0.14 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 19.16 | 19.27 | 19.28 | 18.99 | 18.99 | +0.11 | +0.12 | -0.17 | -0.17 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 12. Maximum Water Surface Elevation and Change from Baseline 2, 1/10 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 42.59 | 42.43 | 42.50 | 42.44 | 42.50 | -0.16 | -0.09 | -0.15 | -0.09 |
| 2 | American R. at H Street (6.580) | 37.85 | 37.56 | 37.69 | 37.57 | 37.69 | -0.29 | -0.16 | -0.28 | -0.16 |
| 3 | American R. at CA-160 (2.036) | 32.20 | 31.46 | 31.81 | 31.47 | 31.82 | -0.74 | -0.39 | -0.73 | -0.38 |
| 4 | Cache Slough at Miner Slough (18.557) | 12.21 | 12.26 | 12.24 | 12.25 | 12.24 | +0.05 | +0.03 | +0.04 | +0.03 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 10.06 | 10.06 | 10.06 | 10.06 | 10.06 | 0 | 0 | 0 | 0 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 12.65 | 12.72 | 12.69 | 12.71 | 12.69 | +0.07 | +0.04 | +0.06 | +0.04 |
| 7 | Ship Channel at Cache Slough (18.854) | 12.21 | 12.26 | 12.24 | 12.25 | 12.24 | +0.05 | +0.03 | +0.04 | +0.03 |
| 8 | Feather R. at Yuba R. (107.463) | 69.59 | 69.59 | 69.59 | 69.59 | 69.59 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 59.79 | 59.79 | 59.79 | 59.79 | 59.79 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 51.01 | 51.00 | 51.01 | 51.00 | 51.01 | -0.01 | 0 | -0.01 | 0 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 39.04 | 38.93 | 39.02 | 38.91 | 39.00 | -0.11 | -0.02 | -0.13 | -0.04 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 39.04 | 38.92 | 39.01 | 38.91 | 38.99 | -0.12 | -0.03 | -0.13 | -0.05 |
| 13 | NEMDC below Robla Creek (6.288) | 33.64 | 33.22 | 33.47 | 33.22 | 33.47 | -0.42 | -0.17 | -0.42 | -0.17 |
| 14 | NEMDC at Arcade Creek (3.598) | 32.61 | 32.02 | 32.39 | 32.01 | 32.39 | -0.59 | -0.22 | -0.60 | -0.22 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 28.27 | 27.32 | 27.22 | 27.22 | 27.14 | -0.95 | -1.05 | -1.05 | -1.13 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 66.72 | 66.72 | 66.72 | 66.72 | 66.72 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 60.32 | 60.32 | 60.32 | 60.32 | 60.32 | 0 | 0 | 0 | 0 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 51.42 | 51.41 | 51.42 | 51.41 | 51.41 | -0.01 | 0 | -0.01 | -0.01 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 40.20 | 40.15 | 40.19 | 40.13 | 40.17 | -0.05 | -0.01 | -0.07 | -0.03 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 38.76 | 38.69 | 38.74 | 38.67 | 38.72 | -0.07 | -0.02 | -0.09 | -0.04 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 38.97 | 38.90 | 38.95 | 38.87 | 38.93 | -0.07 | -0.02 | -0.10 | -0.04 |
| 22 | Sacramento R. at Verona gage (78.741) | 38.87 | 38.74 | 38.83 | 38.73 | 38.81 | -0.13 | -0.04 | -0.14 | -0.06 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 34.56 | 33.96 | 34.42 | 33.95 | 34.41 | -0.60 | -0.14 | -0.61 | -0.15 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 31.43 | 30.52 | 31.01 | 30.51 | 31.00 | -0.91 | -0.42 | -0.92 | -0.43 |
| 25 | Sacramento R. at I Street gage (59.789) | 30.94 | 30.08 | 30.50 | 30.08 | 30.50 | -0.86 | -0.44 | -0.86 | -0.44 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 26.49 | 25.74 | 26.13 | 25.74 | 26.13 | -0.75 | -0.36 | -0.75 | -0.36 |

**Table 12. Maximum Water Surface Elevation and Change from Baseline 2, 1/10 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 24.92 | 24.21 | 24.58 | 24.22 | 24.58 | -0.71 | -0.34 | -0.70 | -0.34 |
| 28 | Sacramento R. at Clarksburg (42.446) | 23.23 | 22.59 | 22.93 | 22.59 | 22.93 | -0.64 | -0.30 | -0.64 | -0.30 |
| 29 | Sacramento R. at Hood (38.701) | 21.49 | 20.91 | 21.21 | 20.92 | 21.21 | -0.58 | -0.28 | -0.57 | -0.28 |
| 30 | Sacramento R. at Courtland (34.733) | 19.72 | 19.20 | 19.46 | 19.21 | 19.47 | -0.52 | -0.26 | -0.51 | -0.25 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 15.92 | 15.57 | 15.74 | 15.57 | 15.74 | -0.35 | -0.18 | -0.35 | -0.18 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 10.06 | 10.07 | 10.07 | 10.07 | 10.07 | +0.01 | +0.01 | +0.01 | +0.01 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 14.09 | 13.84 | 13.96 | 13.84 | 13.96 | -0.25 | -0.13 | -0.25 | -0.13 |
| 34 | Sutter Bypass at CA-20 (87.642) | 52.06 | 52.05 | 52.06 | 52.05 | 52.06 | -0.01 | 0 | -0.01 | 0 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 50.18 | 50.18 | 50.18 | 50.17 | 50.18 | 0 | 0 | -0.01 | 0 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 46.53 | 46.52 | 46.53 | 46.51 | 46.53 | -0.01 | 0 | -0.02 | 0 |
| 37 | Sutter Bypass at CA-113 (71.442) | 45.31 | 45.29 | 45.30 | 45.28 | 45.30 | -0.02 | -0.01 | -0.03 | -0.01 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 44.23 | 44.20 | 44.23 | 44.20 | 44.22 | -0.03 | 0 | -0.03 | -0.01 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 39.50 | 39.43 | 39.48 | 39.41 | 39.46 | -0.07 | -0.02 | -0.09 | -0.04 |
| 40 | Sutter Slough at Miner Slough (2.336) | 15.34 | 15.05 | 15.19 | 15.05 | 15.19 | -0.29 | -0.15 | -0.29 | -0.15 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 33.34 | 33.28 | 33.33 | 33.11 | 33.15 | -0.06 | -0.01 | -0.23 | -0.19 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 30.57 | 30.53 | 30.55 | 30.08 | 30.10 | -0.04 | -0.02 | -0.49 | -0.47 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 26.65 | 26.70 | 26.62 | 26.70 | 26.62 | +0.05 | -0.03 | +0.05 | -0.03 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 26.15 | 26.20 | 26.13 | 26.20 | 26.12 | +0.05 | -0.02 | +0.05 | -0.03 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 25.99 | 26.04 | 25.96 | 26.03 | 25.96 | +0.05 | -0.03 | +0.04 | -0.03 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 23.55 | 23.60 | 23.53 | 23.59 | 23.53 | +0.05 | -0.02 | +0.04 | -0.02 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 21.13 | 21.17 | 21.12 | 21.17 | 21.11 | +0.04 | -0.01 | +0.04 | -0.02 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 16.85 | 16.89 | 16.86 | 16.89 | 16.86 | +0.04 | +0.01 | +0.04 | +0.01 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 14.60 | 14.67 | 14.64 | 14.67 | 14.64 | +0.07 | +0.04 | +0.07 | +0.04 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 13.01 | 13.08 | 13.06 | 13.08 | 13.05 | +0.07 | +0.05 | +0.07 | +0.04 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 13. Maximum Water Surface Elevation and Change from Baseline 2, 1/25 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 46.70 | 46.58 | 46.62 | 46.58 | 46.62 | -0.12 | -0.08 | -0.12 | -0.08 |
| 2 | American R. at H Street (6.580) | 40.96 | 40.68 | 40.78 | 40.68 | 40.78 | -0.28 | -0.18 | -0.28 | -0.18 |
| 3 | American R. at CA-160 (2.036) | 33.95 | 32.79 | 33.13 | 32.79 | 33.12 | -1.16 | -0.82 | -1.16 | -0.83 |
| 4 | Cache Slough at Miner Slough (18.557) | 14.94 | 15.03 | 15.02 | 15.04 | 15.02 | +0.09 | +0.08 | +0.10 | +0.08 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 11.39 | 11.44 | 11.44 | 11.45 | 11.44 | +0.05 | +0.05 | +0.06 | +0.05 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 15.59 | 15.66 | 15.65 | 15.67 | 15.65 | +0.07 | +0.06 | +0.08 | +0.06 |
| 7 | Ship Channel at Cache Slough (18.854) | 14.94 | 15.03 | 15.02 | 15.04 | 15.02 | +0.09 | +0.08 | +0.10 | +0.08 |
| 8 | Feather R. at Yuba R. (107.463) | 71.56 | 71.56 | 71.56 | 71.56 | 71.56 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 62.01 | 62.01 | 62.01 | 62.01 | 62.01 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 52.90 | 52.90 | 52.90 | 52.89 | 52.90 | 0 | 0 | -0.01 | 0 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 40.67 | 40.56 | 40.58 | 40.52 | 40.54 | -0.11 | -0.09 | -0.15 | -0.13 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 40.52 | 40.42 | 40.43 | 40.37 | 40.40 | -0.10 | -0.09 | -0.15 | -0.12 |
| 13 | NEMDC below Robla Creek (6.288) | 36.41 | 35.99 | 36.17 | 35.99 | 36.17 | -0.42 | -0.24 | -0.42 | -0.24 |
| 14 | NEMDC at Arcade Creek (3.598) | 35.03 | 34.39 | 34.66 | 34.39 | 34.65 | -0.64 | -0.37 | -0.64 | -0.38 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 30.97 | 29.97 | 29.93 | 29.88 | 29.84 | -1.00 | -1.04 | -1.09 | -1.13 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.45 | 67.45 | 67.45 | 67.45 | 67.45 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.09 | 61.09 | 61.09 | 61.09 | 61.09 | 0 | 0 | 0 | 0 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 52.25 | 52.24 | 52.24 | 52.24 | 52.24 | -0.01 | -0.01 | -0.01 | -0.01 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 41.45 | 41.41 | 41.42 | 41.36 | 41.37 | -0.04 | -0.03 | -0.09 | -0.08 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 40.03 | 39.97 | 39.98 | 39.92 | 39.93 | -0.06 | -0.05 | -0.11 | -0.10 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 40.30 | 40.24 | 40.25 | 40.19 | 40.20 | -0.06 | -0.05 | -0.11 | -0.10 |
| 22 | Sacramento R. at Verona gage (78.741) | 40.30 | 40.18 | 40.20 | 40.14 | 40.16 | -0.12 | -0.10 | -0.16 | -0.14 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 35.81 | 35.11 | 35.24 | 35.06 | 35.20 | -0.70 | -0.57 | -0.75 | -0.61 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 32.61 | 31.23 | 31.44 | 31.16 | 31.42 | -1.38 | -1.17 | -1.45 | -1.19 |
| 25 | Sacramento R. at I Street gage (59.789) | 32.22 | 30.85 | 31.08 | 30.79 | 31.05 | -1.37 | -1.14 | -1.43 | -1.17 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 27.66 | 26.52 | 26.70 | 26.47 | 26.68 | -1.14 | -0.96 | -1.19 | -0.98 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 26.06 | 25.01 | 25.16 | 24.96 | 25.14 | -1.05 | -0.90 | -1.10 | -0.92 |

**Table 13. Maximum Water Surface Elevation and Change from Baseline 2, 1/25 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 28 | Sacramento R. at Clarksburg (42.446) | 24.34 | 23.40 | 23.54 | 23.35 | 23.51 | -0.94 | -0.80 | -0.99 | -0.83 |
| 29 | Sacramento R. at Hood (38.701) | 22.56 | 21.74 | 21.87 | 21.70 | 21.84 | -0.82 | -0.69 | -0.86 | -0.72 |
| 30 | Sacramento R. at Courtland (34.733) | 20.75 | 20.06 | 20.17 | 20.03 | 20.15 | -0.69 | -0.58 | -0.72 | -0.60 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 16.90 | 16.44 | 16.51 | 16.42 | 16.50 | -0.46 | -0.39 | -0.48 | -0.40 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 11.41 | 11.46 | 11.45 | 11.46 | 11.45 | +0.05 | +0.04 | +0.05 | +0.04 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 15.28 | 14.98 | 15.03 | 14.97 | 15.02 | -0.30 | -0.25 | -0.31 | -0.26 |
| 34 | Sutter Bypass at CA-20 (87.642) | 53.90 | 53.89 | 53.89 | 53.89 | 53.89 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 51.98 | 51.97 | 51.97 | 51.97 | 51.97 | -0.01 | -0.01 | -0.01 | -0.01 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 48.34 | 48.33 | 48.33 | 48.32 | 48.32 | -0.01 | -0.01 | -0.02 | -0.02 |
| 37 | Sutter Bypass at CA-113 (71.442) | 46.98 | 46.97 | 46.97 | 46.95 | 46.96 | -0.01 | -0.01 | -0.03 | -0.02 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 45.86 | 45.83 | 45.84 | 45.82 | 45.83 | -0.03 | -0.02 | -0.04 | -0.03 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 40.85 | 40.79 | 40.80 | 40.74 | 40.76 | -0.06 | -0.05 | -0.11 | -0.09 |
| 40 | Sutter Slough at Miner Slough (2.336) | 16.72 | 16.44 | 16.48 | 16.43 | 16.48 | -0.28 | -0.24 | -0.29 | -0.24 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 35.16 | 35.11 | 35.12 | 34.88 | 34.89 | -0.05 | -0.04 | -0.28 | -0.27 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 32.48 | 32.46 | 32.47 | 32.06 | 32.06 | -0.02 | -0.01 | -0.42 | -0.42 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 29.12 | 29.26 | 29.25 | 29.27 | 29.25 | +0.14 | +0.13 | +0.15 | +0.13 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 28.53 | 28.67 | 28.65 | 28.67 | 28.66 | +0.14 | +0.12 | +0.14 | +0.13 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 28.33 | 28.46 | 28.44 | 28.47 | 28.45 | +0.13 | +0.11 | +0.14 | +0.12 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 25.71 | 25.83 | 25.82 | 25.84 | 25.82 | +0.12 | +0.11 | +0.13 | +0.11 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 23.16 | 23.26 | 23.25 | 23.27 | 23.25 | +0.10 | +0.09 | +0.11 | +0.09 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 19.74 | 19.85 | 19.84 | 19.86 | 19.84 | +0.11 | +0.10 | +0.12 | +0.10 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 17.56 | 17.65 | 17.64 | 17.66 | 17.65 | +0.09 | +0.08 | +0.10 | +0.09 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 15.98 | 16.06 | 16.04 | 16.06 | 16.05 | +0.08 | +0.06 | +0.08 | +0.07 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 14. Maximum Water Surface Elevation and Change from Baseline 2, 1/50 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 48.78 | 48.56 | 48.57 | 48.55 | 48.56 | -0.22 | -0.21 | -0.23 | -0.22 |
| 2 | American R. at H Street (6.580) | 42.89 | 42.43 | 42.44 | 42.40 | 42.42 | -0.46 | -0.45 | -0.49 | -0.47 |
| 3 | American R. at CA-160 (2.036) | 35.87 | 34.41 | 34.47 | 34.33 | 34.40 | -1.46 | -1.40 | -1.54 | -1.47 |
| 4 | Cache Slough at Miner Slough (18.557) | 16.27 | 16.36 | 16.36 | 16.36 | 16.36 | +0.09 | +0.09 | +0.09 | +0.09 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 12.32 | 12.33 | 12.33 | 12.33 | 12.33 | +0.01 | +0.01 | +0.01 | +0.01 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 16.90 | 16.98 | 16.98 | 16.99 | 16.99 | +0.08 | +0.08 | +0.09 | +0.09 |
| 7 | Ship Channel at Cache Slough (18.854) | 16.27 | 16.36 | 16.36 | 16.36 | 16.36 | +0.09 | +0.09 | +0.09 | +0.09 |
| 8 | Feather R. at Yuba R. (107.463) | 73.62 | 73.62 | 73.62 | 73.62 | 73.62 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 64.35 | 64.34 | 64.34 | 64.34 | 64.34 | -0.01 | -0.01 | -0.01 | -0.01 |
| 10 | Feather R. at Bear R. (92.334) | 54.98 | 54.97 | 54.97 | 54.97 | 54.97 | -0.01 | -0.01 | -0.01 | -0.01 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 41.84 | 41.71 | 41.72 | 41.67 | 41.68 | -0.13 | -0.12 | -0.17 | -0.16 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 41.85 | 41.71 | 41.72 | 41.67 | 41.68 | -0.14 | -0.13 | -0.18 | -0.17 |
| 13 | NEMDC below Robla Creek (6.288) | 37.63 | 36.65 | 36.79 | 36.61 | 36.79 | -0.98 | -0.84 | -1.02 | -0.84 |
| 14 | NEMDC at Arcade Creek (3.598) | 36.65 | 35.40 | 35.46 | 35.34 | 35.40 | -1.25 | -1.19 | -1.31 | -1.25 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 32.54 | 31.31 | 31.30 | 31.20 | 31.19 | -1.23 | -1.24 | -1.34 | -1.35 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.56 | 67.56 | 67.56 | 67.56 | 67.56 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.23 | 61.22 | 61.23 | 61.22 | 61.22 | -0.01 | 0 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 52.67 | 52.66 | 52.66 | 52.65 | 52.65 | -0.01 | -0.01 | -0.02 | -0.02 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 42.61 | 42.55 | 42.55 | 42.50 | 42.51 | -0.06 | -0.06 | -0.11 | -0.10 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 41.33 | 41.26 | 41.27 | 41.21 | 41.21 | -0.07 | -0.06 | -0.12 | -0.12 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 41.69 | 41.61 | 41.61 | 41.56 | 41.56 | -0.08 | -0.08 | -0.13 | -0.13 |
| 22 | Sacramento R. at Verona gage (78.741) | 41.68 | 41.53 | 41.54 | 41.49 | 41.49 | -0.15 | -0.14 | -0.19 | -0.19 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 37.26 | 36.39 | 36.43 | 36.33 | 36.37 | -0.87 | -0.83 | -0.93 | -0.89 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 34.22 | 32.36 | 32.43 | 32.26 | 32.34 | -1.86 | -1.79 | -1.96 | -1.88 |
| 25 | Sacramento R. at I Street gage (59.789) | 33.85 | 32.04 | 32.10 | 31.94 | 32.02 | -1.81 | -1.75 | -1.91 | -1.83 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 29.02 | 27.59 | 27.65 | 27.52 | 27.57 | -1.43 | -1.37 | -1.50 | -1.45 |

**Table 14. Maximum Water Surface Elevation and Change from Baseline 2, 1/50 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 27.38 | 26.05 | 26.10 | 25.98 | 26.03 | -1.33 | -1.28 | -1.40 | -1.35 |
| 28 | Sacramento R. at Clarksburg (42.446) | 25.58 | 24.40 | 24.45 | 24.34 | 24.38 | -1.18 | -1.13 | -1.24 | -1.20 |
| 29 | Sacramento R. at Hood (38.701) | 23.75 | 22.70 | 22.75 | 22.66 | 22.69 | -1.05 | -1.00 | -1.09 | -1.06 |
| 30 | Sacramento R. at Courtland (34.733) | 21.87 | 20.98 | 21.02 | 20.94 | 20.97 | -0.89 | -0.85 | -0.93 | -0.90 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 17.82 | 17.25 | 17.28 | 17.23 | 17.25 | -0.57 | -0.54 | -0.59 | -0.57 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 12.27 | 12.28 | 12.28 | 12.28 | 12.28 | +0.01 | +0.01 | +0.01 | +0.01 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 16.26 | 15.92 | 15.94 | 15.91 | 15.92 | -0.34 | -0.32 | -0.35 | -0.34 |
| 34 | Sutter Bypass at CA-20 (87.642) | 54.88 | 54.87 | 54.87 | 54.87 | 54.87 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 53.03 | 53.02 | 53.02 | 53.02 | 53.02 | -0.01 | -0.01 | -0.01 | -0.01 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 49.79 | 49.76 | 49.77 | 49.75 | 49.75 | -0.03 | -0.02 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 48.61 | 48.58 | 48.58 | 48.57 | 48.57 | -0.03 | -0.03 | -0.04 | -0.04 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 47.61 | 47.58 | 47.58 | 47.56 | 47.56 | -0.03 | -0.03 | -0.05 | -0.05 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 42.28 | 42.20 | 42.21 | 42.16 | 42.17 | -0.08 | -0.07 | -0.12 | -0.11 |
| 40 | Sutter Slough at Miner Slough (2.336) | 17.74 | 17.48 | 17.50 | 17.47 | 17.48 | -0.26 | -0.24 | -0.27 | -0.26 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 36.51 | 36.47 | 36.48 | 36.26 | 36.27 | -0.04 | -0.03 | -0.25 | -0.24 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 33.67 | 33.69 | 33.69 | 33.29 | 33.30 | +0.02 | +0.02 | -0.38 | -0.37 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 30.36 | 30.51 | 30.51 | 30.52 | 30.52 | +0.15 | +0.15 | +0.16 | +0.16 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 29.70 | 29.85 | 29.85 | 29.86 | 29.86 | +0.15 | +0.15 | +0.16 | +0.16 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 29.47 | 29.62 | 29.62 | 29.62 | 29.62 | +0.15 | +0.15 | +0.15 | +0.15 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 26.77 | 26.91 | 26.91 | 26.92 | 26.92 | +0.14 | +0.14 | +0.15 | +0.15 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 24.20 | 24.33 | 24.33 | 24.34 | 24.34 | +0.13 | +0.13 | +0.14 | +0.14 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 21.04 | 21.18 | 21.17 | 21.19 | 21.19 | +0.14 | +0.13 | +0.15 | +0.15 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 18.84 | 18.96 | 18.95 | 18.97 | 18.96 | +0.12 | +0.11 | +0.13 | +0.12 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 17.26 | 17.35 | 17.35 | 17.36 | 17.36 | +0.09 | +0.09 | +0.10 | +0.10 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 15. Maximum Water Surface Elevation and Change from Baseline 2, 1/100 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 48.85 | 48.63 | 48.63 | 48.62 | 48.62 | -0.22 | -0.22 | -0.23 | -0.23 |
| 2 | American R. at H Street (6.580) | 43.04 | 42.57 | 42.58 | 42.55 | 42.56 | -0.47 | -0.46 | -0.49 | -0.48 |
| 3 | American R. at CA-160 (2.036) | 36.32 | 34.89 | 34.93 | 34.81 | 34.86 | -1.43 | -1.39 | -1.51 | -1.46 |
| 4 | Cache Slough at Miner Slough (18.557) | 16.99 | 17.07 | 17.06 | 17.07 | 17.07 | +0.08 | +0.07 | +0.08 | +0.08 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 12.87 | 12.88 | 12.88 | 12.88 | 12.88 | +0.01 | +0.01 | +0.01 | +0.01 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 17.62 | 17.70 | 17.69 | 17.70 | 17.70 | +0.08 | +0.07 | +0.08 | +0.08 |
| 7 | Ship Channel at Cache Slough (18.854) | 16.99 | 17.07 | 17.06 | 17.07 | 17.07 | +0.08 | +0.07 | +0.08 | +0.08 |
| 8 | Feather R. at Yuba R. (107.463) | 74.33 | 74.33 | 74.33 | 74.33 | 74.33 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 65.13 | 65.12 | 65.13 | 65.12 | 65.12 | -0.01 | 0 | -0.01 | -0.01 |
| 10 | Feather R. at Bear R. (92.334) | 55.64 | 55.63 | 55.63 | 55.63 | 55.63 | -0.01 | -0.01 | -0.01 | -0.01 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 42.33 | 42.20 | 42.21 | 42.16 | 42.17 | -0.13 | -0.12 | -0.17 | -0.16 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 42.35 | 42.22 | 42.23 | 42.17 | 42.18 | -0.13 | -0.12 | -0.18 | -0.17 |
| 13 | NEMDC below Robla Creek (6.288) | 38.78 | 38.13 | 38.24 | 38.12 | 38.23 | -0.65 | -0.54 | -0.66 | -0.55 |
| 14 | NEMDC at Arcade Creek (3.598) | 37.47 | 36.34 | 36.37 | 36.28 | 36.32 | -1.13 | -1.10 | -1.19 | -1.15 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 33.06 | 31.89 | 31.89 | 31.78 | 31.78 | -1.17 | -1.17 | -1.28 | -1.28 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.77 | 67.77 | 67.77 | 67.77 | 67.77 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.47 | 61.46 | 61.46 | 61.46 | 61.46 | -0.01 | -0.01 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 53.03 | 53.01 | 53.02 | 53.00 | 53.01 | -0.02 | -0.01 | -0.03 | -0.02 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 43.10 | 43.03 | 43.03 | 42.98 | 42.98 | -0.07 | -0.07 | -0.12 | -0.12 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 41.83 | 41.75 | 41.76 | 41.70 | 41.70 | -0.08 | -0.07 | -0.13 | -0.13 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 42.20 | 42.12 | 42.12 | 42.06 | 42.07 | -0.08 | -0.08 | -0.14 | -0.13 |
| 22 | Sacramento R. at Verona gage (78.741) | 42.19 | 42.04 | 42.04 | 41.99 | 42.00 | -0.15 | -0.15 | -0.20 | -0.19 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 37.77 | 36.91 | 36.94 | 36.85 | 36.88 | -0.86 | -0.83 | -0.92 | -0.89 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 34.71 | 32.93 | 32.97 | 32.83 | 32.88 | -1.78 | -1.74 | -1.88 | -1.83 |
| 25 | Sacramento R. at I Street gage (59.789) | 34.33 | 32.59 | 32.63 | 32.50 | 32.54 | -1.74 | -1.70 | -1.83 | -1.79 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 29.47 | 28.10 | 28.13 | 28.03 | 28.06 | -1.37 | -1.34 | -1.44 | -1.41 |

**Table 15. Maximum Water Surface Elevation and Change from Baseline 2, 1/100 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 27.83 | 26.56 | 26.58 | 26.49 | 26.52 | -1.27 | -1.25 | -1.34 | -1.31 |
| 28 | Sacramento R. at Clarksburg (42.446) | 26.04 | 24.89 | 24.91 | 24.83 | 24.86 | -1.15 | -1.13 | -1.21 | -1.18 |
| 29 | Sacramento R. at Hood (38.701) | 24.19 | 23.19 | 23.21 | 23.13 | 23.16 | -1.00 | -0.98 | -1.06 | -1.03 |
| 30 | Sacramento R. at Courtland (34.733) | 22.30 | 21.46 | 21.47 | 21.41 | 21.43 | -0.84 | -0.83 | -0.89 | -0.87 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 18.22 | 17.69 | 17.70 | 17.66 | 17.68 | -0.53 | -0.52 | -0.56 | -0.54 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 12.78 | 12.79 | 12.79 | 12.79 | 12.79 | +0.01 | +0.01 | +0.01 | +0.01 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 16.74 | 16.44 | 16.45 | 16.43 | 16.43 | -0.30 | -0.29 | -0.31 | -0.31 |
| 34 | Sutter Bypass at CA-20 (87.642) | 55.73 | 55.72 | 55.72 | 55.72 | 55.72 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 53.85 | 53.84 | 53.84 | 53.84 | 53.84 | -0.01 | -0.01 | -0.01 | -0.01 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 50.53 | 50.50 | 50.51 | 50.49 | 50.49 | -0.03 | -0.02 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 49.28 | 49.25 | 49.25 | 49.24 | 49.24 | -0.03 | -0.03 | -0.04 | -0.04 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 48.24 | 48.21 | 48.21 | 48.19 | 48.19 | -0.03 | -0.03 | -0.05 | -0.05 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 42.81 | 42.72 | 42.72 | 42.67 | 42.68 | -0.09 | -0.09 | -0.14 | -0.13 |
| 40 | Sutter Slough at Miner Slough (2.336) | 18.28 | 18.07 | 18.07 | 18.06 | 18.06 | -0.21 | -0.21 | -0.22 | -0.22 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 37.12 | 37.08 | 37.08 | 36.87 | 36.87 | -0.04 | -0.04 | -0.25 | -0.25 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 34.26 | 34.27 | 34.27 | 33.88 | 33.89 | +0.01 | +0.01 | -0.38 | -0.37 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 31.00 | 31.15 | 31.15 | 31.17 | 31.17 | +0.15 | +0.15 | +0.17 | +0.17 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 30.32 | 30.47 | 30.47 | 30.48 | 30.48 | +0.15 | +0.15 | +0.16 | +0.16 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 30.08 | 30.22 | 30.22 | 30.23 | 30.23 | +0.14 | +0.14 | +0.15 | +0.15 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 27.40 | 27.53 | 27.53 | 27.54 | 27.54 | +0.13 | +0.13 | +0.14 | +0.14 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 24.83 | 24.95 | 24.95 | 24.96 | 24.96 | +0.12 | +0.12 | +0.13 | +0.13 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 21.76 | 21.89 | 21.88 | 21.90 | 21.89 | +0.13 | +0.12 | +0.14 | +0.13 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 19.52 | 19.62 | 19.61 | 19.62 | 19.62 | +0.10 | +0.09 | +0.10 | +0.10 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 17.94 | 18.02 | 18.02 | 18.02 | 18.02 | +0.08 | +0.08 | +0.08 | +0.08 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 16. Maximum Water Surface Elevation and Change from Baseline 2, 1/200 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 49.09 | 48.88 | 48.89 | 48.87 | 48.88 | -0.21 | -0.20 | -0.22 | -0.21 |
| 2 | American R. at H Street (6.580) | 43.22 | 42.79 | 42.80 | 42.77 | 42.78 | -0.43 | -0.42 | -0.45 | -0.44 |
| 3 | American R. at CA-160 (2.036) | 36.80 | 35.42 | 35.44 | 35.34 | 35.37 | -1.38 | -1.36 | -1.46 | -1.43 |
| 4 | Cache Slough at Miner Slough (18.557) | 17.86 | 17.93 | 17.93 | 17.94 | 17.94 | +0.07 | +0.07 | +0.08 | +0.08 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 13.59 | 13.60 | 13.60 | 13.61 | 13.61 | +0.01 | +0.01 | +0.02 | +0.02 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 18.51 | 18.59 | 18.58 | 18.60 | 18.60 | +0.08 | +0.07 | +0.09 | +0.09 |
| 7 | Ship Channel at Cache Slough (18.854) | 17.86 | 17.93 | 17.93 | 17.94 | 17.94 | +0.07 | +0.07 | +0.08 | +0.08 |
| 8 | Feather R. at Yuba R. (107.463) | 74.95 | 74.95 | 74.95 | 74.95 | 74.95 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 65.82 | 65.82 | 65.82 | 65.82 | 65.82 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 56.25 | 56.24 | 56.24 | 56.24 | 56.24 | -0.01 | -0.01 | -0.01 | -0.01 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 43.05 | 42.91 | 42.91 | 42.85 | 42.86 | -0.14 | -0.14 | -0.20 | -0.19 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 42.92 | 42.75 | 42.76 | 42.69 | 42.70 | -0.17 | -0.16 | -0.23 | -0.22 |
| 13 | NEMDC below Robla Creek (6.288) | 39.92 | 39.37 | 39.43 | 39.35 | 39.43 | -0.55 | -0.49 | -0.57 | -0.49 |
| 14 | NEMDC at Arcade Creek (3.598) | 38.29 | 37.24 | 37.25 | 37.18 | 37.20 | -1.05 | -1.04 | -1.11 | -1.09 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 33.61 | 32.50 | 32.49 | 32.40 | 32.40 | -1.11 | -1.12 | -1.21 | -1.21 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 67.98 | 67.97 | 67.97 | 67.97 | 67.97 | -0.01 | -0.01 | -0.01 | -0.01 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 61.74 | 61.73 | 61.73 | 61.73 | 61.73 | -0.01 | -0.01 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 53.41 | 53.39 | 53.39 | 53.39 | 53.39 | -0.02 | -0.02 | -0.02 | -0.02 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 43.57 | 43.49 | 43.50 | 43.44 | 43.44 | -0.08 | -0.07 | -0.13 | -0.13 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 42.32 | 42.23 | 42.24 | 42.17 | 42.17 | -0.09 | -0.08 | -0.15 | -0.15 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 42.71 | 42.61 | 42.62 | 42.55 | 42.56 | -0.10 | -0.09 | -0.16 | -0.15 |
| 22 | Sacramento R. at Verona gage (78.741) | 42.75 | 42.56 | 42.57 | 42.51 | 42.51 | -0.19 | -0.18 | -0.24 | -0.24 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 38.31 | 37.42 | 37.42 | 37.34 | 37.36 | -0.89 | -0.89 | -0.97 | -0.95 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 35.23 | 33.52 | 33.54 | 33.43 | 33.45 | -1.71 | -1.69 | -1.80 | -1.78 |
| 25 | Sacramento R. at I Street gage (59.789) | 34.85 | 33.18 | 33.19 | 33.09 | 33.11 | -1.67 | -1.66 | -1.76 | -1.74 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 29.97 | 28.64 | 28.65 | 28.57 | 28.59 | -1.33 | -1.32 | -1.40 | -1.38 |

**Table 16. Maximum Water Surface Elevation and Change from Baseline 2, 1/200 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 28.32 | 27.09 | 27.10 | 27.03 | 27.05 | -1.23 | -1.22 | -1.29 | -1.27 |
| 28 | Sacramento R. at Clarksburg (42.446) | 26.53 | 25.43 | 25.43 | 25.37 | 25.39 | -1.10 | -1.10 | -1.16 | -1.14 |
| 29 | Sacramento R. at Hood (38.701) | 24.69 | 23.73 | 23.73 | 23.68 | 23.71 | -0.96 | -0.96 | -1.01 | -0.98 |
| 30 | Sacramento R. at Courtland (34.733) | 22.78 | 22.01 | 22.01 | 21.97 | 21.99 | -0.77 | -0.77 | -0.81 | -0.79 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 18.71 | 18.23 | 18.23 | 18.20 | 18.22 | -0.48 | -0.48 | -0.51 | -0.49 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 13.44 | 13.45 | 13.45 | 13.45 | 13.46 | +0.01 | +0.01 | +0.01 | +0.02 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 17.36 | 17.10 | 17.10 | 17.09 | 17.10 | -0.26 | -0.26 | -0.27 | -0.26 |
| 34 | Sutter Bypass at CA-20 (87.642) | 56.56 | 56.55 | 56.55 | 56.55 | 56.55 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 54.67 | 54.65 | 54.65 | 54.65 | 54.65 | -0.02 | -0.02 | -0.02 | -0.02 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 51.29 | 51.26 | 51.26 | 51.25 | 51.25 | -0.03 | -0.03 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 49.98 | 49.94 | 49.95 | 49.93 | 49.93 | -0.04 | -0.03 | -0.05 | -0.05 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 48.87 | 48.84 | 48.84 | 48.82 | 48.82 | -0.03 | -0.03 | -0.05 | -0.05 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 43.32 | 43.23 | 43.23 | 43.17 | 43.18 | -0.09 | -0.09 | -0.15 | -0.14 |
| 40 | Sutter Slough at Miner Slough (2.336) | 18.97 | 18.81 | 18.81 | 18.80 | 18.81 | -0.16 | -0.16 | -0.17 | -0.16 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 37.68 | 37.62 | 37.62 | 37.41 | 37.41 | -0.06 | -0.06 | -0.27 | -0.27 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 34.82 | 34.83 | 34.83 | 34.45 | 34.45 | +0.01 | +0.01 | -0.37 | -0.37 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 31.66 | 31.80 | 31.80 | 31.82 | 31.82 | +0.14 | +0.14 | +0.16 | +0.16 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 30.98 | 31.12 | 31.11 | 31.13 | 31.13 | +0.14 | +0.13 | +0.15 | +0.15 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 30.71 | 30.84 | 30.84 | 30.85 | 30.86 | +0.13 | +0.13 | +0.14 | +0.15 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 28.07 | 28.19 | 28.19 | 28.20 | 28.20 | +0.12 | +0.12 | +0.13 | +0.13 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 25.51 | 25.62 | 25.62 | 25.64 | 25.64 | +0.11 | +0.11 | +0.13 | +0.13 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 22.53 | 22.65 | 22.65 | 22.66 | 22.66 | +0.12 | +0.12 | +0.13 | +0.13 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 20.26 | 20.35 | 20.35 | 20.36 | 20.36 | +0.09 | +0.09 | +0.10 | +0.10 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 18.73 | 18.81 | 18.81 | 18.82 | 18.82 | +0.08 | +0.08 | +0.09 | +0.09 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 17. Maximum Water Surface Elevation and Change from Baseline 2, 1/325 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1 | American R. at Watt Ave. (9.280) | 55.96 | 55.93 | 55.93 | 53.91 | 53.91 | -0.03 | -0.03 | -2.05 | -2.05 |
| 2 | American R. at H Street (6.580) | 48.14 | 47.85 | 47.85 | 46.48 | 46.48 | -0.29 | -0.29 | -1.66 | -1.66 |
| 3 | American R. at CA-160 (2.036) | 39.33 | 37.90 | 37.92 | 36.89 | 36.91 | -1.43 | -1.41 | -2.44 | -2.42 |
| 4 | Cache Slough at Miner Slough (18.557) | 18.32 | 18.44 | 18.44 | 18.12 | 18.12 | +0.12 | +0.12 | -0.20 | -0.20 |
| 5 | Cache Slough at Ryer Island Ferry (15.196) | 13.92 | 13.95 | 13.95 | 13.78 | 13.79 | +0.03 | +0.03 | -0.14 | -0.13 |
| 6 | Ship Channel at Industrial Blvd. (43.838) | 19.01 | 19.12 | 19.12 | 18.79 | 18.79 | +0.11 | +0.11 | -0.22 | -0.22 |
| 7 | Ship Channel at Cache Slough (18.854) | 18.32 | 18.44 | 18.44 | 18.12 | 18.12 | +0.12 | +0.12 | -0.20 | -0.20 |
| 8 | Feather R. at Yuba R. (107.463) | 75.42 | 75.42 | 75.42 | 75.42 | 75.42 | 0 | 0 | 0 | 0 |
| 9 | Feather R. at Boyd's Landing (101.23) | 66.33 | 66.33 | 66.33 | 66.33 | 66.33 | 0 | 0 | 0 | 0 |
| 10 | Feather R. at Bear R. (92.334) | 56.70 | 56.69 | 56.69 | 56.68 | 56.68 | -0.01 | -0.01 | -0.02 | -0.02 |
| 11 | Natomas Cross Canal at CA-99 (4.448) | 43.51 | 43.37 | 43.37 | 43.29 | 43.30 | -0.14 | -0.14 | -0.22 | -0.21 |
| 12 | Natomas Cross Canal at Sacramento R. (0.326) | 43.51 | 43.36 | 43.36 | 43.29 | 43.29 | -0.15 | -0.15 | -0.22 | -0.22 |
| 13 | NEMDC below Robla Creek (6.288) | 40.99 | 39.87 | 39.89 | 38.90 | 39.00 | -1.12 | -1.10 | -2.09 | -1.99 |
| 14 | NEMDC at Arcade Creek (3.598) | 39.90 | 38.51 | 38.54 | 36.83 | 36.86 | -1.39 | -1.36 | -3.07 | -3.04 |
| 15 | Sacramento Bypass below Sacramento Weir (2.931) | 34.96 | 33.53 | 33.53 | 32.91 | 32.90 | -1.43 | -1.43 | -2.05 | -2.06 |
| 16 | Sacramento R. at Colusa, River Rd. (142.982) | 68.25 | 68.25 | 68.25 | 68.25 | 68.25 | 0 | 0 | 0 | 0 |
| 17 | Sacramento R. at Meridian, CA-20 (133.201) | 62.06 | 62.05 | 62.05 | 62.05 | 62.05 | -0.01 | -0.01 | -0.01 | -0.01 |
| 18 | Sacramento R. at Tisdale Weir (118.824) | 53.84 | 53.82 | 53.82 | 53.81 | 53.81 | -0.02 | -0.02 | -0.03 | -0.03 |
| 19 | Sacramento R. at Knights Landing, CA-113 (90.225) | 44.08 | 44.01 | 44.01 | 43.94 | 43.94 | -0.07 | -0.07 | -0.14 | -0.14 |
| 20 | Sacramento R. at Fremont Weir west end (84.59) | 42.86 | 42.78 | 42.78 | 42.70 | 42.70 | -0.08 | -0.08 | -0.16 | -0.16 |
| 21 | Sacramento R. at Fremont Weir east end (82.1) | 43.27 | 43.18 | 43.18 | 43.10 | 43.10 | -0.09 | -0.09 | -0.17 | -0.17 |
| 22 | Sacramento R. at Verona gage (78.741) | 43.34 | 43.17 | 43.18 | 43.10 | 43.10 | -0.17 | -0.16 | -0.24 | -0.24 |
| 23 | Sacramento R. at Interstate 5 (70.809) | 39.15 | 38.02 | 38.03 | 37.85 | 37.86 | -1.13 | -1.12 | -1.30 | -1.29 |
| 24 | Sacramento R. at of Sacramento Weir (63.351) | 36.76 | 34.50 | 34.53 | 33.93 | 33.97 | -2.26 | -2.23 | -2.83 | -2.79 |
| 25 | Sacramento R. at I Street gage (59.789) | 36.61 | 34.62 | 34.65 | 33.89 | 33.92 | -1.99 | -1.96 | -2.72 | -2.69 |
| 26 | Sacramento R. at ARCF GRR IP ARS-F/Pocket (50.231) | 31.51 | 29.86 | 29.89 | 29.21 | 29.24 | -1.65 | -1.62 | -2.30 | -2.27 |

**Table 17. Maximum Water Surface Elevation and Change from Baseline 2, 1/325 AEP**

| No. | Location (CVFED River Mile) | Maximum Water Surface Elevation (feet, NAVD88) | | | | | Change from Baseline 2 (feet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 27 | Sacramento R. at Freeport bridge (46.344) | 29.79 | 28.25 | 28.28 | 27.64 | 27.66 | -1.54 | -1.51 | -2.15 | -2.13 |
| 28 | Sacramento R. at Clarksburg (42.446) | 27.90 | 26.51 | 26.54 | 25.93 | 25.95 | -1.39 | -1.36 | -1.97 | -1.95 |
| 29 | Sacramento R. at Hood (38.701) | 25.95 | 24.72 | 24.75 | 24.19 | 24.21 | -1.23 | -1.20 | -1.76 | -1.74 |
| 30 | Sacramento R. at Courtland (34.733) | 23.91 | 22.88 | 22.90 | 22.40 | 22.42 | -1.03 | -1.01 | -1.51 | -1.49 |
| 31 | Sacramento R. at Walnut Grove bridge (26.847) | 19.51 | 18.86 | 18.87 | 18.49 | 18.50 | -0.65 | -0.64 | -1.02 | -1.01 |
| 32 | Sacramento R. at Rio Vista bridge (12.858) | 13.73 | 13.75 | 13.75 | 13.62 | 13.62 | +0.02 | +0.02 | -0.11 | -0.11 |
| 33 | Steamboat Slough at Sutter Slough (7.107) | 18.00 | 17.65 | 17.66 | 17.31 | 17.32 | -0.35 | -0.34 | -0.69 | -0.68 |
| 34 | Sutter Bypass at CA-20 (87.642) | 57.36 | 57.35 | 57.35 | 57.35 | 57.35 | -0.01 | -0.01 | -0.01 | -0.01 |
| 35 | Sutter Bypass at Wadsworth Canal (83.452) | 55.46 | 55.45 | 55.45 | 55.44 | 55.44 | -0.01 | -0.01 | -0.02 | -0.02 |
| 36 | Sutter Bypass at Tisdale Bypass (77.251) | 52.05 | 52.03 | 52.03 | 52.01 | 52.01 | -0.02 | -0.02 | -0.04 | -0.04 |
| 37 | Sutter Bypass at CA-113 (71.442) | 50.68 | 50.64 | 50.65 | 50.62 | 50.62 | -0.04 | -0.03 | -0.06 | -0.06 |
| 38 | Sutter Bypass upstream of Feather R. (66.295) | 49.48 | 49.44 | 49.44 | 49.41 | 49.41 | -0.04 | -0.04 | -0.07 | -0.07 |
| 39 | Sutter Bypass at RD1500 Pump Station (58.139) | 43.88 | 43.79 | 43.80 | 43.73 | 43.73 | -0.09 | -0.08 | -0.15 | -0.15 |
| 40 | Sutter Slough at Miner Slough (2.336) | 19.60 | 19.38 | 19.38 | 19.03 | 19.03 | -0.22 | -0.22 | -0.57 | -0.57 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut (53.751) | 38.27 | 38.23 | 38.23 | 37.99 | 37.99 | -0.04 | -0.04 | -0.28 | -0.28 |
| 42 | Yolo Bypass at Interstate 5 (50.337) | 35.35 | 35.38 | 35.38 | 34.92 | 34.92 | +0.03 | +0.03 | -0.43 | -0.43 |
| 43 | Yolo Bypass at Sacramento Bypass (44.156) | 32.15 | 32.45 | 32.46 | 32.19 | 32.19 | +0.30 | +0.31 | +0.04 | +0.04 |
| 44 | Yolo Bypass at West Sac GRR IP #3 (42.694) | 31.44 | 31.64 | 31.65 | 31.45 | 31.45 | +0.20 | +0.21 | +0.01 | +0.01 |
| 45 | Yolo Bypass at Interstate 80 (42.493) | 31.14 | 31.33 | 31.33 | 31.14 | 31.14 | +0.19 | +0.19 | 0 | 0 |
| 46 | Yolo Bypass near Lisbon gage (36.073) | 28.46 | 28.63 | 28.64 | 28.38 | 28.38 | +0.17 | +0.18 | -0.08 | -0.08 |
| 47 | Yolo Bypass at RD 2068 north end (30.102) | 25.91 | 26.08 | 26.08 | 25.82 | 25.81 | +0.17 | +0.17 | -0.09 | -0.10 |
| 48 | Yolo Bypass at Liberty Island gage (25.443) | 22.96 | 23.13 | 23.13 | 22.84 | 22.84 | +0.17 | +0.17 | -0.12 | -0.12 |
| 49 | Yolo Bypass at RD 2098 south end (21.854) | 20.65 | 20.78 | 20.78 | 20.52 | 20.52 | +0.13 | +0.13 | -0.13 | -0.13 |
| 50 | Yolo Bypass at Little Egbert Tract north end (19.434) | 19.16 | 19.27 | 19.28 | 18.99 | 18.99 | +0.11 | +0.12 | -0.17 | -0.17 |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

**Table 18. Maximum Flow and Change from Baseline 1**

| Flood Frequency (AEP) | Location | Maximum Flow (cubic feet per second) | | | | | Change from "Baseline" (cubic feet per second) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1/10 | Fremont Weir | 254,300 | 251,100 | 253,600 | 251,300 | 253,800 | -3,200 (-1.3%) | -700 (-0.3%) | -3,000 (-1.2%) | -500 (-0.2%) |
| | Yolo Bypass below Putah Creek | 293,900 | 296,300 | 292,900 | 296,000 | 292,600 | +2,400 (+0.8%) | -1,000 (-0.3%) | +2,100 (+0.7%) | -1,300 (-0.4%) |
| | Sacramento R. below Natomas Cross Canal | 91,700 | 94,100 | 91,900 | 94,100 | 91,800 | +2,400 (+2.6%) | +200 (+0.2%) | +2,400 (+2.6%) | +100 (+0.1%) |
| | Sacramento Weir | 57,900 | 65,700 | 62,700 | 65,400 | 62,700 | +7,800 (+13.5%) | +4,800 (+8.3%) | +7,500 (+13.0%) | +4,800 (+8.3%) |
| | Sacramento R. below American R. | 101,800 | 97,000 | 99,700 | 97,000 | 99,600 | -4,800 (-4.7%) | -2,100 (-2.1%) | -4,800 (-4.7%) | -2,200 (-2.2%) |
| | Sacramento R. at Rio Vista | 367,100 | 367,700 | 367,800 | 367,400 | 367,600 | +600 (+0.2%) | +700 (+0.2%) | +300 (+0.1%) | +500 (+0.1%) |
| 1/25 | Fremont Weir | 310,900 | 306,700 | 307,900 | 306,900 | 308,200 | -4,200 (-1.4%) | -3,000 (-1.0%) | -4,000 (-1.3%) | -2,700 (-0.9%) |
| | Yolo Bypass below Putah Creek | 414,800 | 422,600 | 421,700 | 422,900 | 421,900 | +7,800 (+1.9%) | +6,900 (+1.7%) | +8,100 (+2.0%) | +7,100 (+1.7%) |
| | Sacramento R. below Natomas Cross Canal | 102,500 | 104,600 | 104,200 | 104,300 | 103,900 | +2,100 (+2.0%) | +1,700 (+1.7%) | +1,800 (+1.8%) | +1,400 (+1.4%) |
| | Sacramento Weir | 88,300 | 101,900 | 98,300 | 102,100 | 98,200 | +13,600 (+15.4%) | +10,000 (+11.3%) | +13,800 (+15.6%) | +9,900 (+11.2%) |
| | Sacramento R. below American R. | 108,200 | 101,300 | 102,800 | 101,000 | 102,800 | -6,900 (-6.4%) | -5,400 (-5.0%) | -7,200 (-6.7%) | -5,400 (-5.0%) |
| | Sacramento R. at Rio Vista | 480,400 | 485,600 | 485,100 | 485,800 | 485,300 | +5,200 (+1.1%) | +4,700 (+1.0%) | +5,400 (+1.1%) | +4,900 (+1.0%) |
| 1/50 | Fremont Weir | 375,100 | 370,600 | 370,800 | 370,800 | 371,200 | -4,500 (-1.2%) | -4,300 (-1.1%) | -4,300 (-1.1%) | -3,900 (-1.0%) |
| | Yolo Bypass below Putah Creek | 483,900 | 493,000 | 492,900 | 493,400 | 493,400 | +9,100 (+1.9%) | +9,000 (+1.9%) | +9,500 (+2.0%) | +9,500 (+2.0%) |
| | Sacramento R. below Natomas Cross Canal | 106,800 | 110,900 | 110,500 | 110,800 | 110,400 | +4,100 (+3.8%) | +3,700 (+3.5%) | +4,000 (+3.7%) | +3,600 (+3.4%) |
| | Sacramento Weir | 106,900 | 122,500 | 122,000 | 123,000 | 122,400 | +15,600 (+14.6%) | +15,100 (+14.1%) | +16,100 (+15.1%) | +15,500 (+14.5%) |
| | Sacramento R. below American R. | 115,800 | 106,500 | 106,900 | 106,100 | 106,400 | -9,300 (-8.0%) | -8,900 (-7.7%) | -9,700 (-8.4%) | -9,400 (-8.1%) |
| | Sacramento R. at Rio Vista | 565,400 | 566,600 | 566,600 | 566,800 | 566,800 | +1,200 (+0.2%) | +1,200 (+0.2%) | +1,400 (+0.2%) | +1,400 (+0.2%) |
| 1/100 | Fremont Weir | 398,600 | 393,500 | 393,700 | 393,900 | 394,300 | -5,100 (-1.3%) | -4,900 (-1.2%) | -4,700 (-1.2%) | -4,300 (-1.1%) |
| | Yolo Bypass below Putah Creek | 519,200 | 528,100 | 528,000 | 528,800 | 528,700 | +8,900 (+1.7%) | +8,800 (+1.7%) | +9,600 (+1.8%) | +9,500 (+1.8%) |
| | Sacramento R. below Natomas Cross Canal | 106,800 | 112,500 | 112,300 | 112,400 | 112,100 | +5,700 (+5.3%) | +5,500 (+5.1%) | +5,600 (+5.2%) | +5,300 (+5.0%) |
| | Sacramento Weir | 110,600 | 126,100 | 125,700 | 126,500 | 126,100 | +15,500 (+14.0%) | +15,100 (+13.7%) | +15,900 (+14.4%) | +15,500 (+14.0%) |
| | Sacramento R. below American R. | 118,400 | 109,000 | 109,300 | 108,500 | 108,800 | -9,400 (-7.9%) | -9,100 (-7.7%) | -9,900 (-8.4%) | -9,600 (-8.1%) |
| | Sacramento R. at Rio Vista | 605,200 | 606,200 | 606,200 | 606,400 | 606,500 | +1,000 (+0.2%) | +1,000 (+0.2%) | +1,200 (+0.2%) | +1,300 (+0.2%) |

**Table 18. Maximum Flow and Change from Baseline 1**

| Flood Frequency (AEP) | Location | Maximum Flow (cubic feet per second) | | | | | Change from "Baseline" (cubic feet per second) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 1 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1/200 | Fremont Weir | 422,600 | 417,200 | 417,200 | 417,400 | 417,600 | -5,400 (-1.3%) | -5,400 (-1.3%) | -5,200 (-1.2%) | -5,000 (-1.2%) |
| | Yolo Bypass below Putah Creek | 561,600 | 570,000 | 570,000 | 570,700 | 570,900 | +8,400 (+1.5%) | +8,400 (+1.5%) | +9,100 (+1.6%) | +9,300 (+1.7%) |
| | Sacramento R. below Natomas Cross Canal | 110,100 | 115,300 | 115,200 | 115,000 | 115,000 | +5,200 (+4.7%) | +5,100 (+4.6%) | +4,900 (+4.5%) | +4,900 (+4.5%) |
| | Sacramento Weir | 114,400 | 129,700 | 129,600 | 130,100 | 129,900 | +15,300 (+13.4%) | +15,200 (+13.3%) | +15,700 (+13.7%) | +15,500 (+13.5%) |
| | Sacramento R. below American R. | 120,700 | 111,300 | 111,400 | 110,800 | 110,900 | -9,400 (-7.8%) | -9,300 (-7.7%) | -9,900 (-8.2%) | -9,800 (-8.1%) |
| | Sacramento R. at Rio Vista | 653,900 | 655,100 | 655,000 | 655,400 | 655,700 | +1,200 (+0.2%) | +1,100 (+0.2%) | +1,500 (+0.2%) | +1,800 (+0.3%) |
| 1/325 | Fremont Weir | 450,400 | 444,500 | 444,600 | 444,600 | 444,600 | -5,900 (-1.3%) | -5,800 (-1.3%) | -5,800 (-1.3%) | -5,800 (-1.3%) |
| | Yolo Bypass below Putah Creek | 588,700 | 601,400 | 601,600 | 584,700 | 584,700 | +12,700 (+2.2%) | +12,900 (+2.2%) | -4,000 (-0.7%) | -4,000 (-0.7%) |
| | Sacramento R. below Natomas Cross Canal | 113,000 | 118,400 | 118,300 | 118,600 | 118,600 | +5,400 (+4.8%) | +5,300 (+4.7%) | +5,600 (+5.0%) | +5,600 (+5.0%) |
| | Sacramento Weir | 146,100 | 169,000 | 168,800 | 155,600 | 155,300 | +22,900 (+15.7%) | +22,700 (+15.5%) | +9,500 (+6.5%) | +9,200 (+6.3%) |
| | Sacramento R. below American R. | 130,500 | 118,800 | 119,000 | 114,600 | 114,800 | -11,700 (-9.0%) | -11,500 (-8.8%) | -15,900 (-12.2%) | -15,700 (-12.0%) |
| | Sacramento R. at Rio Vista | 688,800 | 690,800 | 691,000 | 669,700 | 669,700 | +2,000 (+0.3%) | +2,200 (+0.3%) | -19,100 (-2.8%) | -19,100 (-2.8%) |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88

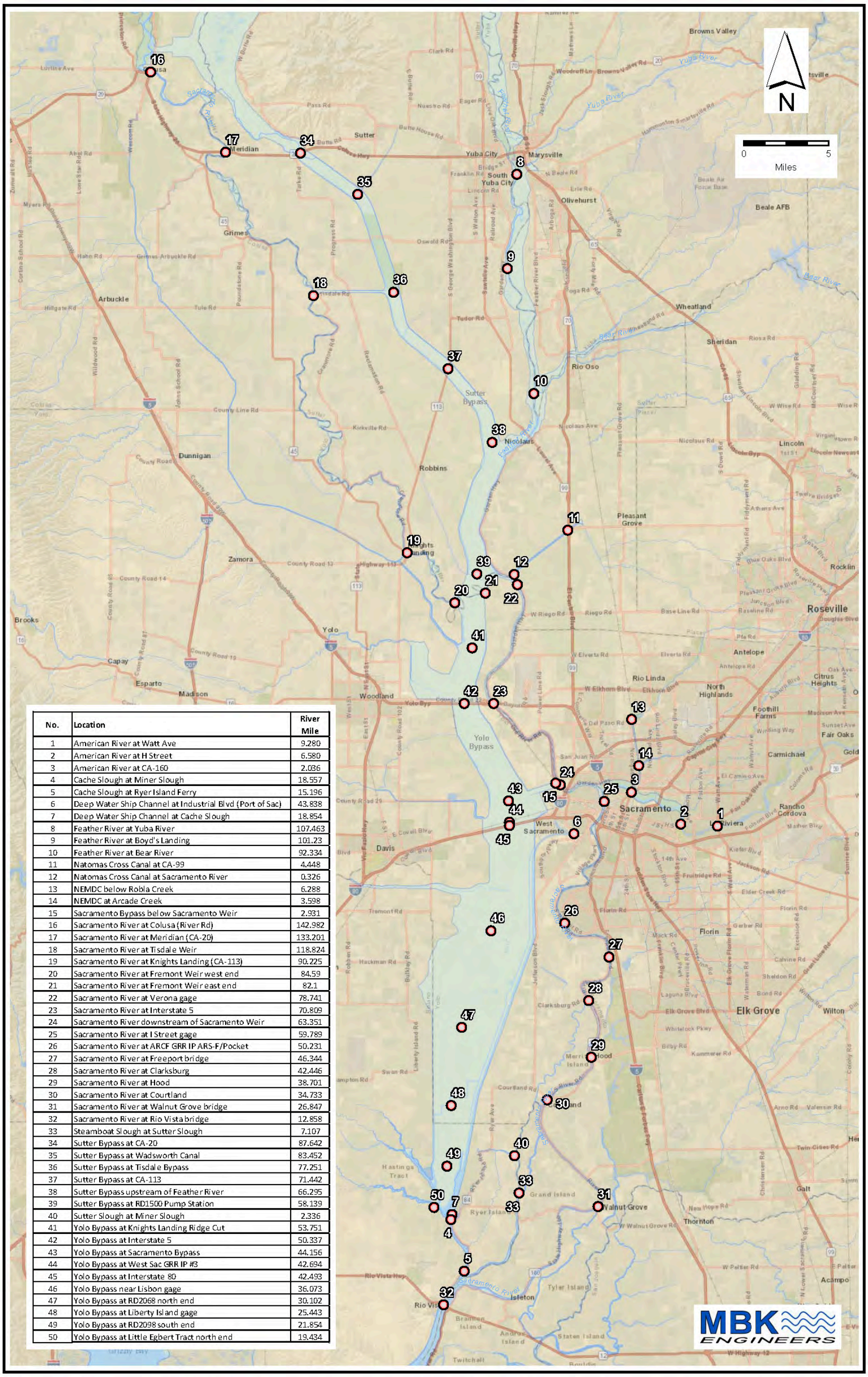
**Table 19. Maximum Flow and Change from Baseline 2**

| Flood Frequency (AEP) | Location | Maximum Flow (cubic feet per second) | | | | | Change from "Baseline" (cubic feet per second) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1/10 | Fremont Weir | 254,300 | 251,100 | 253,600 | 251,300 | 253,800 | -3,200 (-1.3%) | -700 (-0.3%) | -3,000 (-1.2%) | -500 (-0.2%) |
| | Yolo Bypass below Putah Creek | 293,900 | 296,300 | 292,900 | 296,000 | 292,600 | +2,400 (+0.8%) | -1,000 (-0.3%) | +2,100 (+0.7%) | -1,300 (-0.4%) |
| | Sacramento R. below Natomas Cross Canal | 91,700 | 94,100 | 91,900 | 94,100 | 91,800 | +2,400 (+2.6%) | +200 (+0.2%) | +2,400 (+2.6%) | +100 (+0.1%) |
| | Sacramento Weir | 57,700 | 65,700 | 62,700 | 65,400 | 62,700 | +7,800 (+13.5%) | +5,000 (+8.7%) | +7,700 (+13.3%) | +5,000 (+8.7%) |
| | Sacramento R. below American R. | 102,000 | 97,000 | 99,700 | 97,000 | 99,600 | -5,000 (-4.9%) | -2,300 (-2.3%) | -5,000 (-4.9%) | -2,400 (-2.4%) |
| | Sacramento R. at Rio Vista | 367,200 | 367,700 | 367,800 | 367,400 | 367,600 | +500 (+0.1%) | +600 (+0.2%) | +200 (+0.1%) | +400 (+0.1%) |
| 1/25 | Fremont Weir | 310,800 | 306,700 | 307,900 | 306,900 | 308,200 | -4,100 (-1.3%) | -2,900 (-0.9%) | -3,900 (-1.3%) | -2,600 (-0.8%) |
| | Yolo Bypass below Putah Creek | 414,600 | 422,600 | 421,700 | 422,900 | 421,900 | +8,000 (+1.9%) | +7,100 (+1.7%) | +8,300 (+2.0%) | +7,300 (+1.8%) |
| | Sacramento R. below Natomas Cross Canal | 102,300 | 104,600 | 104,200 | 104,300 | 103,900 | +2,300 (+2.2%) | +1,900 (+1.9%) | +2,000 (+2.0%) | +1,600 (+1.6%) |
| | Sacramento Weir | 88,200 | 101,900 | 98,300 | 102,100 | 98,200 | +13,700 (+15.5%) | +10,100 (+11.5%) | +13,900 (+15.8%) | +10,000 (+11.3%) |
| | Sacramento R. below American R. | 108,400 | 101,300 | 102,800 | 101,000 | 102,800 | -7,100 (-6.5%) | -5,600 (-5.2%) | -7,400 (-6.8%) | -5,600 (-5.2%) |
| | Sacramento R. at Rio Vista | 480,500 | 485,600 | 485,100 | 485,800 | 485,300 | +5,100 (+1.1%) | +4,600 (+1.0%) | +5,300 (+1.1%) | +4,800 (+1.0%) |
| 1/50 | Fremont Weir | 375,000 | 370,600 | 370,800 | 370,800 | 371,200 | -4,400 (-1.2%) | -4,200 (-1.1%) | -4,200 (-1.1%) | -3,800 (-1.0%) |
| | Yolo Bypass below Putah Creek | 483,600 | 493,000 | 492,900 | 493,400 | 493,400 | +9,400 (+1.9%) | +9,300 (+1.9%) | +9,800 (+2.0%) | +9,800 (+2.0%) |
| | Sacramento R. below Natomas Cross Canal | 106,900 | 110,900 | 110,500 | 110,800 | 110,400 | +4,000 (+3.7%) | +3,600 (+3.4%) | +3,900 (+3.6%) | +3,500 (+3.3%) |
| | Sacramento Weir | 106,800 | 122,500 | 122,000 | 123,000 | 122,400 | +15,700 (+14.7%) | +15,200 (+14.2%) | +16,200 (+15.2%) | +15,600 (+14.6%) |
| | Sacramento R. below American R. | 116,000 | 106,500 | 106,900 | 106,100 | 106,400 | -9,500 (-8.2%) | -9,100 (-7.8%) | -9,900 (-8.5%) | -9,600 (-8.3%) |
| | Sacramento R. at Rio Vista | 565,500 | 566,600 | 566,600 | 566,800 | 566,800 | +1,100 (+0.2%) | +1,100 (+0.2%) | +1,300 (+0.2%) | +1,300 (+0.2%) |
| 1/100 | Fremont Weir | 398,500 | 393,500 | 393,700 | 393,900 | 394,300 | -5,000 (-1.3%) | -4,800 (-1.2%) | -4,600 (-1.2%) | -4,200 (-1.1%) |
| | Yolo Bypass below Putah Creek | 519,200 | 528,100 | 528,000 | 528,800 | 528,700 | +8,900 (+1.7%) | +8,800 (+1.7%) | +9,600 (+1.8%) | +9,500 (+1.8%) |
| | Sacramento R. below Natomas Cross Canal | 106,700 | 112,500 | 112,300 | 112,400 | 112,100 | +5,800 (+5.4%) | +5,600 (+5.2%) | +5,700 (+5.3%) | +5,400 (+5.1%) |
| | Sacramento Weir | 110,400 | 126,100 | 125,700 | 126,500 | 126,100 | +15,700 (+14.2%) | +15,300 (+13.9%) | +16,100 (+14.6%) | +15,700 (+14.2%) |
| | Sacramento R. below American R. | 118,700 | 109,000 | 109,300 | 108,500 | 108,800 | -9,700 (-8.2%) | -9,400 (-7.9%) | -10,200 (-8.6%) | -9,900 (-8.3%) |
| | Sacramento R. at Rio Vista | 605,400 | 606,200 | 606,200 | 606,400 | 606,500 | +800 (+0.1%) | +800 (+0.1%) | +1,000 (+0.2%) | +1,100 (+0.2%) |

**Table 19. Maximum Flow and Change from Baseline 2**

| Flood Frequency (AEP) | Location | Maximum Flow (cubic feet per second) | | | | | Change from "Baseline" (cubic feet per second) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline 2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 | FWP 26 | FWP 29.2 | FC 26 | FC 29.2 |
| 1/200 | Fremont Weir | 422,700 | 417,200 | 417,200 | 417,400 | 417,600 | -5,500 (-1.3%) | -5,500 (-1.3%) | -5,300 (-1.2%) | -5,100 (-1.2%) |
| | Yolo Bypass below Putah Creek | 561,400 | 570,000 | 570,000 | 570,700 | 570,900 | +8,600 (+1.5%) | +8,600 (+1.5%) | +9,300 (+1.7%) | +9,500 (+1.7%) |
| | Sacramento R. below Natomas Cross Canal | 110,200 | 115,300 | 115,200 | 115,000 | 115,000 | +5,100 (+4.6%) | +5,000 (+4.5%) | +4,800 (+4.4%) | +4,800 (+4.4%) |
| | Sacramento Weir | 114,100 | 129,700 | 129,600 | 130,100 | 129,900 | +15,600 (+13.7%) | +15,500 (+13.6%) | +16,000 (+14.0%) | +15,800 (+13.8%) |
| | Sacramento R. below American R. | 121,000 | 111,300 | 111,400 | 110,800 | 110,900 | -9,700 (-8.0%) | -9,600 (-7.9%) | -10,200 (-8.4%) | -10,100 (-8.3%) |
| | Sacramento R. at Rio Vista | 654,100 | 655,100 | 655,000 | 655,400 | 655,700 | +1,000 (+0.2%) | +900 (+0.1%) | +1,300 (+0.2%) | +1,600 (+0.2%) |
| 1/325 | Fremont Weir | 450,100 | 444,500 | 444,600 | 444,600 | 444,600 | -5,600 (-1.2%) | -5,500 (-1.2%) | -5,500 (-1.2%) | -5,500 (-1.2%) |
| | Yolo Bypass below Putah Creek | 588,400 | 601,400 | 601,600 | 584,700 | 584,700 | +13,000 (+2.2%) | +13,200 (+2.2%) | -3,700 (-0.6%) | -3,700 (-0.6%) |
| | Sacramento R. below Natomas Cross Canal | 113,100 | 118,400 | 118,300 | 118,600 | 118,600 | +5,300 (+4.7%) | +5,200 (+4.6%) | +5,500 (+4.9%) | +5,500 (+4.9%) |
| | Sacramento Weir | 145,900 | 169,000 | 168,800 | 155,600 | 155,300 | +23,100 (+15.8%) | +22,900 (+15.7%) | +9,700 (+6.6%) | +9,400 (+6.4%) |
| | Sacramento R. below American R. | 130,900 | 118,800 | 119,000 | 114,600 | 114,800 | -12,100 (-9.2%) | -11,900 (-9.1%) | -16,300 (-12.5%) | -16,100 (-12.3%) |
| | Sacramento R. at Rio Vista | 688,900 | 690,800 | 691,000 | 669,700 | 669,700 | +1,900 (+0.3%) | +2,100 (+0.3%) | -19,200 (-2.8%) | -19,200 (-2.8%) |

Notes: FWP 26 = Future With Project with Sacramento Weir extension crest elevation of 26 feet NAVD88
FWP 29.2 = Future With Project with Sacramento Weir extension crest elevation of 29.2 feet NAVD88
FC 26 = Future Cumulative with Sacramento Weir extension crest elevation of 26 feet NAVD88
FC 29.2 = Future Cumulative with Sacramento Weir extension crest elevation of 29.2 feet NAVD88




| No. | Location | River Mile |
|---|---|---|
| 1 | American River at Watt Ave | 9.280 |
| 2 | American River at H Street | 6.580 |
| 3 | American River at CA-160 | 2.036 |
| 4 | Cache Slough at Miner Slough | 18.557 |
| 5 | Cache Slough at Ryer Island Ferry | 15.196 |
| 6 | Deep Water Ship Channel at Industrial Blvd (Port of Sac) | 43.838 |
| 7 | Deep Water Ship Channel at Cache Slough | 18.854 |
| 8 | Feather River at Yuba River | 107.463 |
| 9 | Feather River at Boyd's Landing | 101.23 |
| 10 | Feather River at Bear River | 92.334 |
| 11 | Natomas Cross Canal at CA-99 | 4.448 |
| 12 | Natomas Cross Canal at Sacramento River | 0.326 |
| 13 | NEMDC below Robla Creek | 6.288 |
| 14 | NEMDC at Arcade Creek | 3.598 |
| 15 | Sacramento Bypass below Sacramento Weir | 2.931 |
| 16 | Sacramento River at Colusa (River Rd) | 142.982 |
| 17 | Sacramento River at Meridian (CA-20) | 133.201 |
| 18 | Sacramento River at Tisdale Weir | 118.824 |
| 19 | Sacramento River at Knights Landing (CA-113) | 90.225 |
| 20 | Sacramento River at Fremont Weir west end | 84.59 |
| 21 | Sacramento River at Fremont Weir east end | 82.1 |
| 22 | Sacramento River at Verona gage | 78.741 |
| 23 | Sacramento River at Interstate 5 | 70.809 |
| 24 | Sacramento River downstream of Sacramento Weir | 63.351 |
| 25 | Sacramento River at I Street gage | 59.789 |
| 26 | Sacramento River at ARCF GRR IP ARS-F/Pocket | 50.231 |
| 27 | Sacramento River at Freeport bridge | 46.344 |
| 28 | Sacramento River at Clarksburg | 42.446 |
| 29 | Sacramento River at Hood | 38.701 |
| 30 | Sacramento River at Courtland | 34.733 |
| 31 | Sacramento River at Walnut Grove bridge | 26.847 |
| 32 | Sacramento River at Rio Vista bridge | 12.858 |
| 33 | Steamboat Slough at Sutter Slough | 7.107 |
| 34 | Sutter Bypass at CA-20 | 87.642 |
| 35 | Sutter Bypass at Wadsworth Canal | 83.452 |
| 36 | Sutter Bypass at Tisdale Bypass | 77.251 |
| 37 | Sutter Bypass at CA-113 | 71.442 |
| 38 | Sutter Bypass upstream of Feather River | 66.295 |
| 39 | Sutter Bypass at RD1500 Pump Station | 58.139 |
| 40 | Sutter Slough at Miner Slough | 2.336 |
| 41 | Yolo Bypass at Knights Landing Ridge Cut | 53.751 |
| 42 | Yolo Bypass at Interstate 5 | 50.337 |
| 43 | Yolo Bypass at Sacramento Bypass | 44.156 |
| 44 | Yolo Bypass at West Sac GRR IP #3 | 42.694 |
| 45 | Yolo Bypass at Interstate 80 | 42.493 |
| 46 | Yolo Bypass near Lisbon gage | 36.073 |
| 47 | Yolo Bypass at RD2068 north end | 30.102 |
| 48 | Yolo Bypass at Liberty Island gage | 25.443 |
| 49 | Yolo Bypass at RD2098 south end | 21.854 |
| 50 | Yolo Bypass at Little Egbert Tract north end | 19.434 |

Figure 10. Evaluation Points Location Map

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USACE. (2018). *Engineering Report, Folsom Dam Water Control Manual Update, Draft Copy for Public Review. May 8, 2018.*

USACE. (2019). *Memorandum for Record, Subject: CVHS Hydrograph Package for HEC-RAS Model Inputs. February 28, 2019.*

USBR & DWR. (2019). *Yolo Bypass Salmonid Habitat Restoration and Fish Passage, FInal EIS/EIR. May 2019.*

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# TECHNICAL MEMORANDUM

**DATE:** June 2, 2020

**PREPARED BY:** MacKenzie Guilliams and Patrick Ho, P.E., MBK Engineers

**REVIEWED BY:** Don Trieu, P.E., MBK Engineers

**SUBJECT:** **Estimating Stage on the Sacramento River at Sacramento Weir**

## 1. Purpose

The Sacramento Weir is an integral flood control infrastructure in the Sacramento River Flood Control Project and is being widened as part of the American Rivers Common Feature General Reevaluation (USACE, 2015). Elevations referred to herein are in North American Vertical Datum 1988 (NAVD 88). The widened portion of the Sacramento Weir will be ungated and have a crest elevation at 26 feet, NAVD 88. This proposed crest elevation is approximately 3.0 to 3.5 feet lower than the top-of-gates in the existing weir, and would allow the Sacramento River to spill flood waters into the Sacramento Bypass more frequently. To guide analysis in various aspects of the Sacramento Weir project, MBK Engineers (MBK) has developed a long-term stage time-series from water years 1970 to 2015, which will be referred to herein as our period-of-analysis.

Data produced in this analysis will be used to support the Sacramento Weir Widening Supplemental Environmental Impact Statement/Environmental Impact Report, prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

## 2. Related Work

Stage at the Sacramento Weir was previously estimated in order to analyze the frequency of weir overtopping in the Yolo Bypass. This analysis was primarily used to characterize flood events. Gage measurements at the Sacramento Weir are activated only during flood events, and data availability at stages below 20 feet NAVD 88 is limited. To extend the available historical stage record at the Sacramento Weir, stage was estimated using a set of regression relationships that were developed using historical stage records from Sacramento River at I Street, Bryte Lab, and the Sacramento Weir (MBK, 2019).

The stages developed from the regression relationships in the flood coincident analysis (MBK, 2019) are applicable only in predicting stage elevations above 20 feet. Predictions below this elevation will generally be an extrapolation, and therefore accuracy is uncertain. This analysis is an extension of the flood coincident analysis (MBK, 2019) used to provide further refinements during periods of low flow.

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# 3. Gage Records and Vertical Datum Shifts

Sacramento River at Sacramento Weir is located between a gage upstream at Verona, and a gage downstream at Bryte Lab, as shown in Figure 1.

## 3.1 Sacramento River at Verona

The gage at Verona is operated by the United State Geologic Survey (USGS), and has a gage designation number 11425500. The record contains a mean flow per day record, which spans from 1929 to 2020, and a mean stage per day record spanning from 1990 to 2020. The gage records a reference height and can be converted to NAVD 88 by first converting gage height to National Geodetic Vertical Datum 1929 (NGVD 29), and then using a conversion from NGVD 29 to NAVD 88. This formula can be expressed as NAVD 88 = Gage Height (feet) – 3.0 feet + 2.4 feet, where -3.0 feet is the conversion from gage height to NGVD 29, and +2.4 feet is the conversion from NGVD 29 to NAVD 88.

## 3.2 Sacramento River at Bryte Lab

The gage at Bryte Lab is operated by the California Department of Water Resources (DWR), and data is collected from the Water Data Library (WDL) A02104. The record contains a mean stage per day record spanning from 1982 to 2018. The record is also a reference datum that can be converted to NAVD 88 by first converting gage height to NGVD 29, and then using a conversion from NGVD29 to NAVD88. This formula can be expressed as NAVD 88 = Gage Height (feet) – 3.0 feet + 2.4 feet, where -3.0 feet is the conversion from gage height to NGVD 29, and +2.4 feet is the conversion from NGVD29 to NAVD88.

These gage records are also are also summarized in Table 1.

**Table 1. Gage Records**

| Sacramento River at | Vertical Datum | Conversion to NAVD 88 | Source | Period-of-Record |
|---|---|---|---|---|
| **Verona (Stage)** | Gage Height | -3 feet + 2.4 feet | USGS | 1990 - 2020 |
| **Verona (Flow)** | Gage Height | | USGS | 1929 - 2020 |
| **Bryte Lab (Stage)** | WDL Datum | | DWR | 1982 - 2005 |
| **Bryte Lab (Stage)** | NAVD 88 | +0 feet | DWR | 2005 - 2018 |

# 4. Methodology

A linear slope technique is applied in order to estimate stage on the Sacramento River at Sacramento Weir. The distance measured along a river centerline between Verona and Sacramento Weir is approximately 93% of the distance measured between Verona and Bryte Lab. Centerline measurements were extracted from channel distance measurements located in a U. S. Army Corps of Engineers (USACE) HEC-RAS model, prepared in order to evaluate Sacramento Weir configurations. Meta-data describes the model as the Sacramento River Basin Model from the American River Watershed Common Features General Re-Evaluation Report. The distance from Verona to Sacramento Weir is approximately 14.9

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miles, and the distance from Sacramento Weir to Bryte Lab is approximately 1.1 miles. This proportion is applied as a multiplier on a time-series of stage differences between Verona and Bryte Lab as an estimate of stage at the Sacramento Weir, and assumes constant water surface elevation slope between Verona and Bryte Lab. Bryte Lab contains data gaps when projected on our period-of-analysis. Data gaps are filled by using a regression fitted between stage at Verona and stage differences between Verona and Bryte Lab.

## 4.1 Regression Parameters

Using available data where points coincide on a given day, differences in mean daily stage between data points at Verona and Bryte Lab are calculated and shown in Figure 2. Coincident data was available from 1990 to 2015. A regression model is fitted by parameterizing stage at Verona to estimate stage difference between Verona and Bryte Lab. The fitness along this dataset is shown in Figure 3. Estimating stage differences is only a linear transformation from estimating actual stage at Bryte Lab. In other words, fitted models would yield the same estimates as long as each model is trained with the same dataset. To home in on periods of low flow, the dataset was filtered to use only periods when stage at Sacramento Weir is estimated to be below 23 feet, prior to fitting the regression model. Finally, the 93% proportion of stage difference between Verona and Bryte Lab is applied to estimate stage at the Sacramento Weir. This yields the following relationship:

$$Sac\ Weir\ Stage = (Verona\ Stage) - 0.93[\beta_0 + \beta_1 \times (Verona\ Stage) + \beta_2 \times (Verona\ Stage)^2]$$

The fitted parameters are as follows:

$$\beta_0 = -0.46049544,$$
$$\beta_1 = 0.58606131,$$
$$\beta_2 = -0.01057474$$

With this regression model, a stage at the Sacramento Weir can be estimated using historical stage record from Verona.

## 4.2 Data Gaps and Backfilling Verona

Before estimating stage at Bryte Lab, the Sacramento River at Verona has a data gap for stage during periods before 1990, and will need to be backfilled to the beginning of our analysis period. The flow records are available at Verona, and were transformed to stage using a rating curve from USGS to extend the stage record at Verona to 1970. The rating curve for the Sacramento River at Verona is shown on Figure 4, and was developed by the USGS using discharge and gage height measurements between water year 2012 and 2014 (USGS, 2020).

## 4.3 Time-Series Composition

The main purpose of this analysis was to extend and refine stage estimates at Sacramento Weir during periods where water surface elevation at the Sacramento Weir is below 23 feet. Stage records with elevations above 23 feet are retained from previous work (MBK, 2019). Periods where stages are estimated to be below 23 feet are estimated using the regression model developed in this analysis. For these periods, 93% of the stage difference between Verona and Bryte Lab, estimated by the regression model, is assumed to be the difference in stage between Verona andthe

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Sacramento Weir. The composition of these stage time-series becomes the basis for a stage record for the period-of-analysis.

# 5. Validation

## 5.1 Comparison with Historical Bryte Lab

A stage time-series was predicted using the regression equation at Bryte Lab, and was compared to the historical Bryte Lab in order to understand how well the regression model generalizes. Figure 5 and Figure 6 show the comparison between mean daily predicted stage and mean daily historical stage at Bryte Lab, as well as the absolute error. Figure 7 shows the comparison between mean daily predicted stage and mean daily historical stage at Bryte Lab along a one-to-one line. Each data point represents the pairing of historical and predicted stage at Bryte Lab. For example, Bryte Lab recorded a stage of 10.6 feet on October 1, 1982, and the regression predicted 10.37 feet. A point located at (10.6, 10.37) will be shown in Figure 7. Data lying on the one-to-one line means that the predicted stage at Bryte Lab equals historical stage or perfect accuracy.

# 6. Discussion

From a simplistic error analysis review of Figure 5 and Figure 6, the absolute error is generally within +1 feet to -1 feet of the historical stage at Bryte Lab. There are periods where the error is on the absolute order of 15 feet; for example, in December 2014. From a review of historical data at Bryte Lab, the record during this period is suspicious. The stage at Bryte Lab was recorded near an elevation of 5 feet, while both USGS records at Verona recorded stages above 25 feet during the same period. This period coincided with a rainfall event in December 2014. Therefore, it is our engineering judgement that the regression relationship performs reasonably during periods of low-stage.

The stage time-series on the Sacramento River at Sacramento Weir is located on Figure 8 and Figure 9.

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# 7. References

1. (DWR, 2020). *Sacramento River at Bryte Lab*. California Department of Water Resources Water Data Library A02104. 2020.
2. (MBK, 2019). *Impacts of Sacramento Weir Extension to Agriculture in the Yolo Bypass.* October 11, 2019.
3. (USACE, 2015). *American River Watershed Common Features General Reevaluation Report*. December 2015.
4. (USGS, 2020a). *Sacramento River at Freeport CA*. Gage 11447650 accessed February 2020 at URL https://waterdata.usgs.gov/usa/nwis/uv?site_no=11447650.
5. (USGS, 2020b). *Sacramento River at Verona Rating Curve Description*. Accessed March 2020. https://waterwatch.usgs.gov/?m=mkrc&sno=11425500.

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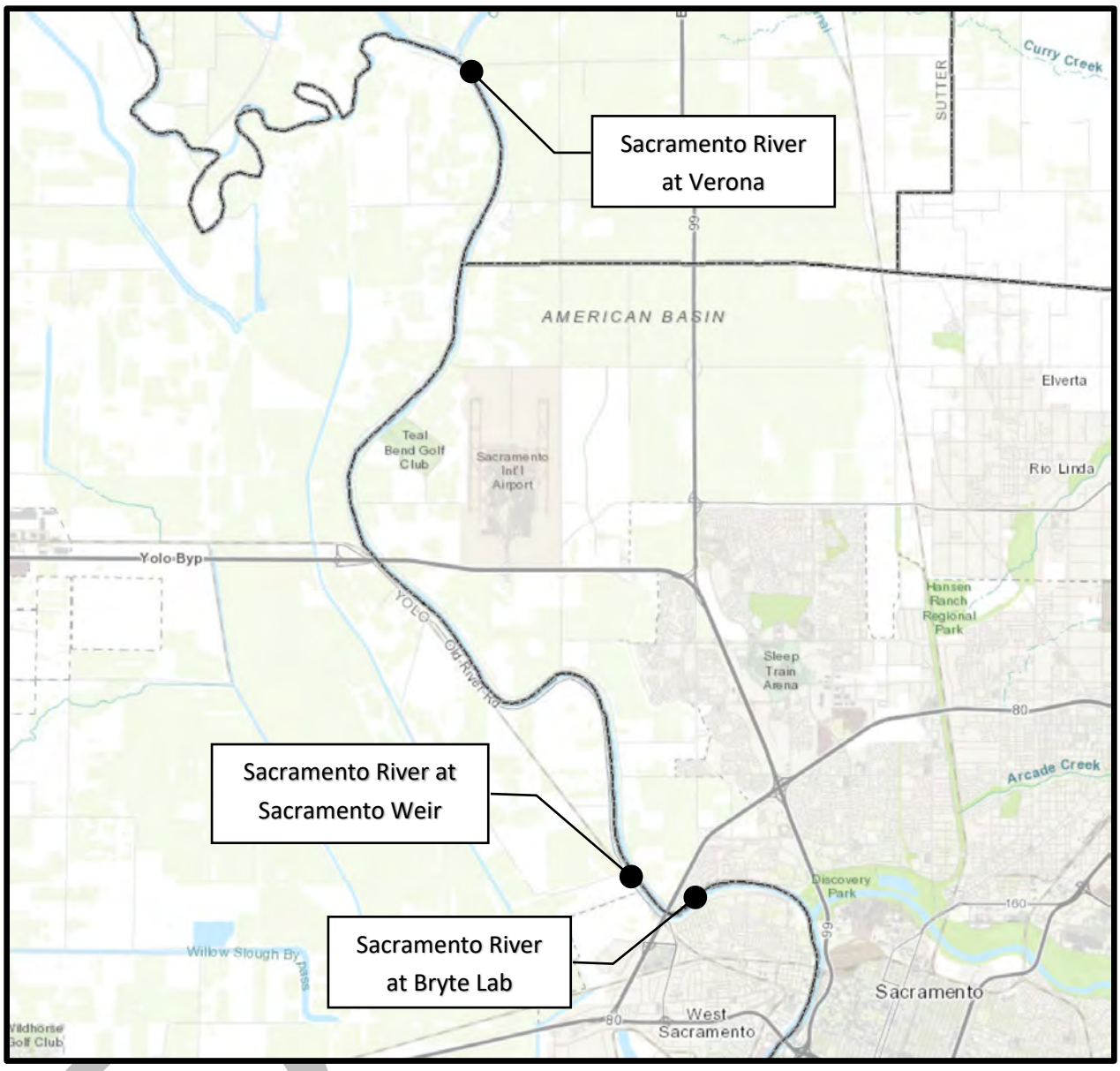


**Figure 1. Regional Map and Gages in Project Area**

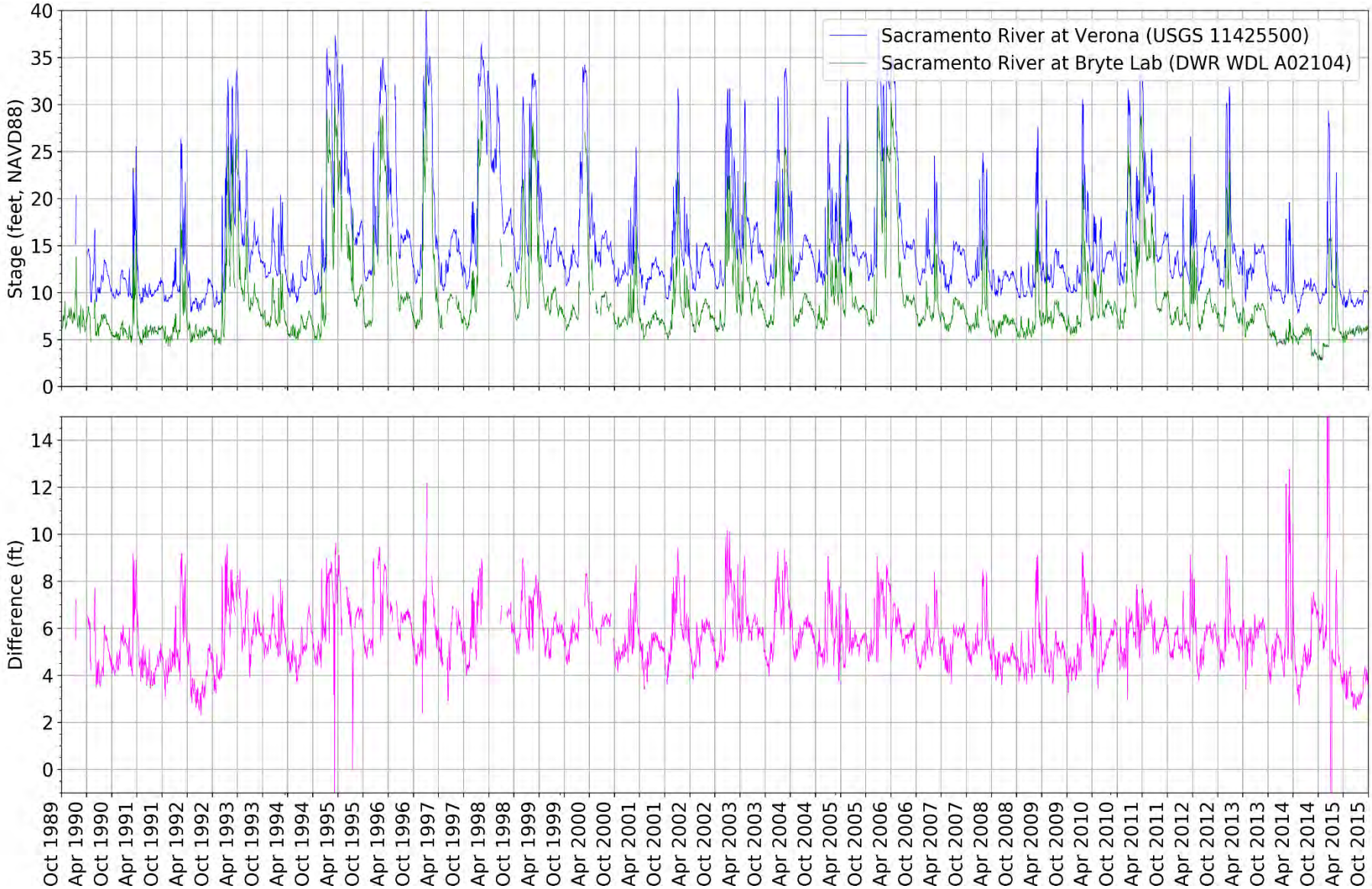


**Figure 2. Stage and Stage Difference on the Sacramento River at Verona and Bryte Lab**

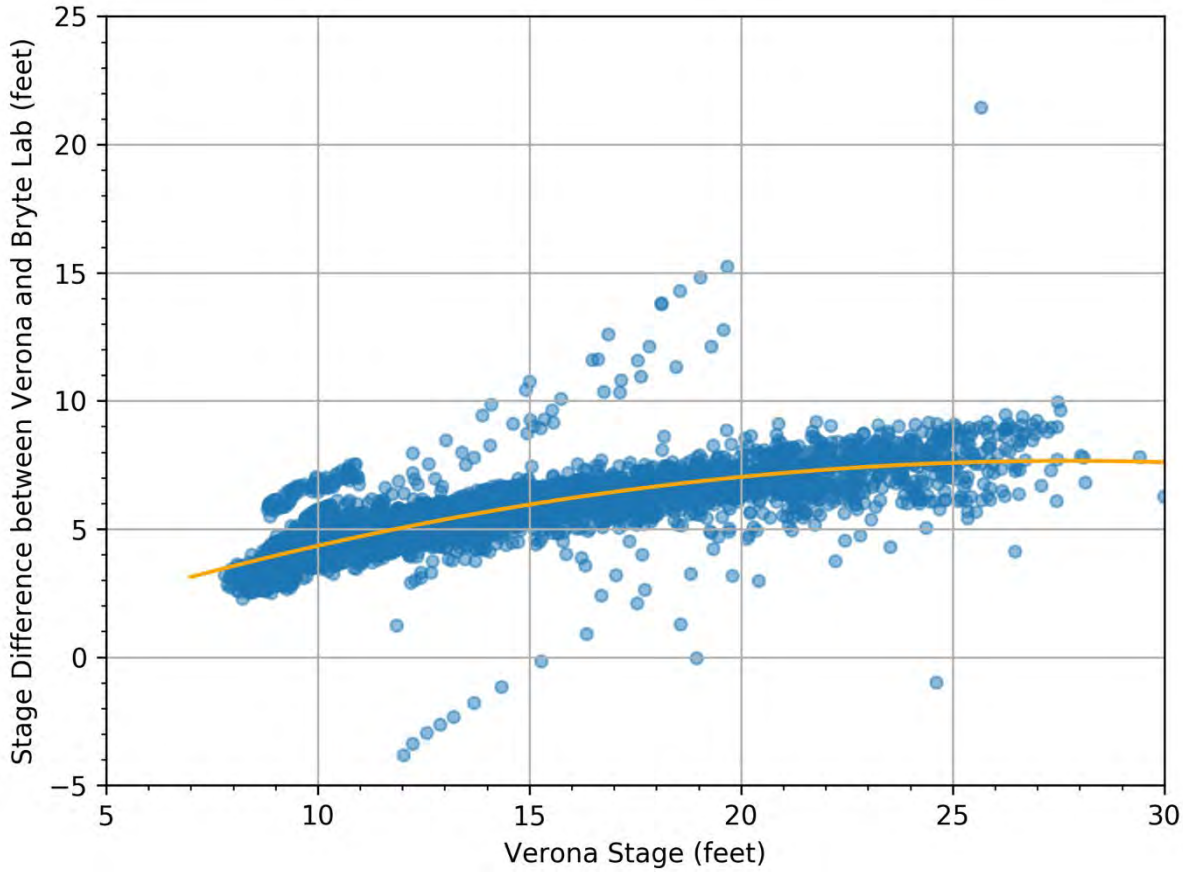


**Figure 3. Fitness of Regression Model against Historical Data**

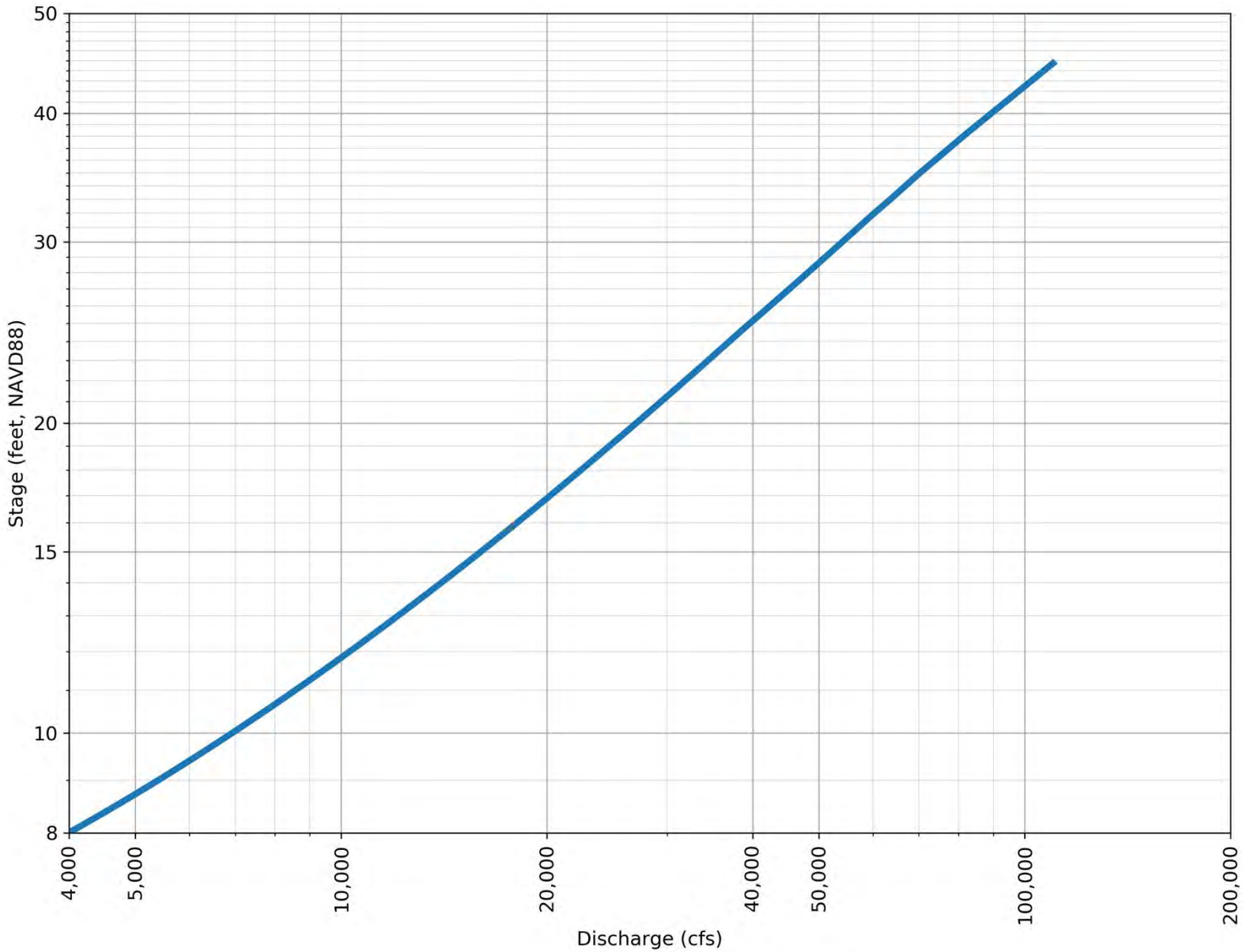


**Figure 4. Sacramento River at Verona Stage Rating Curve (USGS)**

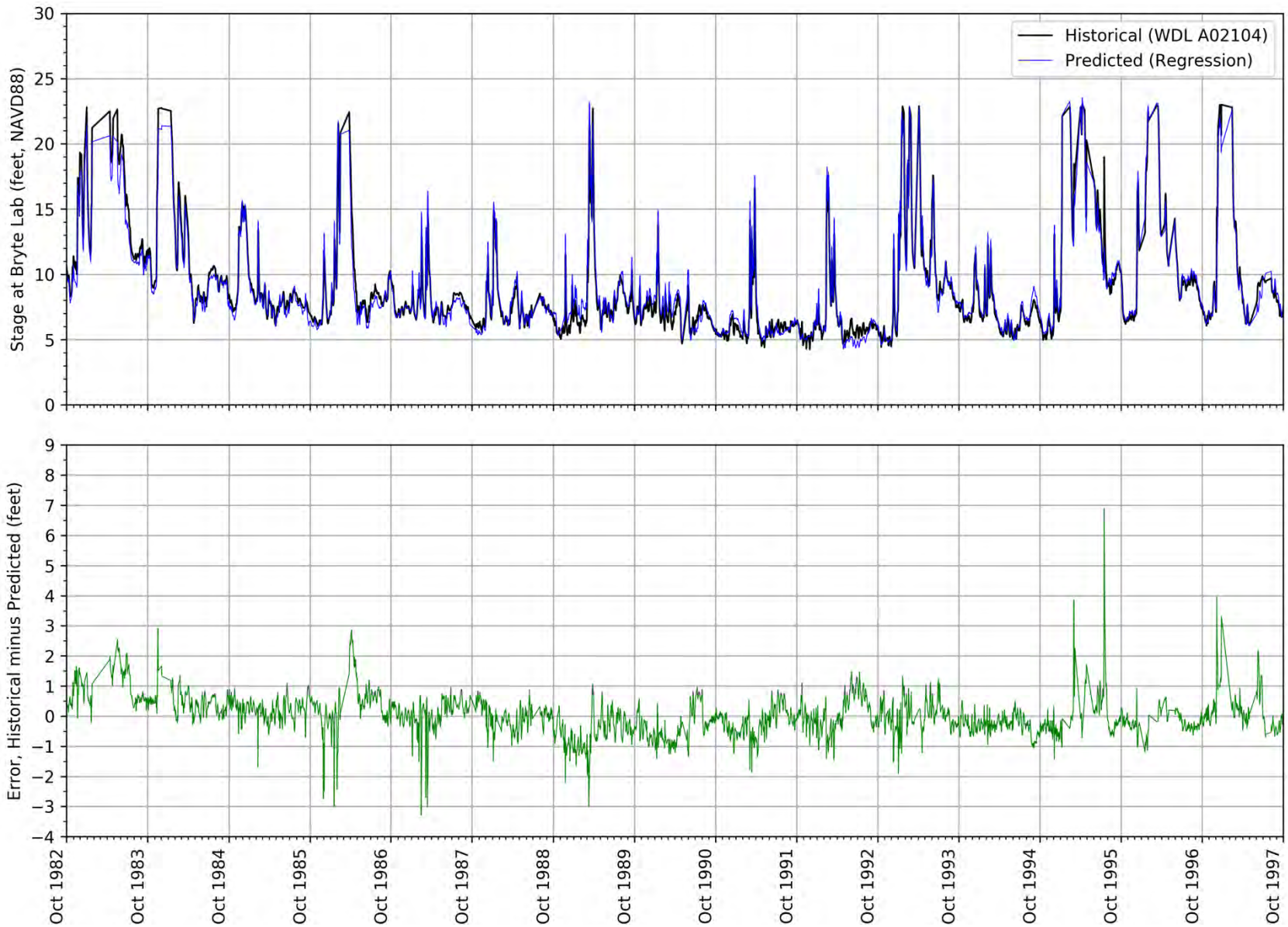


**Figure 5. Comparison of Historical Bryte Lab vs. Predicted and Absolute Error in Estimate per Day (WY 1982 to 1997)**

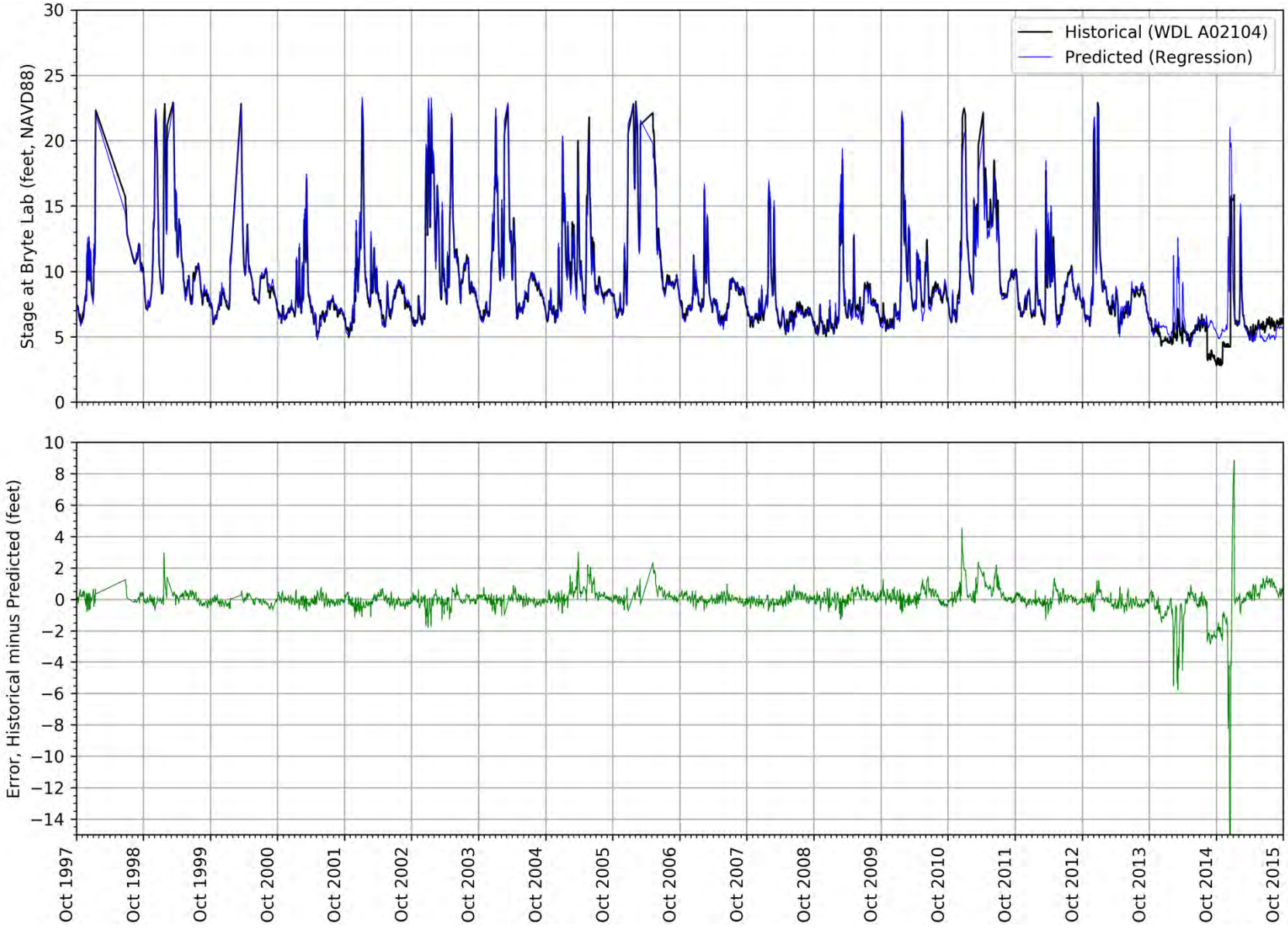


**Figure 6. Comparison of Historical Bryte Lab vs. Predicted and Absolute Error in Estimate per Day (WY 1997 to 2015)**

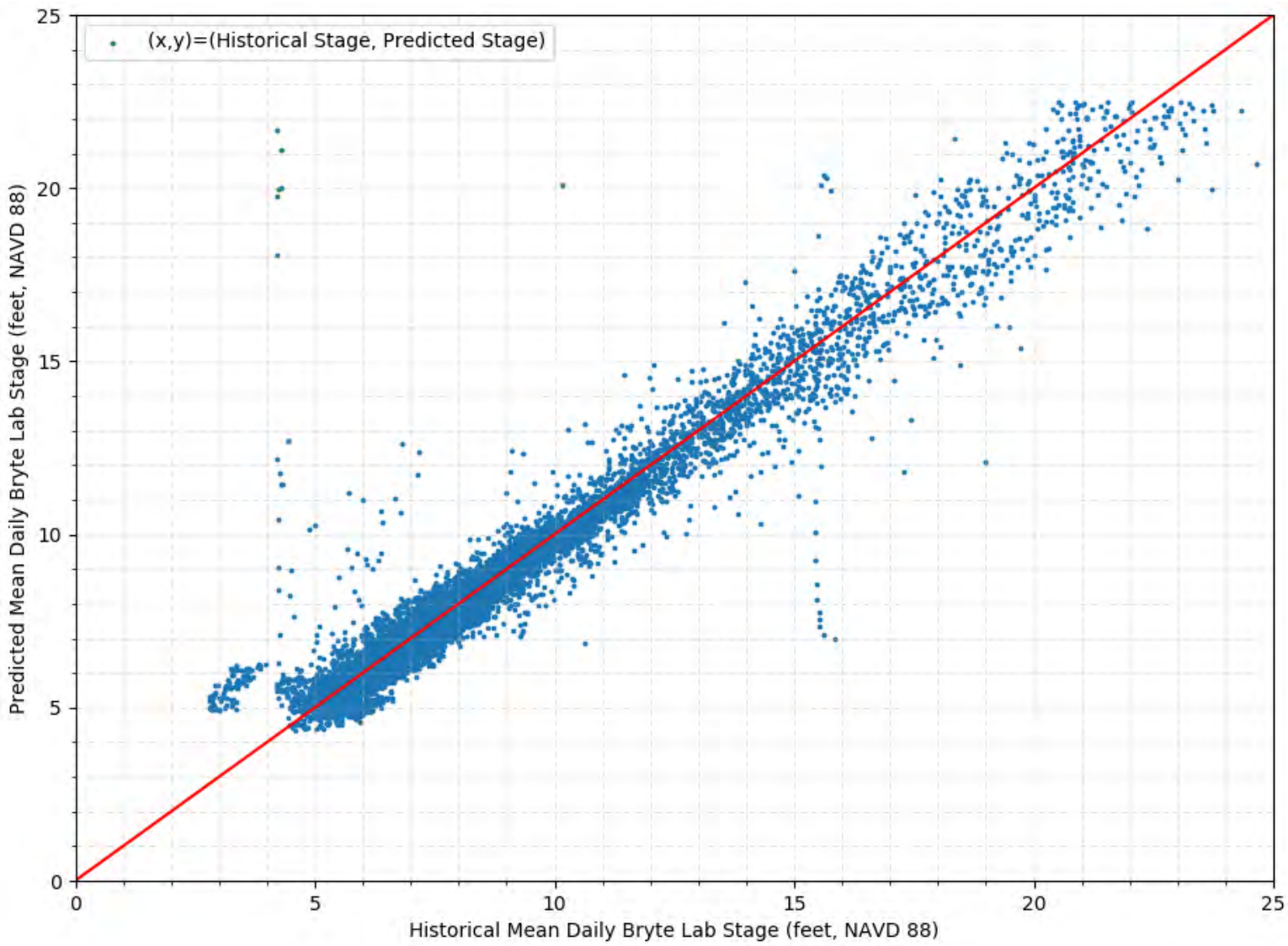


**Figure 7. Regression Validation against Historical Bryte Lab**

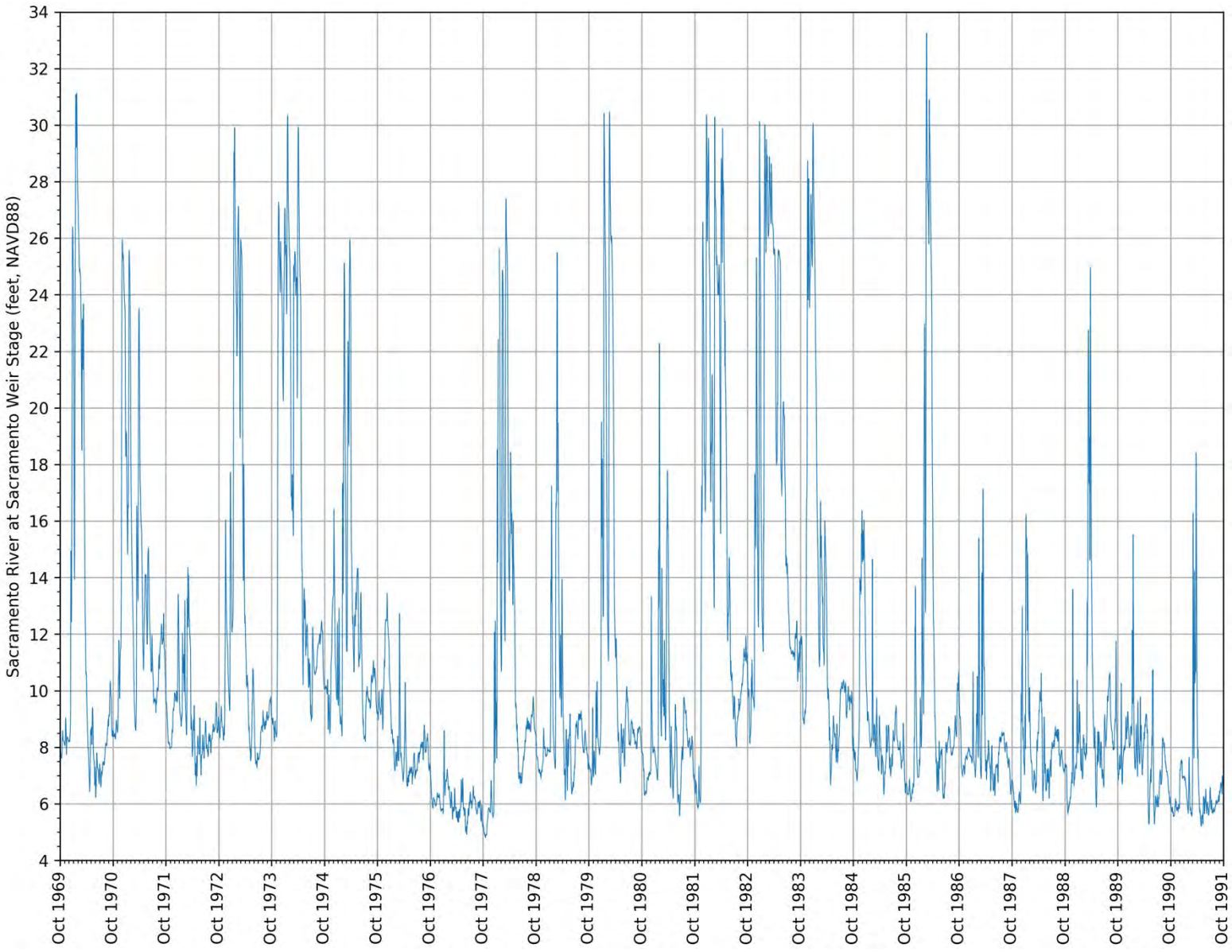


**Figure 8. Predicted Sacramento River at Sacramento Weir Stage (WY 1970 to 1990)**

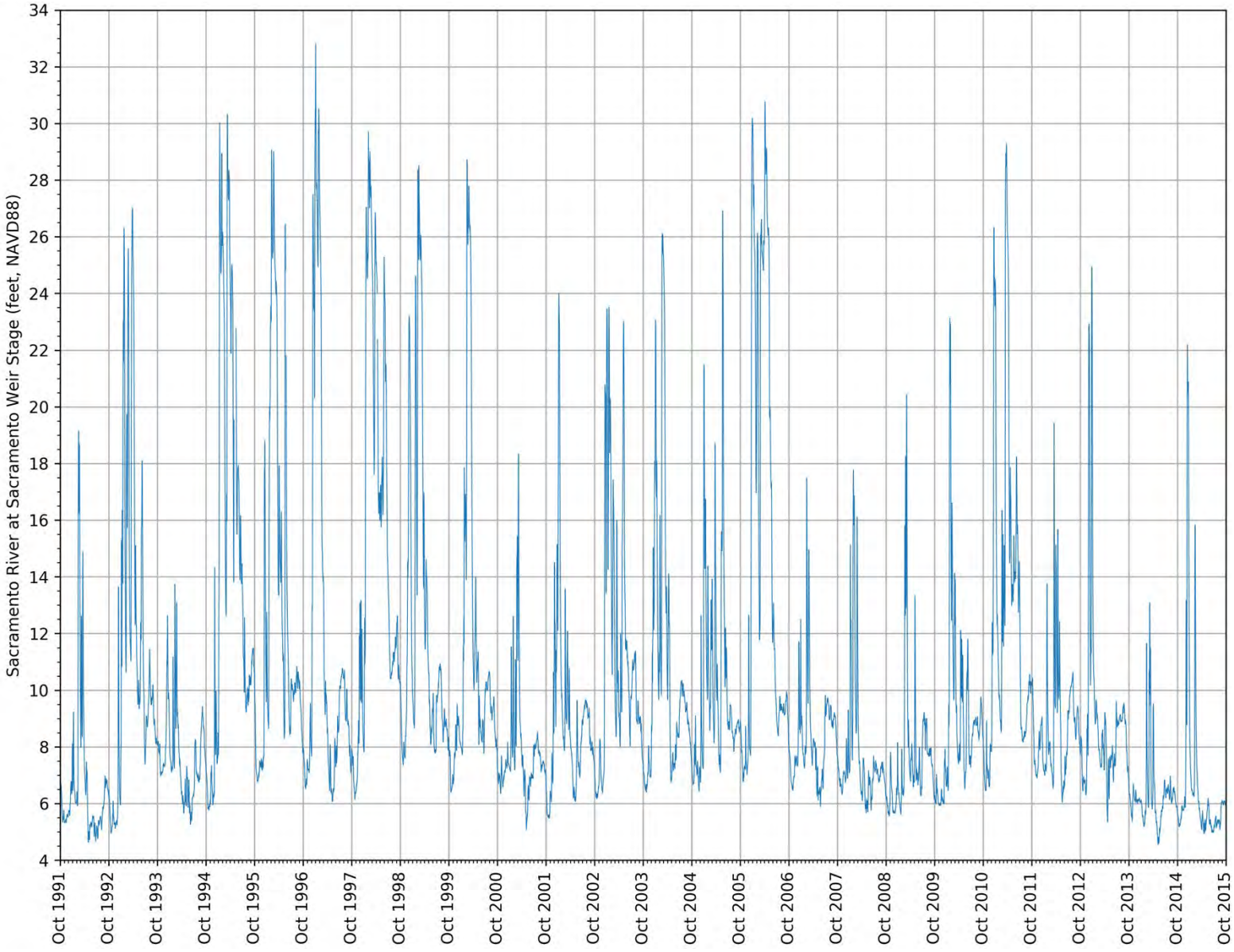


**Figure 9. Predicted Sacramento River at Sacramento Weir Stage (WY 1990 to 2015)**

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# TECHNICAL MEMORANDUM

**DATE:** June 2, 2020

**PREPARED BY:** MacKenzie Guilliams and Patrick Ho, P.E., MBK Engineers

**REVIEWED BY:** Don Trieu, P.E., MBK Engineers

**SUBJECT:** **Sacramento River Flow Reduction Analysis from Sacramento Weir Fish Passage Diversion**

## 1. Summary of Findings

This technical memorandum documents the approach, results, and analysis of reduced flows in the Sacramento River at Freeport, as a result of operating the proposed Sacramento Weir fish passage structure. Two fish passage operations were analyzed using a historical stage record to rate mean daily flows through the structure at the operating range between stage 10 feet and 26 feet NAVD 88 on the Sacramento River at Sacramento Weir. The corresponding reduction in mean daily flows at Freeport are then calculated. The calculations are then disaggregated by month and Sacramento River Water Year Index or water year types. This analysis shows that the fish passage structure would operate: 7% of wet years, 3% of above normal years, less than 1% of below normal years, and not operate during dry and critical years. In those durations of operating the fish passage, the reduction of flows at Freeport would be, at most, 2% of historical flows. This operation assumes that the fish passage structure would stop operating by July 1 every year to prevent fish passage structure flowing through the summer. A second set of operations was analyzed that does not stop fish passage operations by July 1 so long as the Sacramento River stage is in the fish passage operating elevation. That second analysis shows that the fish passage structure would operate 7% of wet years, 3% of above normal years, less than 1% of below normal years, and not operate during dry and critical water years. During those durations of operations, the reduction of flows at Freeport would be at most 2% of historical flows. Without the backstop in July, certain wet years will divert water through the fish passage structure. However, this occurrence is infrequent and operates 2% of the wet years during the months between July and September. Further details are articulated in this technical memorandum.

## 2. Purpose

The Sacramento Weir is an integral flood control infrastructure in the Sacramento River Flood Control Project, and is being widened as part of the American Rivers Common Feature General Reevaluation (USACE, 2015). The widened portion of the Sacramento Weir will be ungated and have a crest elevation at 26 feet, NAVD 88. This proposed crest elevation is approximately 3.0 to 3.5 feet lower than the top-of-gates in the existing weir. This would allow the Sacramento River to spill flood waters into the Sacramento Bypass more frequently, but would also raise the potential concern of fish stranding, particularly the up-migrating adults. A Fish Passage Project Design Team (PDT) is currently providing supporting design data for a fish passage structure that would allow stranded fish to return back into the

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Sacramento River. This information will be used to support the Sacramento Weir Widening Supplemental Environmental Impact Statement/Environmental Impact Report prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

Water flowing through the proposed fish passage structure is routed from the Sacramento River and into the Yolo Bypass. MBK Engineers (MBK) has prepared an analysis to characterize the reduction of flow on the Sacramento River under a set of fish passage operating criteria. A separate workgroup has been tasked, and are working in parallel with the PDT, to develop the Operations and Maintenance (O&M) component of the fish passage structure. To move forward with the environmental documentation in reporting the flow reduction on the Sacramento River, the PDT has made assumptions on how the fish passage structure will be operated. Data produced from this analysis will be provided to the O&M workgroup for consultation.

While this technical memorandum documents reduced flows in the Sacramento River at Freeport as a result of operating the proposed Sacramento Weir fish passage, it does not document the impact of water surface elevation, duration, or frequency of fish passage flows on the Yolo Bypass.

# 3. Approach

The analysis was performed over a historical period from 1970 to 2015, and evaluates how the diversion of water through the fish passage would impact flows downstream of the structure on the Sacramento River. HDR has prepared an elevation-flow rating curve of the fish passage structure based on stage on the Sacramento River at Sacramento Weir. Stage measurements on the Sacramento River at Sacramento Weir are taken only during flood events; therefore, the historical record is incomplete. From a flood spill coincidence analysis in the Yolo Bypass, a series of mean daily stage on the Sacramento River at Sacramento Weir was prepared (MBK, 2019) to provide estimates during periods of high-stage periods specifically at stage elevations greater than 23 feet, NAVD 88. These estimates used gage data on the Sacramento River at I street to estimate a mean daily stage at the Sacramento Weir using a regression. During periods of low-stage (less than 23 ft.), a slope-method (MBK, 2020) using a regression to estimate stage differences between historical measurements from Sacramento at Verona and Sacramento River at Bryte Lab was applied to provide a more complete record.

Estimated mean daily flow through the fish passage structure is then determined using the elevation-flow rating curve provided by HDR. This results in a daily time series of maximum flows through the fish passage structure. Flows through the fish passage structure were then divided by flows measured on the Sacramento River at Freeport (USGS, 2020) for that particular day, which yields the proportion of flows reduced at Freeport. For instance, if the mean daily flow diverted from the Sacramento River through the fish passage was 100 cfs and the corresponding flow at Freeport was 10,000 cfs, then the flow reduction is 100 cfs / 10,000 cfs = 1%. Flows on the Sacramento River at Freeport account for flows from the American River and the Sacramento River below the Sacramento Weir, and is the Sacramento River inflow source into the California Delta. Effects will be measured in reference to this location. Effects are measured by analyzing daily statistical exceedance analysis of flow reductions for the period between water year 1970 through 2015. The proportion of flows reduced at Freeport is sorted into plotting positions by month and by Sacramento River Water Year Index Types (WYI). These exceedances characterize frequency and timings in flow reductions. Two ranges at 1% intervals from 0% to 2% of percent reduction in flow at Freeport are summarized in tables by month and WYI.

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# 4. Operational Criteria

The fish passage structure will operate to allow stranded fish an opportunity to migrate from the Sacramento Bypass to the Sacramento River, following a period when the Sacramento Weir is overtopped. Once the stage at Sacramento River at the Sacramento Weir reaches an elevation of 26 feet, the expanded portion of the Sacramento Weir hydraulically connects the Sacramento River and the Sacramento Bypass. Once stage recedes below 26 feet, the expanded portion of the Sacramento Weir ceases to spill, and fish may become stranded in the Yolo Bypass and Sacramento Bypass. This will be referred to as an overtopping event. Therefore, operation of the fish passage structure begins once the stage recedes below 26 feet and continues until stage reaches 10 feet, at which point the fish passage structure closes. This also assumes that the gates on the existing Sacramento Weir were not open.

The fish passage structure from the 65% design is shown in Figure 1. The passage structure contains a fish passage channel and a fish ladder. Depending on the stage of the Sacramento River at Sacramento Weir, different gate configurations can be utilized and allow different magnitude flows through the passage structure. For example, at elevation below 17 feet and above 10 feet, both the fish passage channel and ladder are utilized and yield greater flow through the fish passage structure. Above elevation 17, only portions of the fish passage structure are utilized. The elevation flow rating for the fish passage structure is shown in Table 1 and is referred to as the operating elevation range.

**Table 1. Elevation versus Flow Rating**

| Stage on the Sacramento River at Sacramento Weir (feet, NAVD 88) | 10 | 12 | 14 | 15 | 16 | 17 | 20 | 22 | 26 |
|---|---|---|---|---|---|---|---|---|---|
| Flow (cfs) | 0 | 237 | 432 | 520 | 805 | 882 | 174 | 230 | 351 |

While the O&M workgroup is working in parallel on defining the operational criteria, two assumptions are layered onto the criteria described above. These assumptions are described as follows:

## Scenario 1 - July 1st Backstop Operation

In years where the stage at Sacramento Weir remains within the operational elevation range past spring, the fish passage structure will close on the last day of June. The fish passage structure may reopen if an overtopping event occurs later in that year, such as high-stage events in November and December.

## Scenario 2 - No Backstop Operation

The second scenario would keep the fish passage structure open as long as the stage on the Sacramento River at the Sacramento Weir is within the range of the operating elevations, which is between 10 feet and 26 feet.

# 5. Results

Plots highlighting time-windows of fish passage structure operations for Scenario 1 are shown on Figure 2, and shown on Figure 12 for Scenario 2. A tabulation of the percentage of days in a given month that the fish passage structure is diverting water, sorted by WY type, is presented in Table 2 through  for

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Scenario 1, and Table 4 through  for Scenario 2. Additional plots of flow (left plot) and percent of flow reduction at Freeport (right plot), as well as exceedance probabilities by month and water year type are provided in Figure 4 through Figure 11 for Scenario 1, and Figure 13 through Figure 24 for Scenario 2.

## 6. Discussion

This analysis uses a historical stage time-series from water year 1970 through 2015 to determine the mean daily flow that would be diverted into the Sacramento Bypass through the proposed fish passage structure. Figure 2 illustrates the mean daily flow rate from the mean daily stage from Scenario 1. Recall that Scenario 1 assumes that continuous flows for the fish passage structure flows from an earlier overtopping event will not operate past June 30$^{th}$ of that year. However, overtopping events that occur later in the year will allow the fish passage structure to reopen so long as the stage is within the operating elevation range. The mean daily flows through the fish passage structure, shown in Figure 2, is then divided by the corresponding mean daily flow from the U.S. Geological Survey (USGS) record on the Sacramento River at Freeport, which yields the daily percentage of flow reduction for the analysis period. While a more complete record using regression relationships from a previous analysis was developed on the Sacramento River at Sacramento Weir, missing data still exists in this record. Missing data is also highlighted in Figure 2. The degree of missing data can be greater than a month and further techniques were not applied in this study to estimate missing data. Missing data is treated as no flow through the fish passage structure, and can coincide with short durations of an overtopping event followed by a sudden discontinuity of the stage data for instance from April 30, 1995, to May 14, 1995.

Monthly plotting positions of flow through the fish passage structure and percentage of flows reduced at Freeport, separated by water year types, are provided from Figure 4 through Figure 11. The level of flow reductions are reported as percentage of flow reductions at Freeport using a 1% interval from 0% to 2%. Using monthly plotting positions, various flow reduction levels and their cumulative probability of diverting water for any given water year can be inferred from a historical perspective. Figure 3 illustrates how readers can utilize monthly plotting positions in translating to values shown in Table 2 and Table 3.

The probability of diverting water is determined along x-axis for the given bound of flow reductions on the y-axis. For example, using the blue shaded box on Figure 3, the width of the box in the x-axis direction is the percentage of days out of the total record or 0.5% of days in a March wet year where flows at Freeport were reduced by 2% to 3%. Similarly, using the yellow shaded box, there were 5% of days in a March wet year where flows at Freeport were reduced by 1% to 2%. Finally, using the green shaded box, there were 13% of the days in a March wet year where flows at Freeport were reduced by 0% to 1%. In summary, there is a 0.5% + 5% + 13% = 18% cumulative chance of operating the fish passage during a March wet year. These descriptions can be similarly inferred for other months, year types, and ranges of flow reductions at Freeport.

These percent reductions at Freeport are summarized from Table 2 and Table 3. In Scenario 1, the fish passage structure would primarily be diverting water from January through May. There are fish passage structure operations in November and December during some Wet years, but those operations only reduced Sacramento River at Freeport flows by less than 1%. In March, flows at Freeport were reduced by 1% to 2% on average, during 5% of days in those months of the analysis period (Table 3). In April, flows at Freeport were reduced by 1% to 2% on average, during 4% of days in those months of the analysis period (Table 3). In May, flows at Freeport were reduced by 1% to 2% on average, during 2% of

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days in those months of the analysis period (Table 3). Moreover, the fish passage structure operated primarily during Wet years or 5% of the years in the analysis period, and Above Normal years or 2% of the years in the analysis period. The fish passage structure was operated less than 1% of the years in the analysis period during Below Normal years. These days mostly occurred during the 2004 water year where historical stage on the Sacramento River at Sacramento Weir exceeded 26 feet in February of 2004 for a few days and quickly receded into the fish passage operating elevation range. The stage held above elevation 10 feet until beginning of April. In Scenario 1, the fish passage is assumed to stop fish passage flows by June 30 to prevent carrying over through the summer and therefore flow reduction was back stopped. There were no days where the fish passage structure was in operation during Dry or Critical water year types.

In Scenario 2, without a backstop on July 1, the fish passage structure would potentially divert water through the summer. An example would be in 1983, which is a Wet water year type. After a hypothetical overtopping event in March of 1983, stage on the Sacramento River would have held above 10 feet until mid-October. Under the operational assumptions of Scenario 2, the fish passage structure would be flowing through the summer of 1983 as shown in Figure 12. In March, flows at Freeport were reduced by 1% to 2% on average, for 2% of days during the analysis period (Table 5). In April, flows at Freeport were reduced by 1% to 2% on average, for 2% of days during the analysis period (Table 5). In May, flows at Freeport were reduced by 1% to 2% for 2% of days during the analysis period (Table 5). There were no days where the fish passage structure was in operation during Dry or Critical year types.

Probability of exceedance plots are shown from Figure 13 through Figure 24 and characterizes plotting positions of flow diversions at the fish passage structure by month and water year type from the simulated operations of Scenario 2. Scenario 2 generally show diversions and reduction in flows at Freeport occurring during Wet and Above Normal year types.

# 7. References

1. (MBK, 2019). Impacts of Sacramento Weir Extension to Agriculture in the Yolo Bypass. October 11, 2019.
2. (MBK, 2020). Estimating Stage on the Sacramento River at Sacramento Weir. June 2020.
3. (USACE, 2015). American River Watershed Common Features General Reevaluation Report. December 2015.
4. (USGS, 2020). Sacramento River at Freeport CA. Gage 11447650 accessed February 2020 at URL https://waterdata.usgs.gov/usa/nwis/uv?site_no=11447650.

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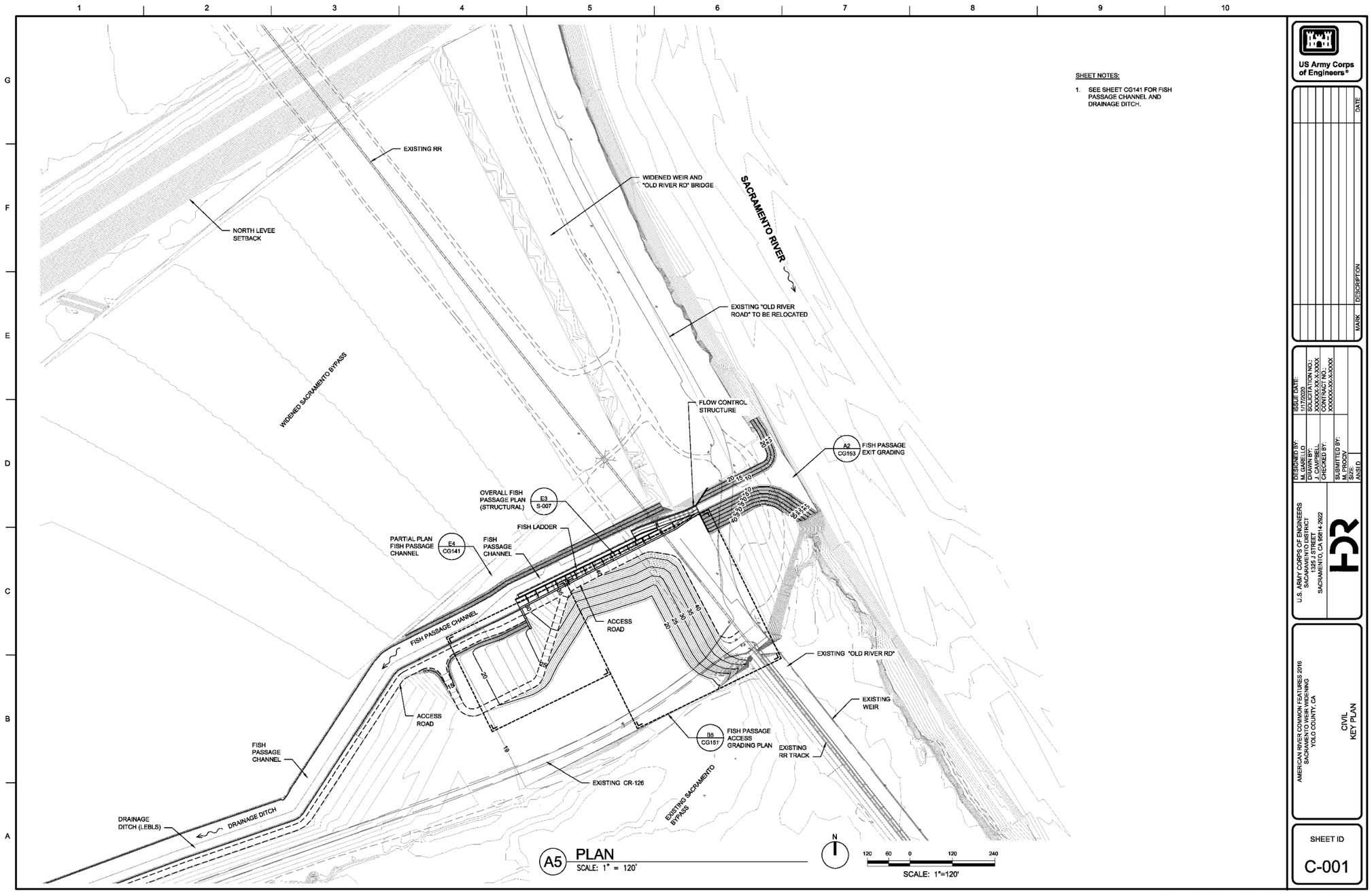


65% DRAFT NOT FOR CONSTRUCTION

**Figure 1. Fish Passage Structure in Plan-View**

**Figure 2. Simulated Operation Periods and Rated Flow Through Fish Passage (Scenario 1)**

**Table 2. Reduction of 0% to 1% of Flows at Freeport – Percent of Days by Month and WY Type (Scenario 1)**

| Water Year Type | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Average (% of Days in Month) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wet (W) | 8% | 8% | 13% | 9% | 6% | 6% | [1]-- | -- | -- | -- | 1% | 6% | 5% |
| Above Normal (AN) | 1% | 4% | 5% | 6% | 2% | 2% | -- | -- | -- | -- | -- | -- | 2% |
| Below Normal (BN) | -- | -- | 1% | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Dry (D) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Critical (C) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Average (% of Days) | 3% | 3% | 5% | 4% | 2% | 2% | 0% | 0% | 0% | 0% | 0% | 2% | |

[1]--indicates 0%

**Table 3. Reduction of 1% to 2% of Flows at Freeport – Percent of Days by Month and WY Types (Scenario 1)**

| Water Year Type | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Average (% of Days in Month) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wet (W) | 3% | 5% | 5% | 6% | 5% | 3% | [1]-- | -- | -- | -- | -- | 1% | 2% |
| Above Normal (AN) | -- | 1% | 3% | 3% | 1% | -- | -- | -- | -- | -- | -- | -- | 1% |
| Below Normal (BN) | -- | -- | 1% | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Dry (D) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Critical (C) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Average (% of Days) | 1% | 2% | 2% | 2% | 2% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | |

[1]--indicates 0%

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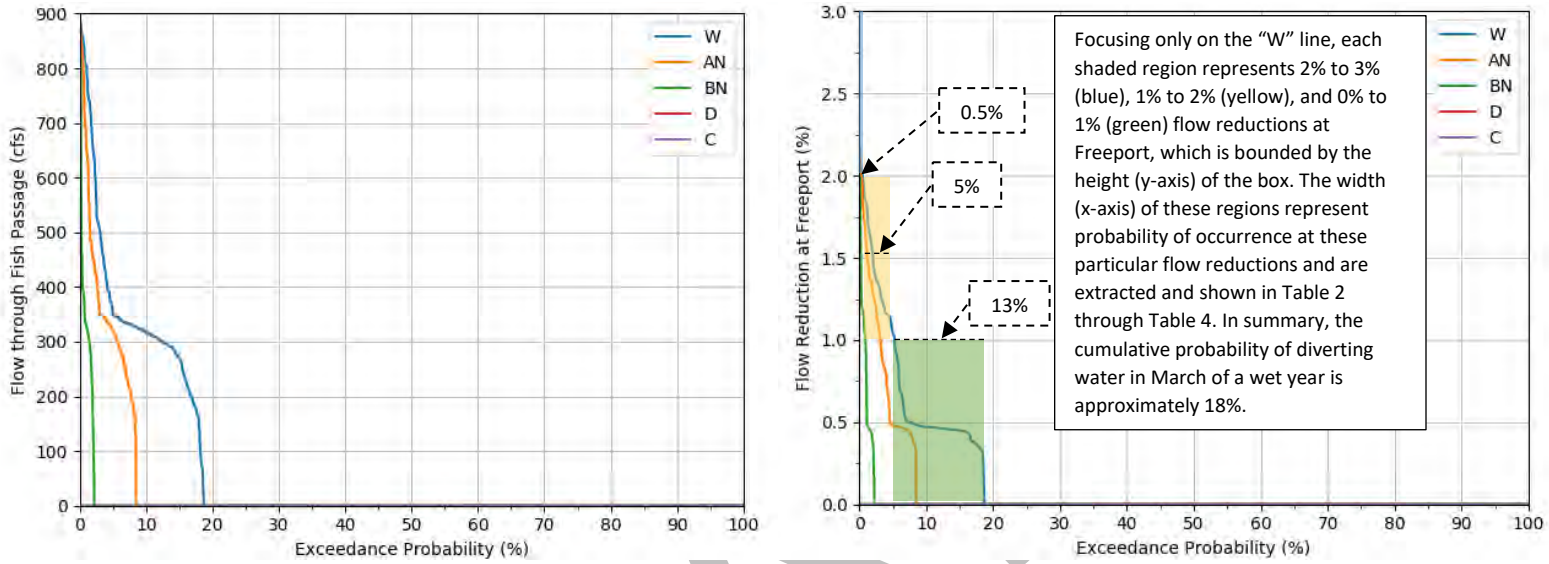


**Figure 3. Sample Usage of March Probability-of-Exceedance of Flow Reduction at Freeport (Scenario 1)**

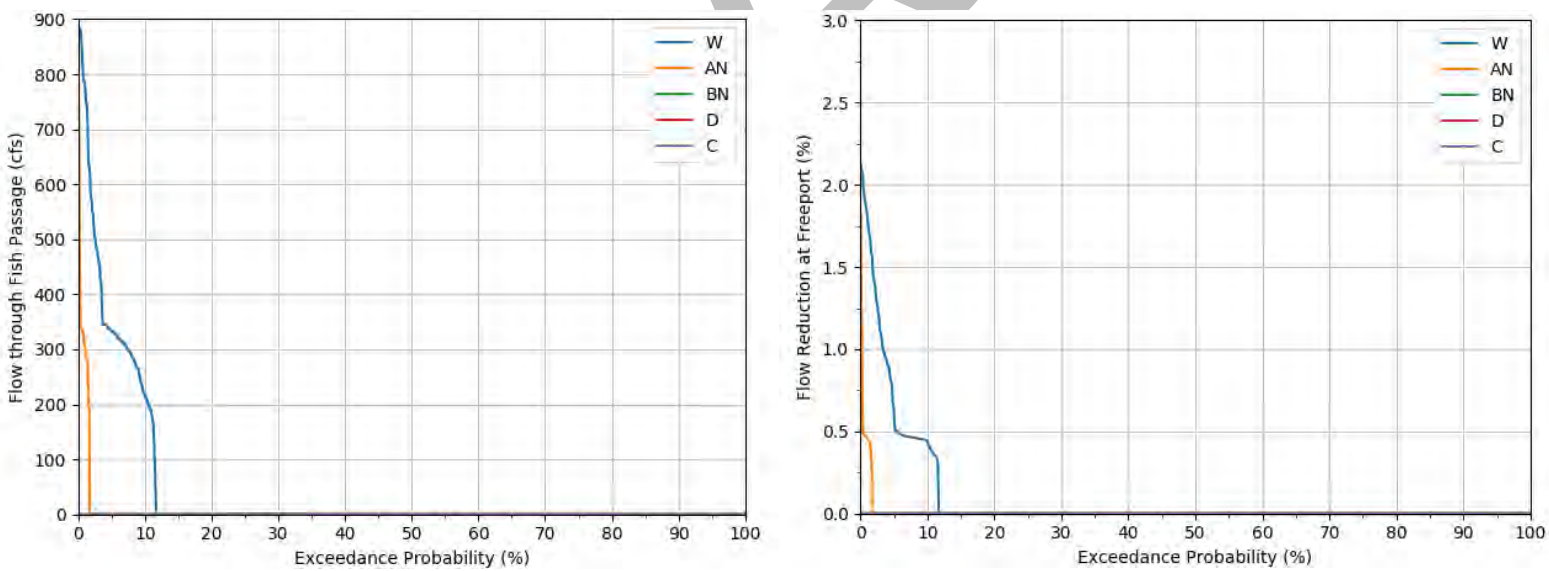


**Figure 4. January Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

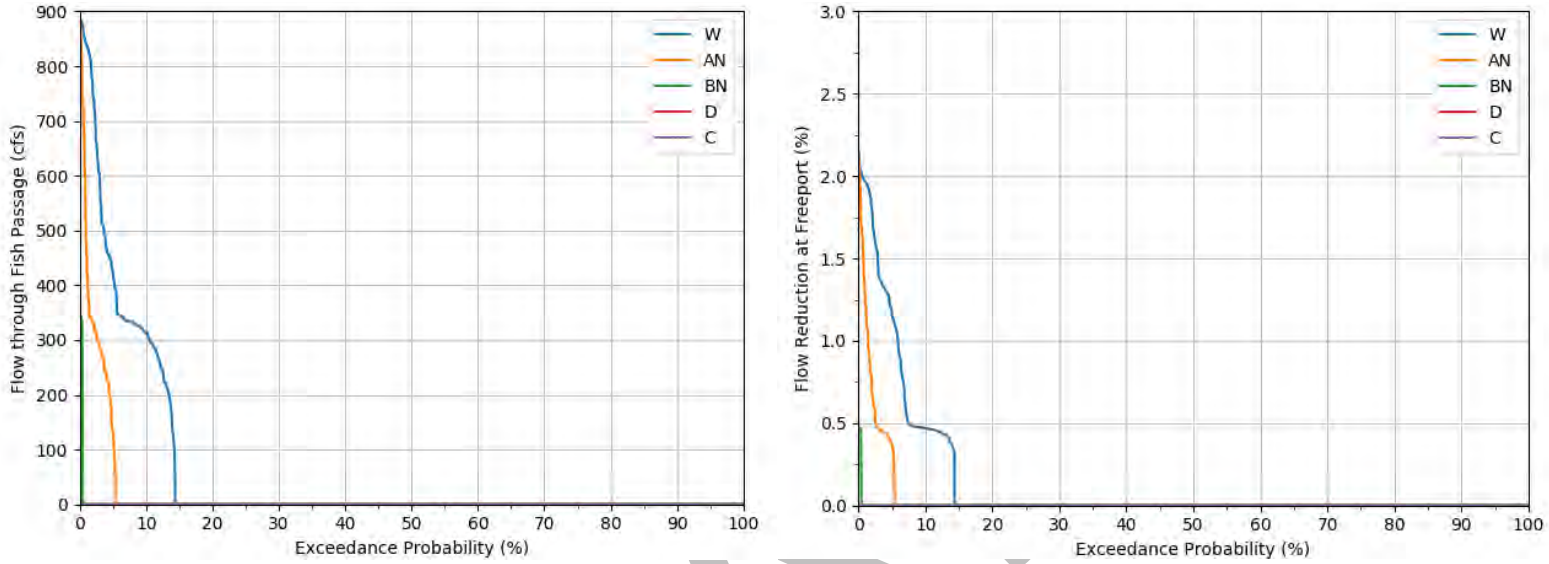


**Figure 5. February Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

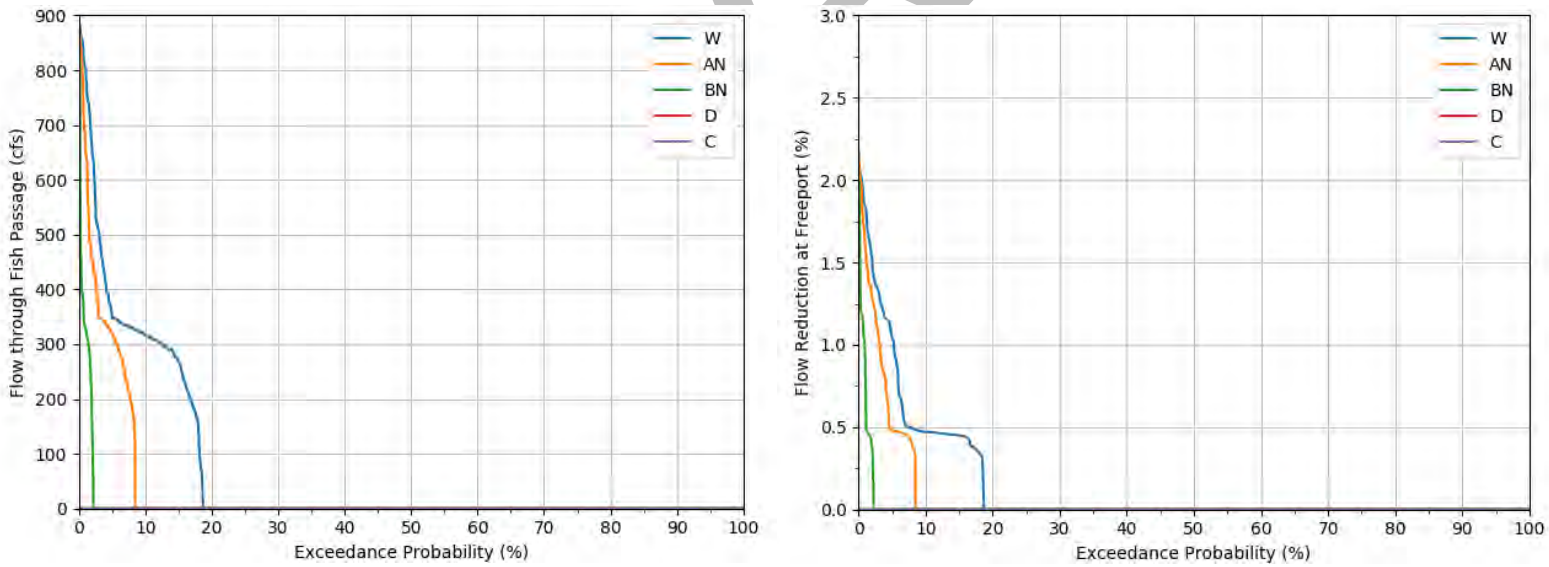


**Figure 6. March Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

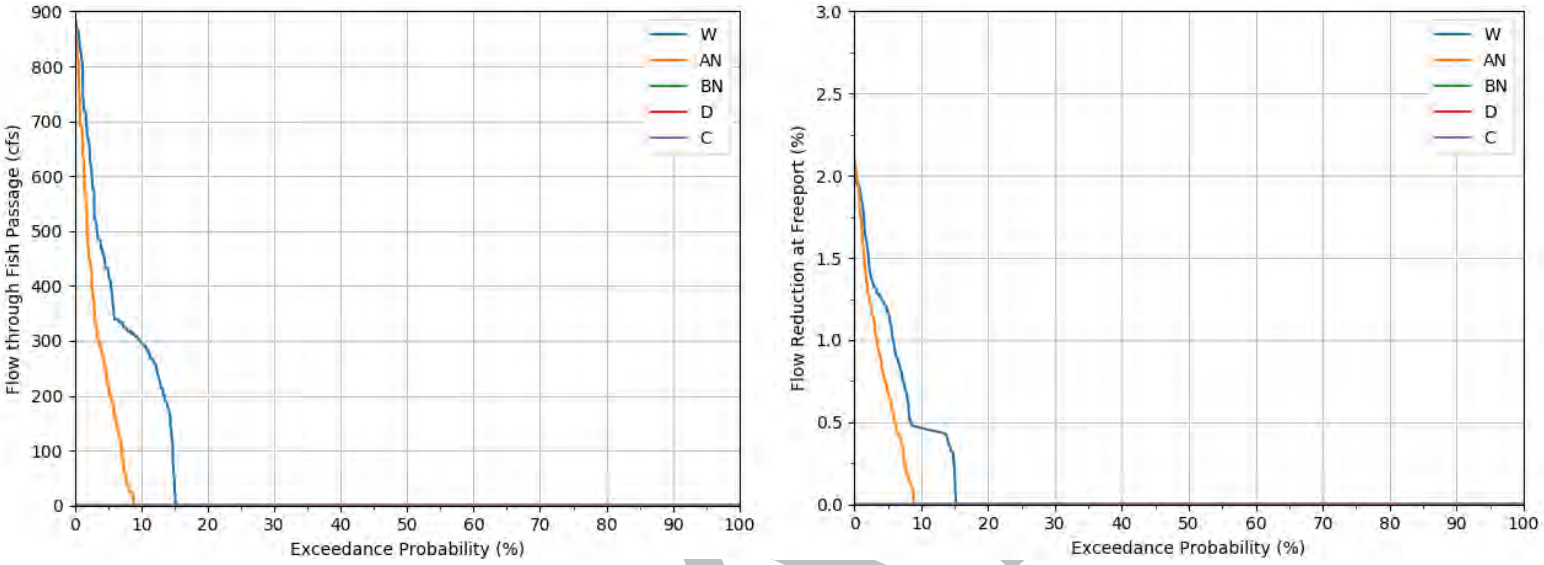


**Figure 7. April Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

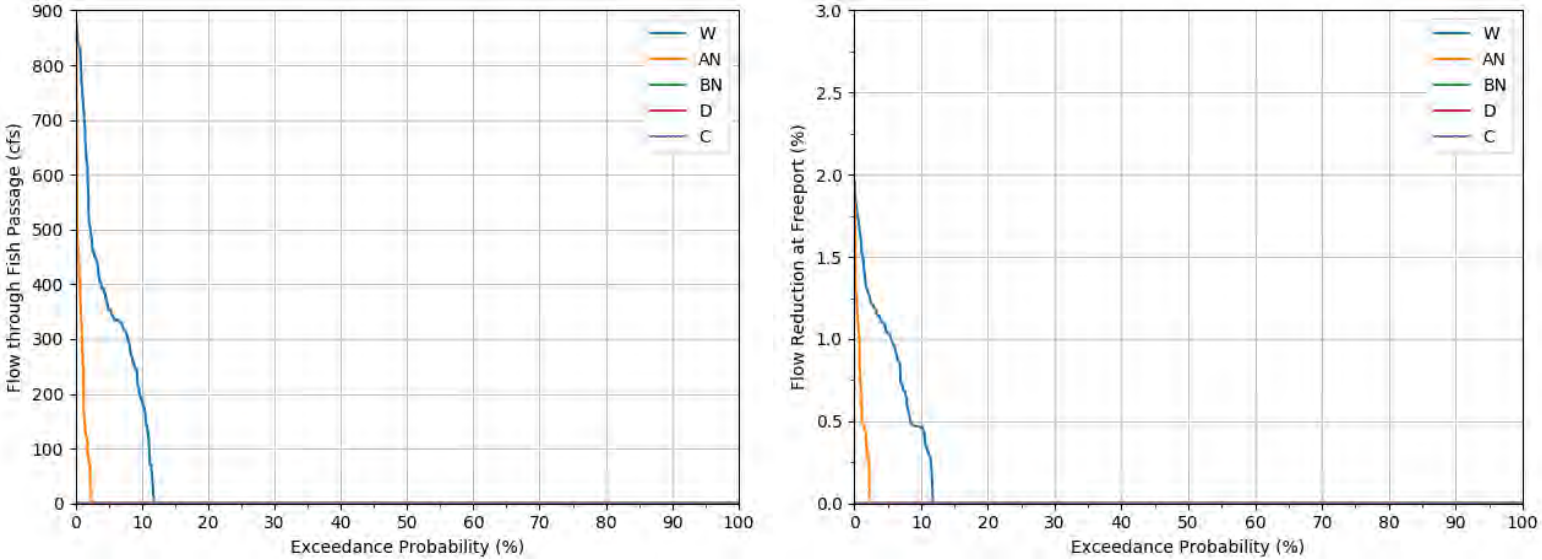


**Figure 8. May Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

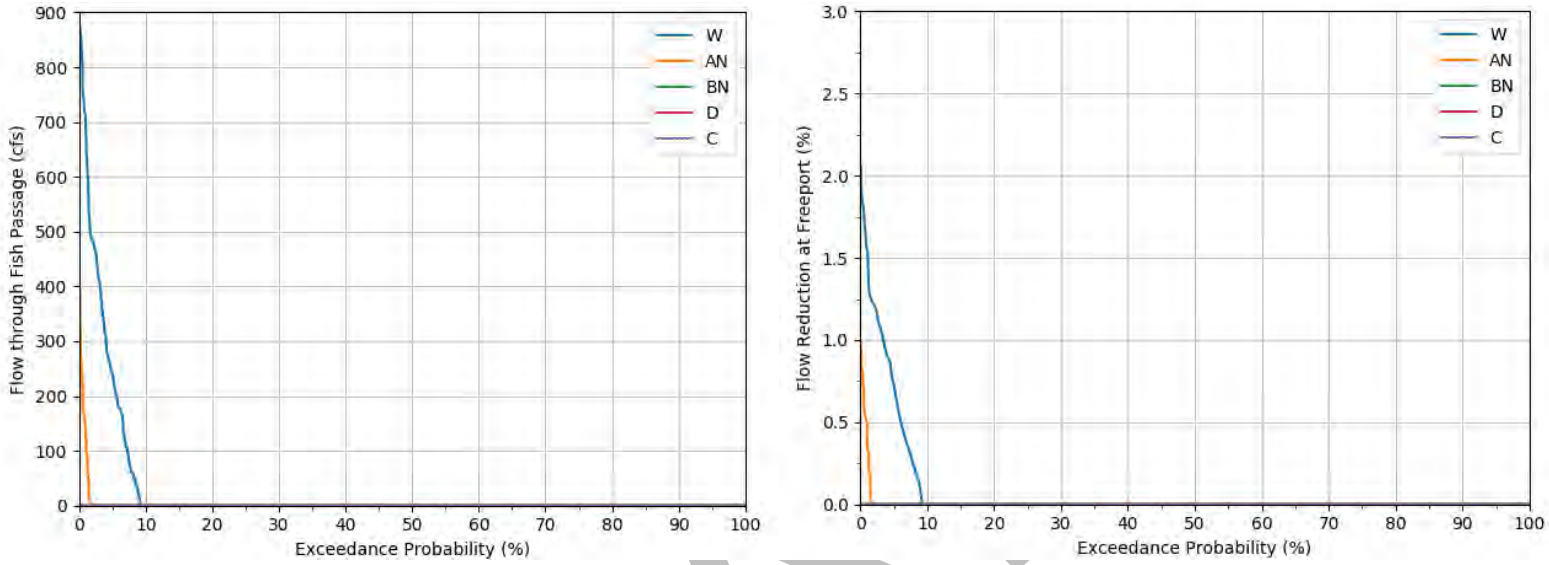


**Figure 9. June Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

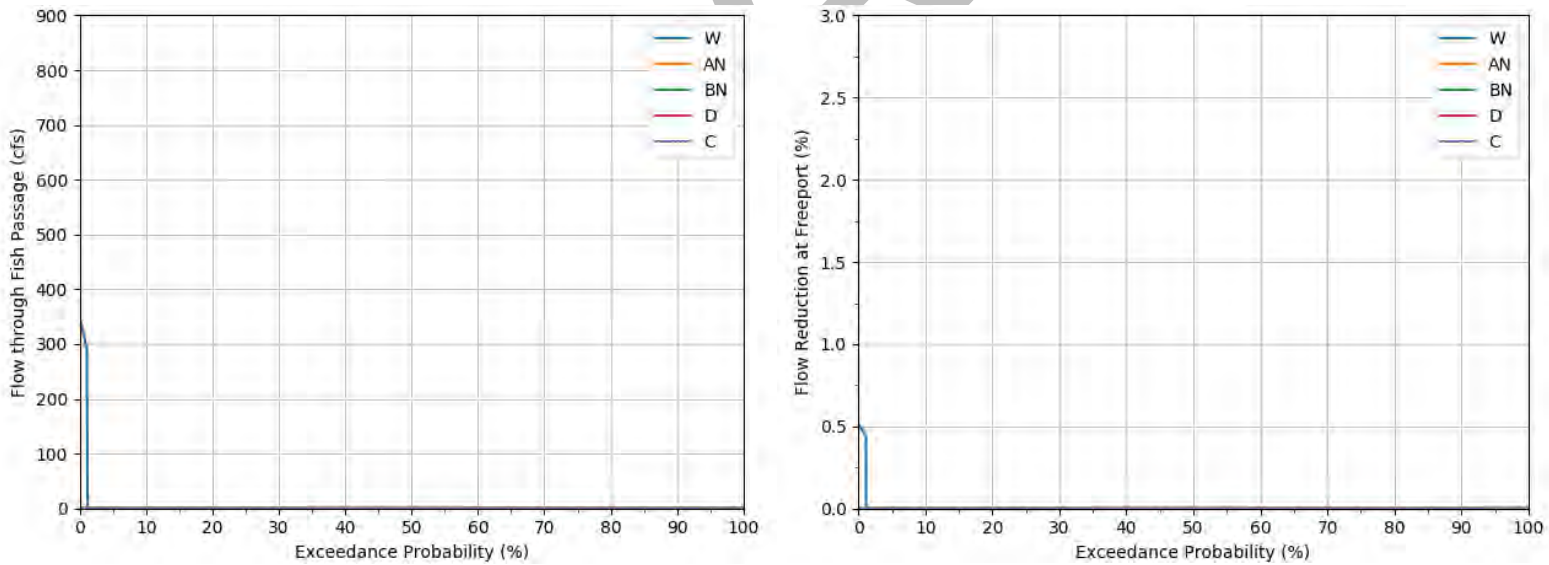


**Figure 10. November Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

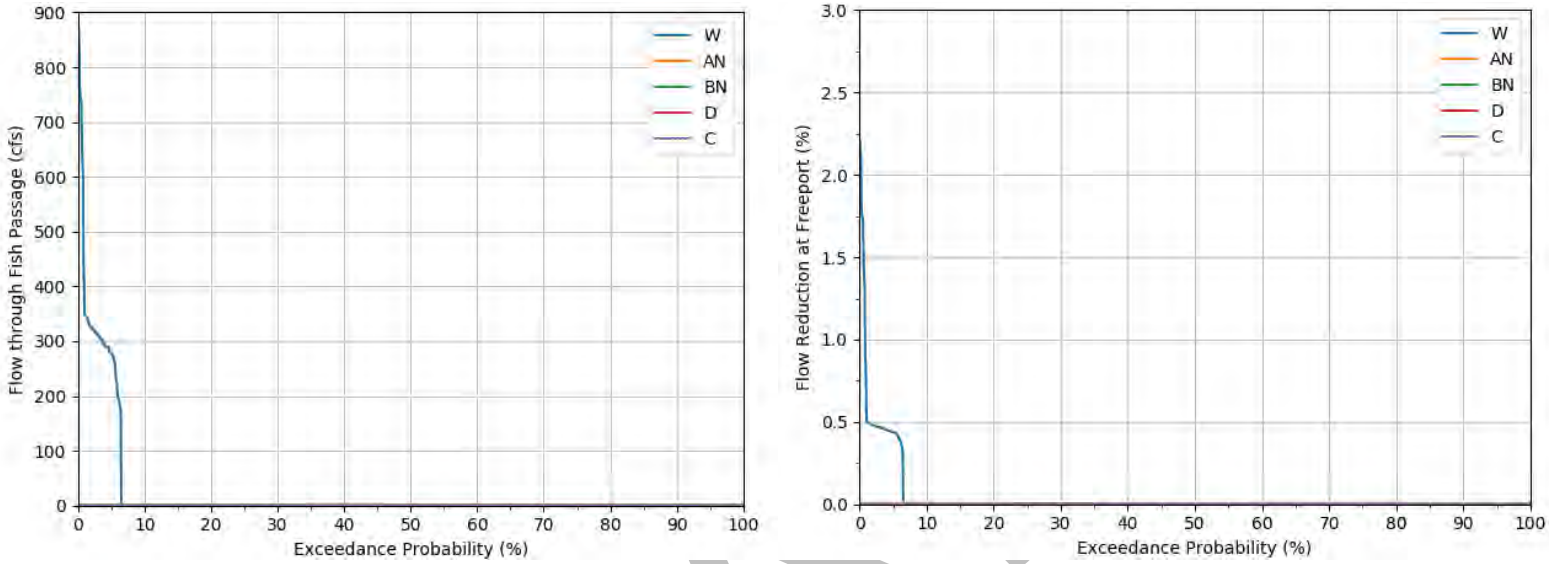


**Figure 11. December Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 1)**

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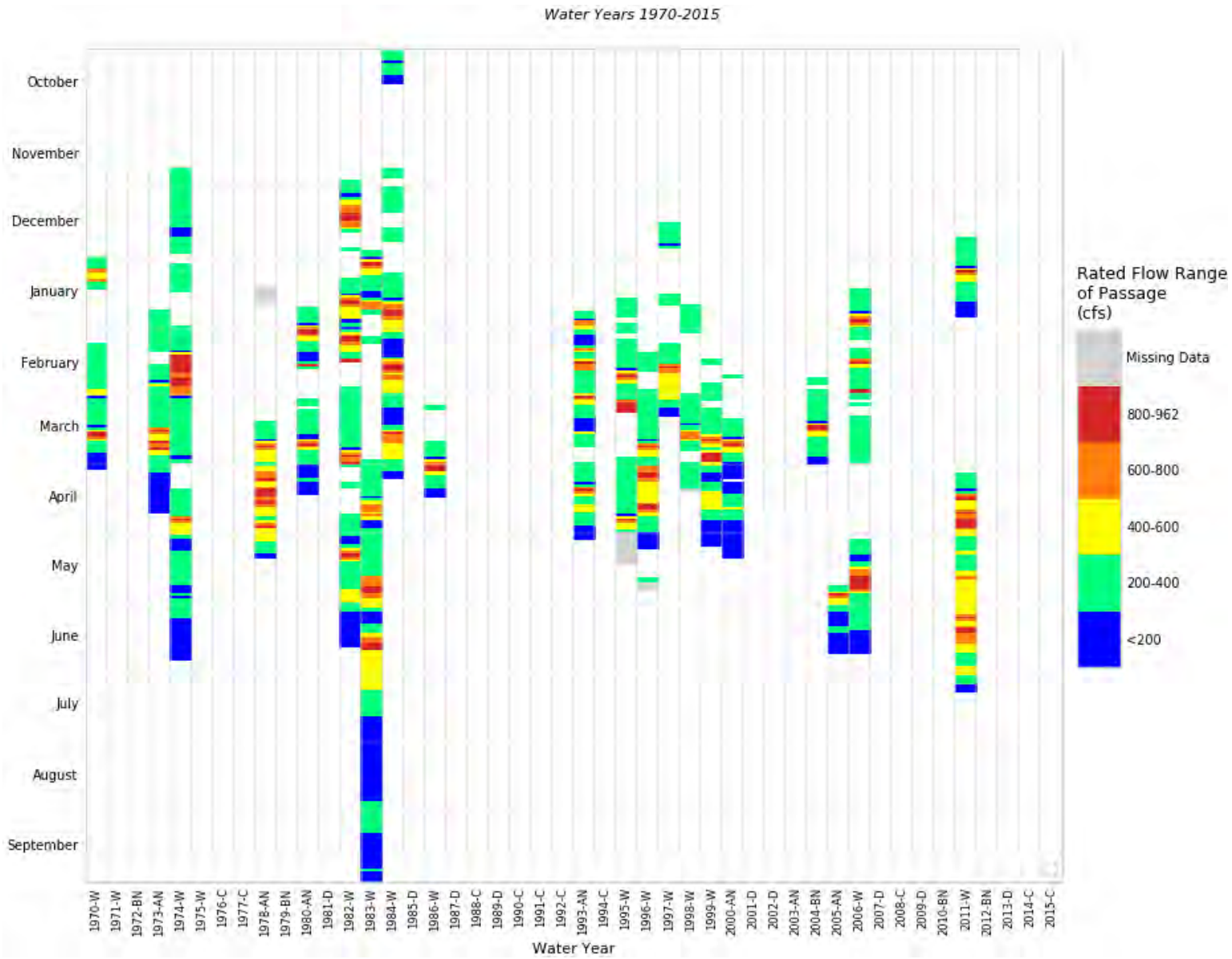


**Figure 12. Simulated Operation Periods and Rated Flow Through Fish Passage (Scenario 2)**

**Table 4. Reduction of 0% to 1% of Flows at Freeport – Percent of Days by Month and WY Type (Scenario 2)**

| Water Year Type | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Average (% of Days in Month) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wet (W) | 8% | 8% | 13% | 9% | 6% | 6% | 2% | 2% | 2% | 1% | 1% | 6% | 5% |
| Above Normal (AN) | 1% | 4% | 5% | 6% | 2% | 2% | -- | -- | -- | -- | -- | -- | 2% |
| Below Normal (BN) | -- | -- | 1% | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Dry (D) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Critical (C) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Average (% of Days) | 3% | 3% | 5% | 4% | 2% | 2% | 1% | 1% | 1% | 0% | 0% | 2% | |

[1]--indicates 0%

**Table 5. Reduction of 1% to 2% of Flows at Freeport – Percent of Days by Month and WY Types (Scenario 2)**

| Water Year Type | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Average (% of Days in Month) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wet (W) | 3% | 5% | 5% | 6% | 5% | 3% | 1% | [1]-- | -- | -- | -- | 1% | 2% |
| Above Normal (AN) | -- | 1% | 3% | 3% | 1% | -- | -- | -- | -- | -- | -- | -- | 1% |
| Below Normal (BN) | -- | -- | 1% | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Dry (D) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Critical (C) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% |
| Average (% of Days) | 1% | 2% | 2% | 2% | 2% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | |

[1]--indicates 0%

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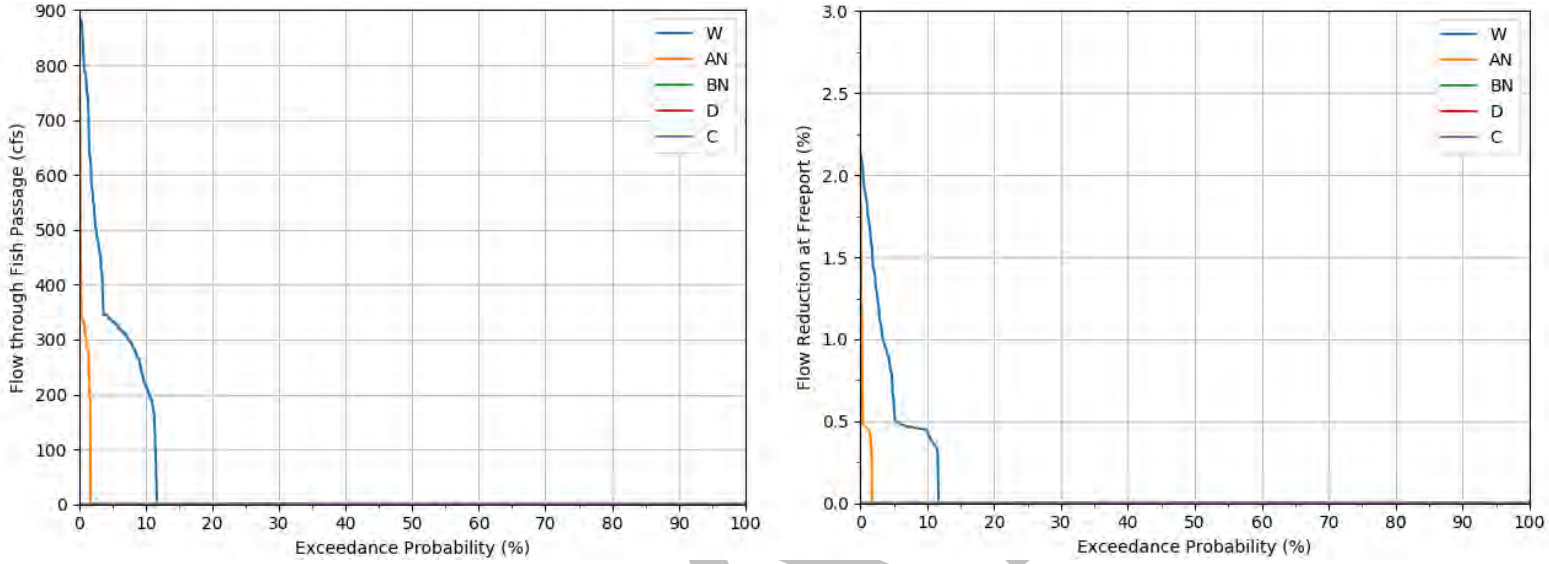


**Figure 13. January Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

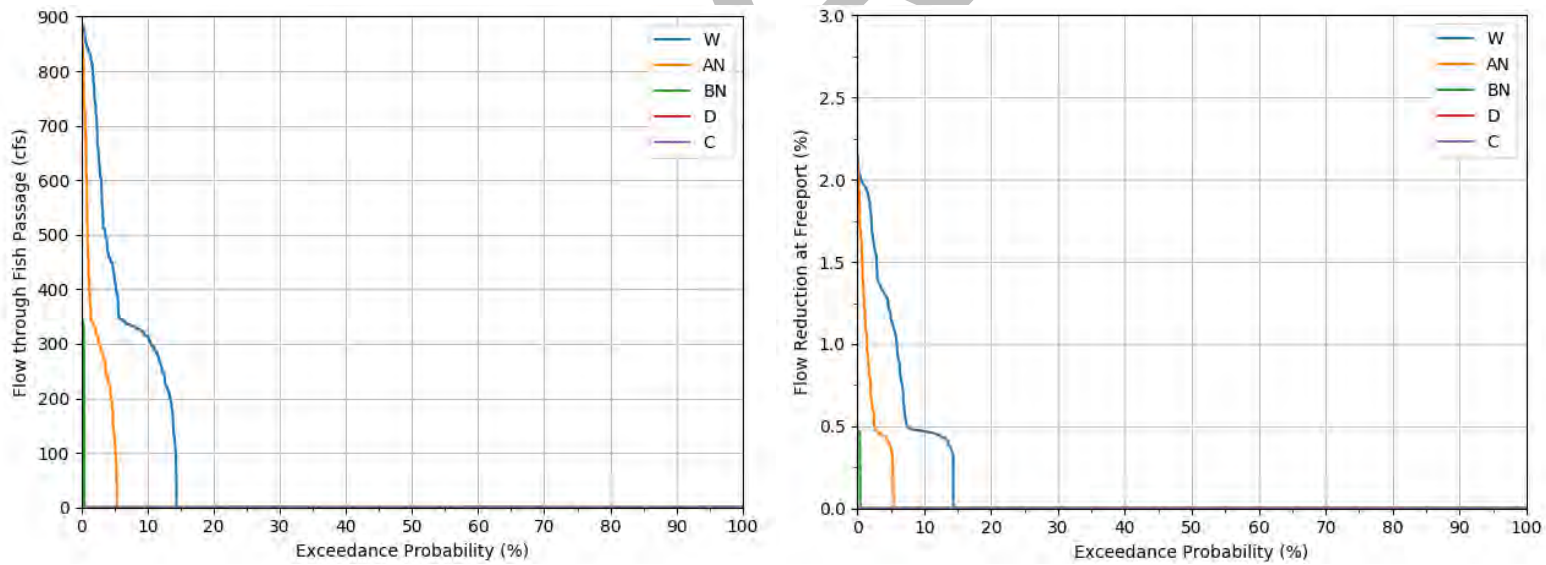


**Figure 14. February Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

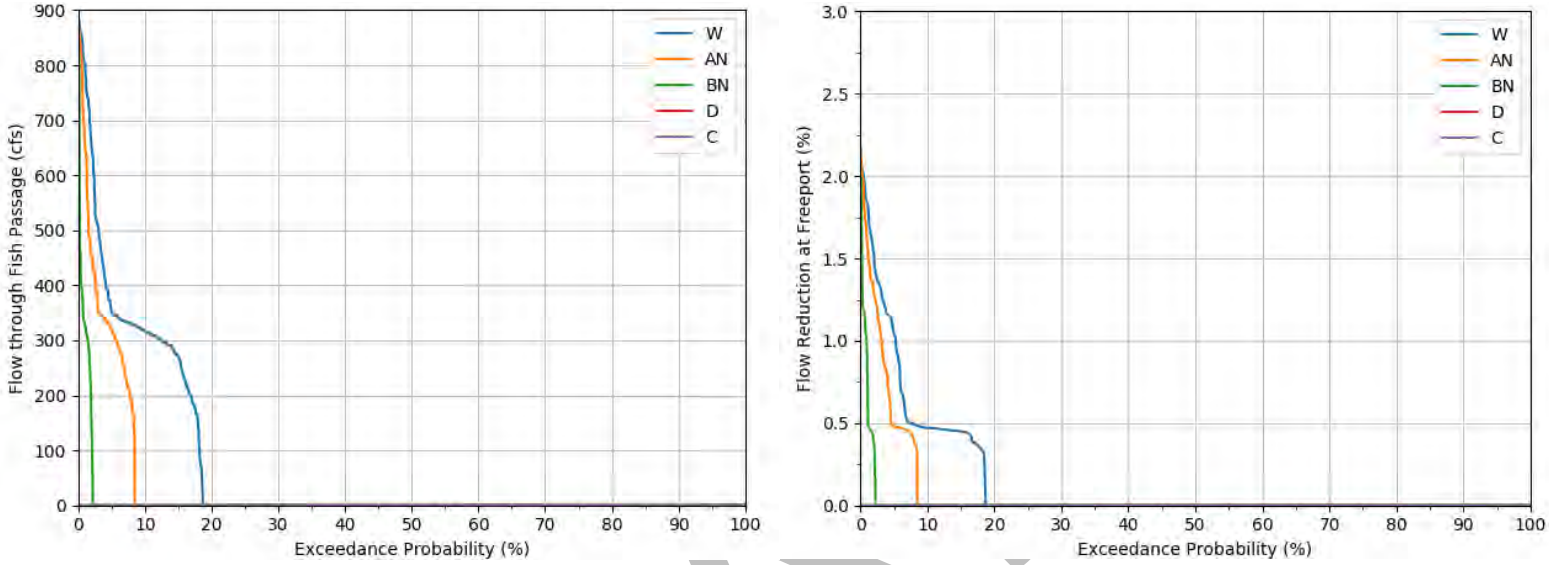


**Figure 15. March Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

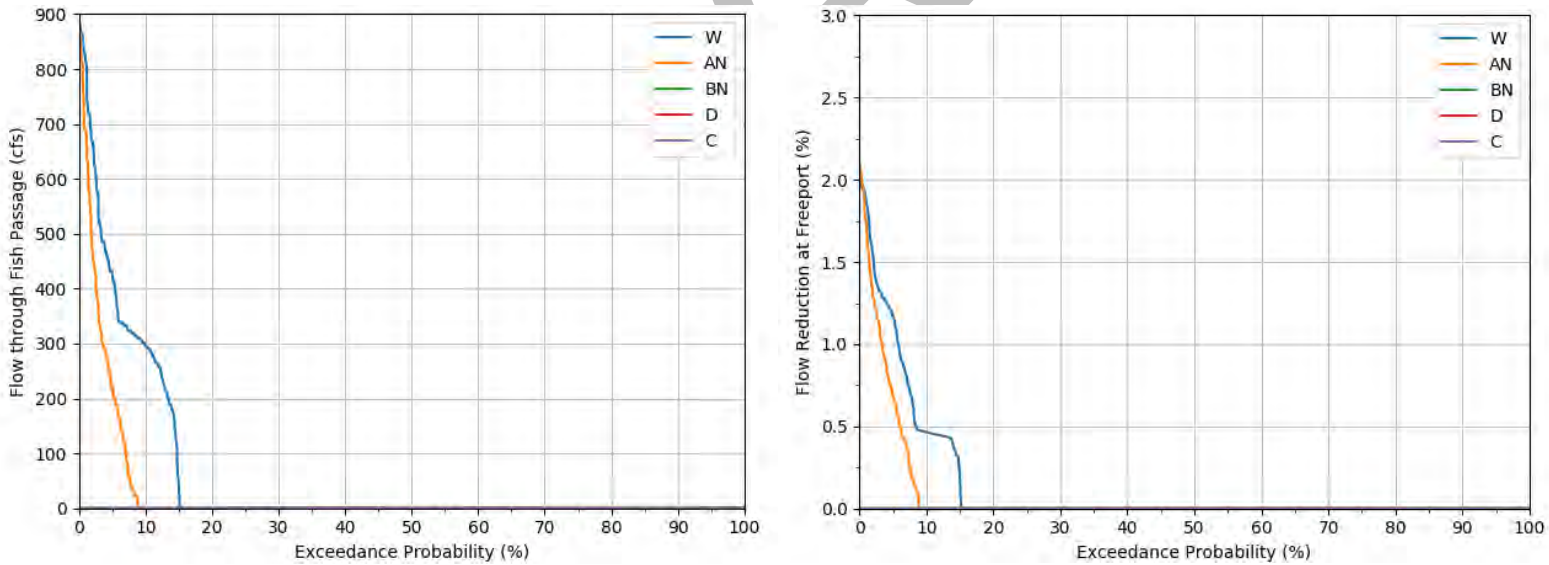


**Figure 16. April Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

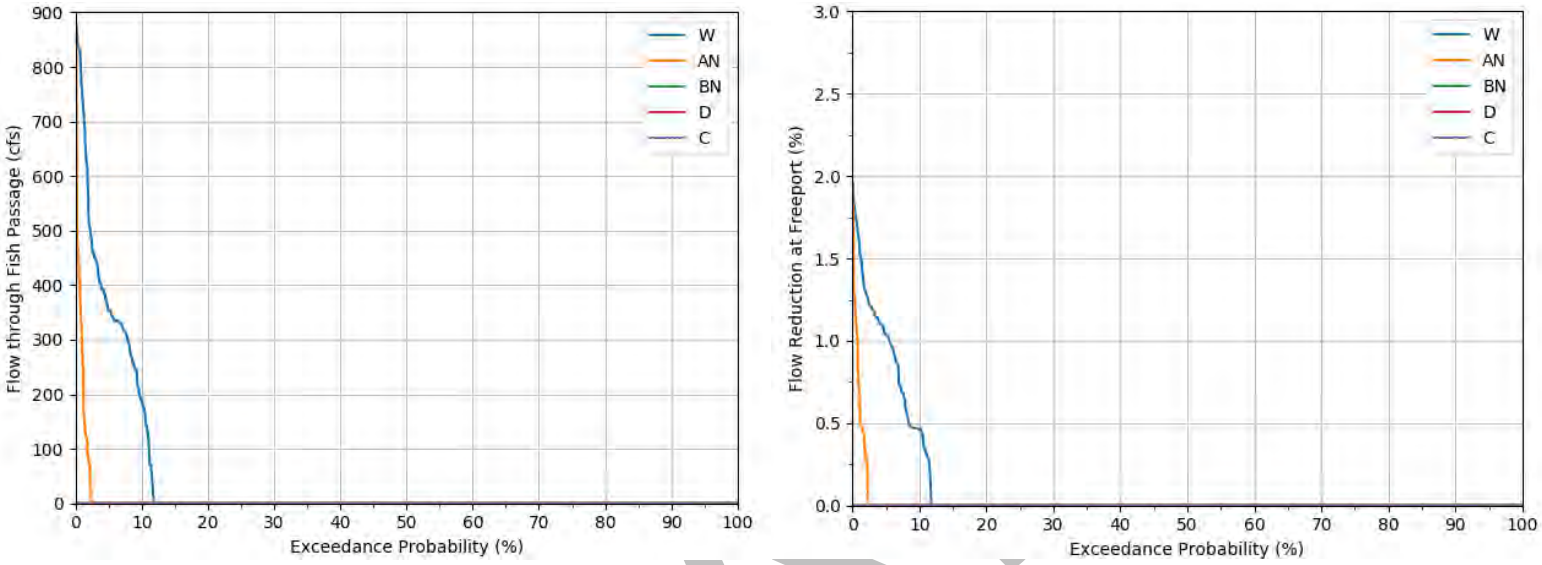


**Figure 17. May Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

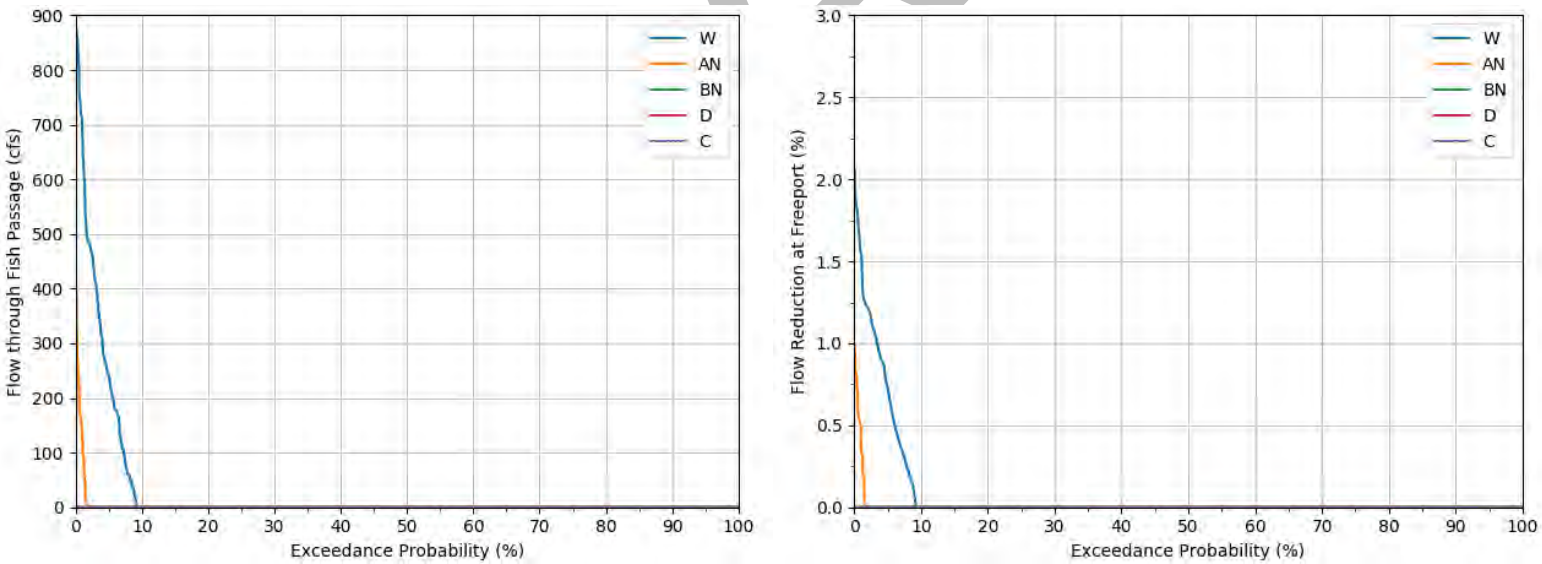


**Figure 18. June Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

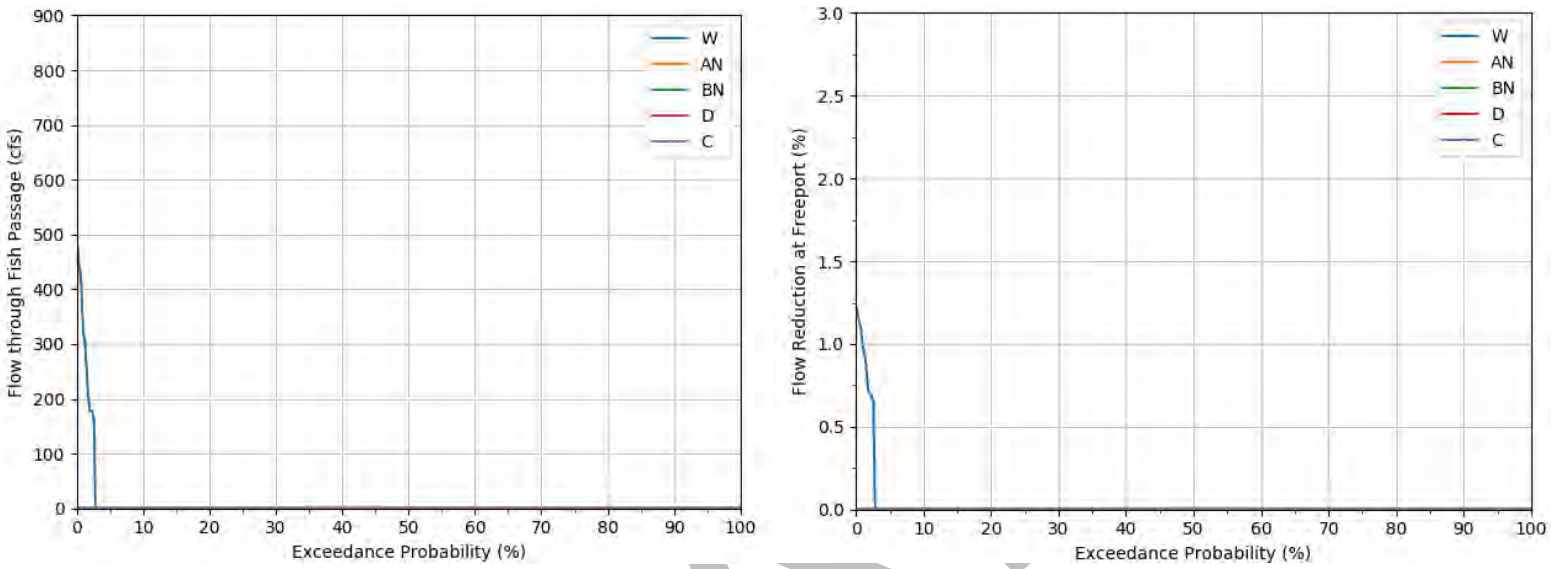


**Figure 19. July Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

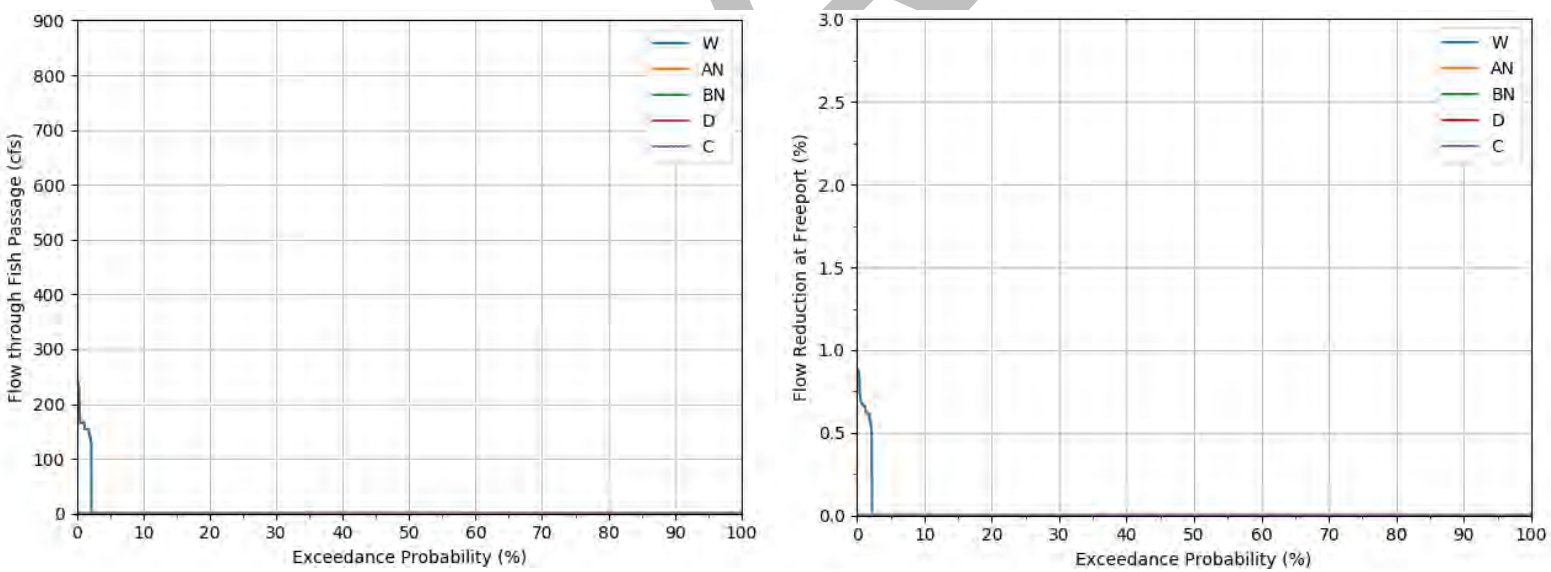


**Figure 20. August Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

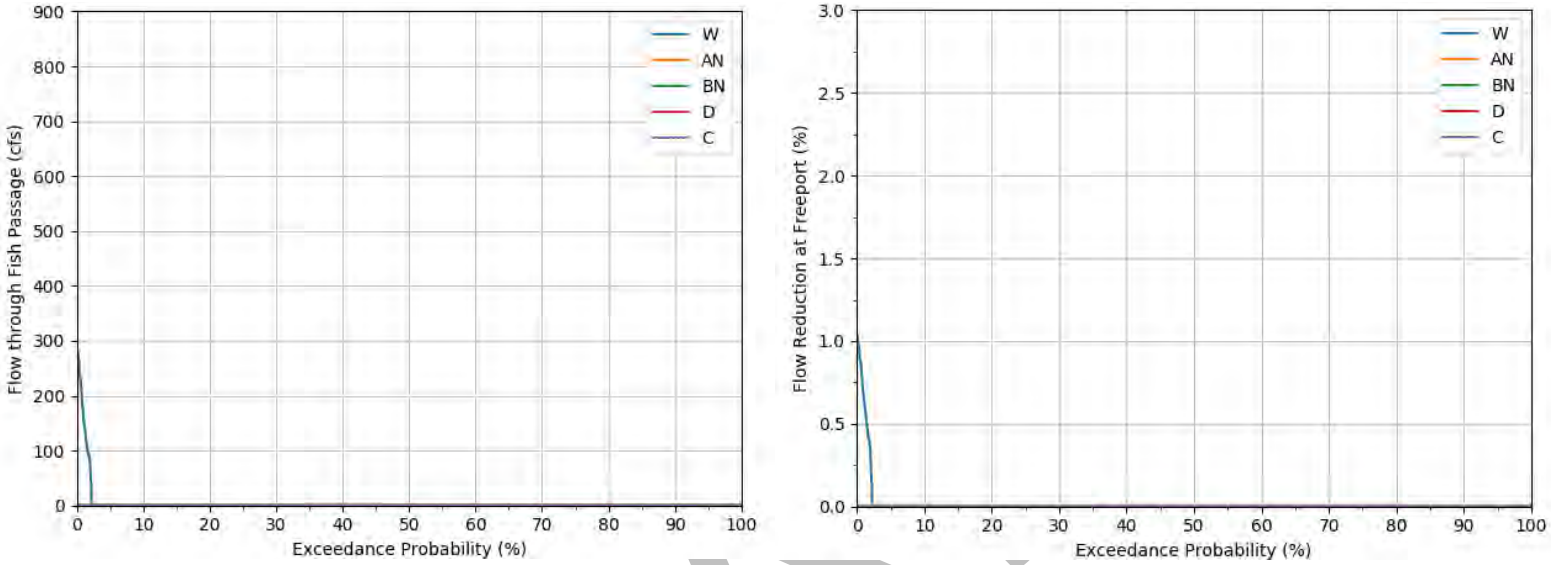


**Figure 21. September Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

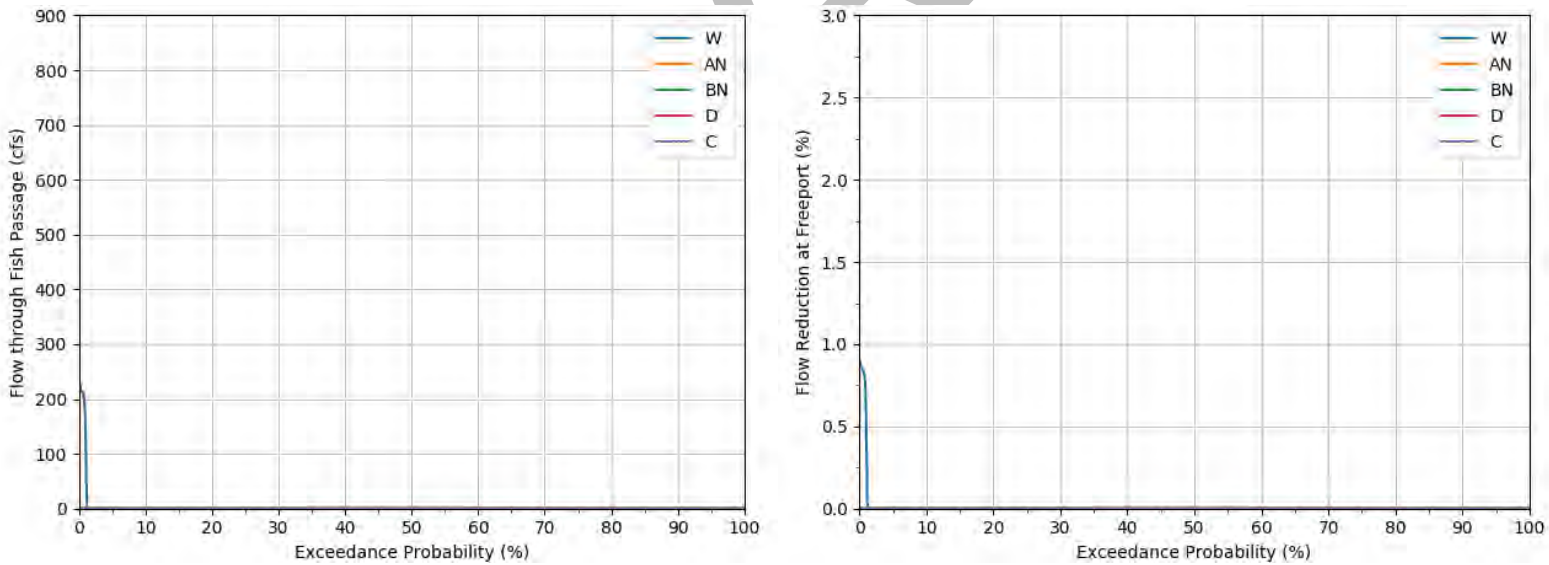


**Figure 22. October Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

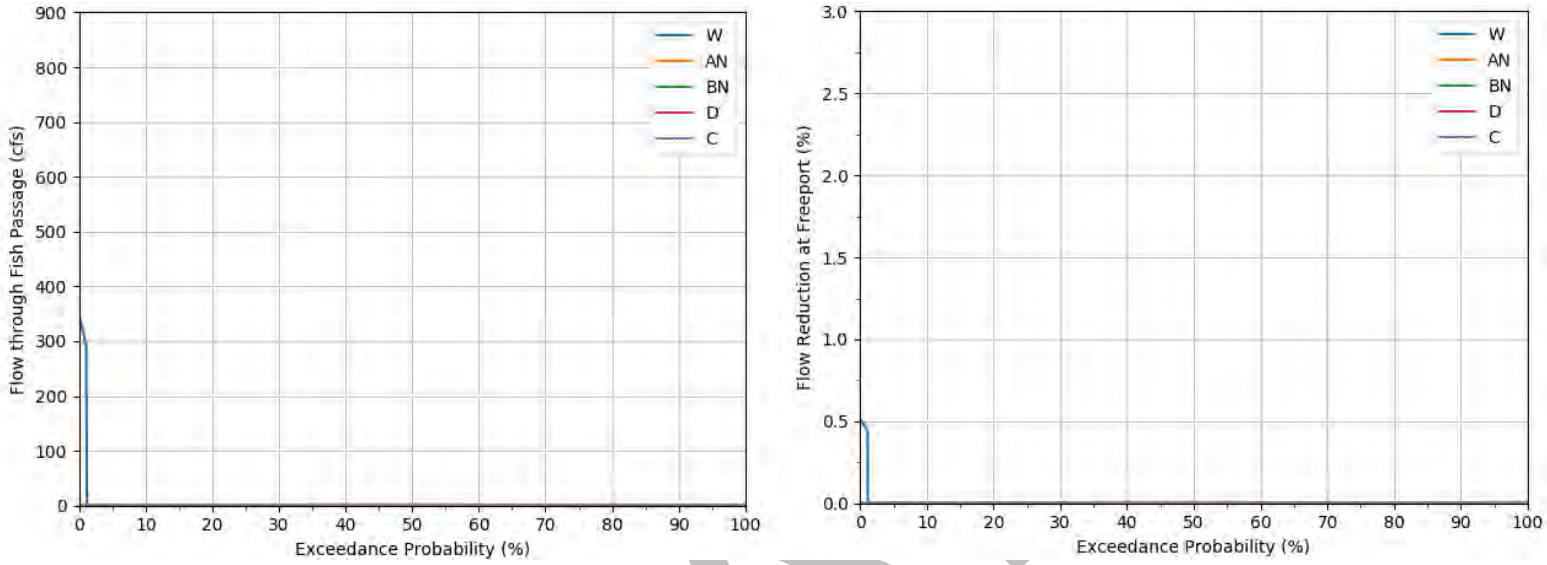


**Figure 23. November Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

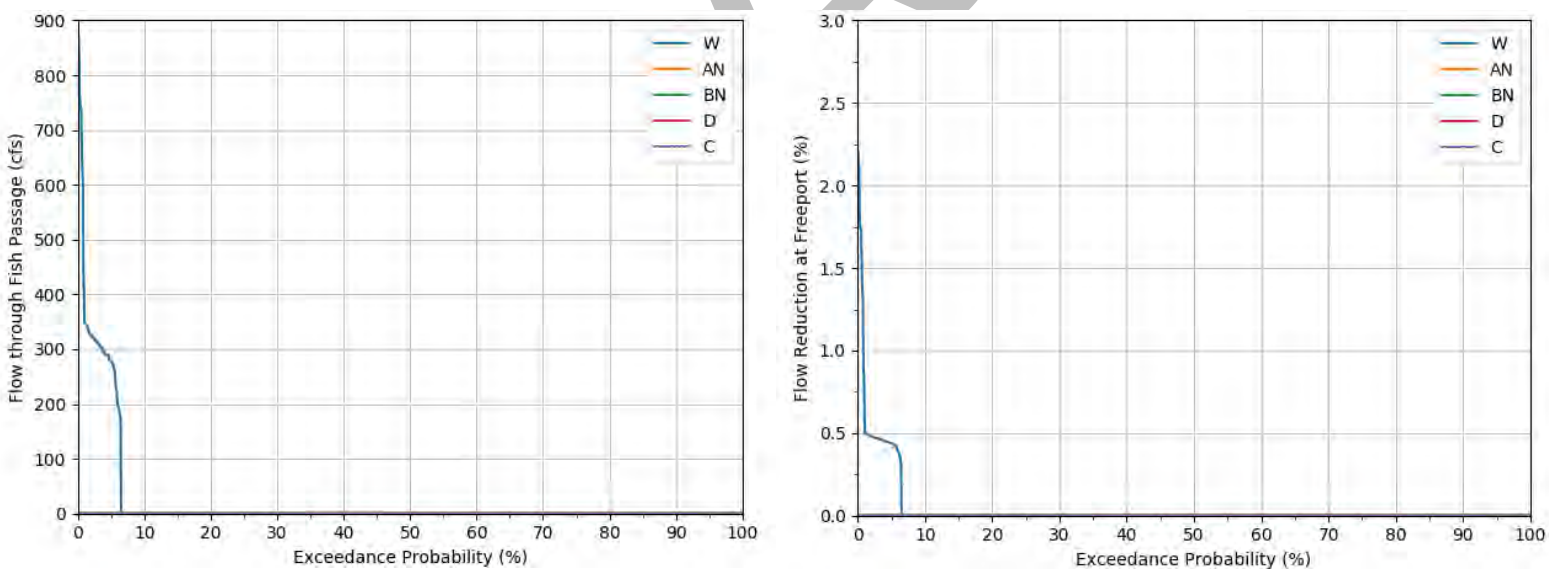


**Figure 24. December Probability-of-Exceedance of Flow Through Fish Passage and Flow Reduction at Freeport (Scenario 2)**

# Appendix B. Biological Resources Assessment

September 27, 2019

Geotechnical
Environmental
Water Resources
Ecological

Robert Chase
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, CA 95814

Subject: Biological Resources Reconnaissance Assessment for the Sacramento Weir Project

Dear Mr. Chase:

The U.S. Army Corps of Engineers (USACE) is implementing the Sacramento Weir and Bypass Widening Project (project) as part of the American River Common Features General Reevaluation Report (ARCF GRR), under the Water Resources Development Act (WRDA 2016). An assessment of biological resources, including a tree inventory and aquatic resources delineation was completed on the project site by GEI Consultants, Inc. (GEI). The field survey effort focused on the eastern half of the project site, where flood-risk reduction measures would be implemented. This letter report describes the methods and results of the biological resources assessment.

## Project Description

The proposed action includes widening the Sacramento Weir and Bypass. Project features would include:

- a new, approximately 1,500-foot-long passive concrete weir structure located north of the existing Sacramento Weir;
- a new, realigned portion of the existing Old River Road, and a new bridge along the new weir;
- a fish passage structure near the southern end of the new weir, flowing into a drainage ditch and Tule Canal;
- a new, realigned County Road 124;
- a new bridge for the Sierra Northern Railway along the current alignment, or removal of the railroad; and
- a new portion of the Sacramento Bypass North Levee, and degrade of the existing portion

Figure 1 in Attachment A shows the location of the study area, which includes all project features and areas that would be subject to operations and maintenance activities, following implementation of the proposed project.

## Pre-field Investigation and Field Survey

Before conducting the field survey, the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2019) and the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2019) were reviewed. These reviews were centered on the Sacramento West U.S. Geologic Survey



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(USGS) 7.5-minute quadrangle and included the eight surrounding quadrangles. Results of these reviews and a map depicting sensitive resource documented within 5 miles of the project site are provided in Attachment B.

A list of resources under jurisdiction of the U.S. Fish and Wildlife Service (USFWS) that could be affected by the project was obtained from the USFWS Information for Planning and Conservation (IPaC) website (USFWS 2019a), and the USFWS online map of critical habitat for Federally threatened and endangered species (USFWS 2019b) was reviewed. A list of species and habitats under jurisdiction of the National Marine Fisheries Service (NMFS) was obtained for the Sacramento West USGS quadrangle from the online California Species List Tools (NMFS 2019). The IPaC resource list and NMFS list are provided in Attachment B. The evaluation of sensitive species was completed after reviewing the USFWS Biological Opinion issued for the ARCF (08ESMF-00-2014-F-0518), dated September 15, 2015 and the NMFS Biological Opinion dated September 9, 2015 (WCR-2014-1377).

Aerial imagery on Google Earth®, National Wetlands Inventory data, and the Natural Resources Conservation Service *Soil Survey of Yolo County County, California* (NRCS 2019) also were reviewed before and after conducting the field survey.

A field survey of the project site was conducted by GEI biologists Sarah A. Norris, Brook Constantz, and Stephen Ramirez on July 29 and 30, 2019 and Devin Barry on September 11, 2019. Photographs of the project site taken during the July field survey are provided in Attachment C. The field surveys included an assessment of habitat types present, including potential waters of the United States; a tree inventory to document species, size, and location; and evaluation of habitat suitability and potential for special-status species to occur at, or adjacent to, the project site.

## Environmental Setting

The project site is located at River Mile 64, along the west bank of the Sacramento River in Yolo County and is accessible from Old River Road and County Road 126. The Sacramento Bypass is located along the southern boundary of the project site. The Sierra Northern Railway line bisects the project site. Elevation at the 465.42-acre project site ranges from approximately 15 to 37 feet above mean sea level. The highest elevation is associated with the elevated railroad line and County Road 126, which also serves as the northern levee of the Sacramento Bypass. The project site is located on the unsectioned portion of Sacramento West USGS 7.5-minute topographic map, Township 9 North, Range 3 and 4 East (Attachment A, Figure 2).

The west bank of the Sacramento River within the project site is subject to anthropogenic disturbances, where there are openings in the tree canopy that allow for river access. A parking area is present at the south end of the project site in this area, and there is evidence of fishing and recreation activities. Old River Road is an active road used to access farming communities located north of the project site and accommodate traffic into West Sacramento.

The Sacramento Weir separates the Sacramento Bypass from the Sacramento River. The Sacramento weir consists of 48 gates that must be manually opened to allow water to enter the Sacramento Bypass. The weir is opened when the I street Bridge river gauge reaches 29.87 feet and continues to rise. The Sacramento weir was most recently opened 2017 and 2006.

The Sierra Northern Railroad is an active line used for rail transport of material goods. Two trestles provide access under the rail line, between the agricultural fields that are bisected by the railroad, and provide a movement corridor for wildlife.

### *Habitat and Land Cover Types*

A map showing habitats present on the project site is provided in Attachment D.

#### Agriculture

The project site is primarily composed of agricultural lands, with walnut (*Juglans regia*) orchards as the dominant crop. Agricultural lands are subject to regular disturbance associated with the production of agricultural crops. Lands may be sprayed for pests or to manage vegetation between orchard rows. Due to the intense management of agricultural lands, these areas typically have reduced habitat value for wildlife and support a relatively low diversity of species that are adapted to the homogeneous habitat and high disturbance levels.

#### Annual Grassland

Annual grassland habitat is present along the South Cross Canal, Sacramento Bypass North Levee and at Bryte Landfill in the southwestern portion of the project site. This habitat type is characterized by dense cover of nonnative annual grasses. The herbaceous layer can reach 3 feet or taller, although levees may be burned to control vegetation and increase ground visibility to perform routine inspections. Annual grassland on the project site is dominated by nonnative grasses including ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian ryegrass (*Festuca perennis*), rattail sixweeks grass (*Festuca myuros*), wild barley (*Hordeum murinum*), wild oat (*Avena fatua*), and Bermuda grass (*Cynodon dactylon*). Commonly encountered forbs include redstem filaree (*Erodium cicutarium*), broadleaf filaree (*Erodium botrys*), common vetch (*Vicia sativa*), prickly lettuce (*Lactuca serriola*), and yellow star-thistle (*Centaurea solstitialis*). This habitat can be described as annual brome grasslands, according to the California Manual of Vegetation (Sawyer et. al. 2009).

#### Developed

Developed areas on the project site include Old River Road, County Road 126, and an unpaved parking area at a river access point in the southeastern corner of the project site. Evidence that the parking area has been used for the illegal disposal of household goods is present. These developed areas are generally devoid of vegetation, because they are paved or covered with aggregate road base. Turkey mullein (*Croton setiger*) and horseweed are present at the intergrade between developed areas and vegetated habitats.

#### Woodland

California Walnut groves and valley oak woodland occur in the eastern portion of the project site. Riparian woodland is present in the Sacramento Bypass, in the southern portion of the project site. These habitats are identified as sensitive natural communities by CDFW and are described below under “Sensitive Habitats.”

#### Aquatic

A total of eight aquatic features – the Sacramento River, Sacramento Bypass, and agricultural drainage ditches and canals – occur on the project site. These features are described below under “Sensitive Habitats.”

### *Sensitive Biological Resources*

Sensitive biological resources addressed in this section include those that are afforded consideration or protection under the California Environmental Quality Act (CEQA), California Fish and Game Code (FGC), California Endangered Species Act (CESA), Federal Endangered

Species Act (ESA), Clean Water Act (CWA), and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

### Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through CEQA, ESA, Section 1602 of the FGC, Section 404 of the CWA, and the Porter-Cologne Control Act. Sensitive habitats may be of special concern for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to special-status species.

#### *California Walnut Groves*

The elevated railroad grade supports a mature assemblage of northern California black walnut (*Juglans hindsii*) and valley oak (*Quercus lobata*) trees. This habitat can be described as *Juglans hindsii* and Hybrids Woodland Special Stands and Semi-Natural Alliance, according to the California Manual of Vegetation (Sawyer et. al. 2009). This alliance is considered a sensitive natural community by CDFW (CDFW 2018).

Trees inventoried on the project site are identified in maps provided in Attachment E. Standing dead trees of northern California black walnut were also commonly encountered on the railroad grade. Elderberry (*Sambucus nigra* subsp. *caerulea*) thickets are present along the western slope of the railroad grade, with wild rose (*Rosa californica*) shrubs interspersed. A comprehensive survey or for elderberries was not completed as part of initial field efforts, although it is estimated that hundreds of elderberry shrubs are present within the project site, mostly in thickets located along the railroad grade. Herbaceous vegetation is sparse under the canopy of black walnut trees. Nonnative grasses observed at the edge of the walnut canopy and near the top of the railroad grade included ripgut brome, soft chess, and rattail sixweeks grass. Late-season forbs observed occasionally in the vicinity of the railroad grade included St. John's wort (*Hypericum perforatum*) and horseweed (*Erigeron canadensis*).

#### *Riparian Woodland*

Riparian woodland is present within the Sacramento Bypass, in the southern portion of the project site. This alliance is considered a sensitive natural community by CDFW (CDFW 2018).

Riparian woodland on the project site is dominated by Fremont's cottonwood (*Populus fremontii*), valley oak, box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), black walnut, and black willow (*Salix gooddingii*). Smaller willow species, including sandbar (*Salix exigua*) and arroyo willow (*S. lasiolepis*), are present in the sub-canopy, as well as California button willow (*Cephalanthus occidentalis*), Himalayan blackberry, California wild rose, and poison oak (*Toxicodendron diversilobum*). Within the project site, nonnative species including tree-of-heaven (*Ailanthus altissima*), and black locust (*Robinia pseudoacacia*), are also common in the tree layer. The herbaceous layer includes mugwort (*Artemisia douglasiana*), common scouring rush (*Equisetum hyemale*), California tule pea (*Lathyrus jepsonii* var. *californicus*), Bermuda grass (*Cynodon dactylon*), and common vetch. In the Central Valley, riparian forest/woodlands are found on floodplains, along low-gradient rivers, along perennial or seasonally intermittent streams, and in alluvial fans where shallow groundwater is present. This habitat can be described as Fremont cottonwood forest alliance, according to the California Manual of Vegetation (Sawyer et. al. 2009).

### *Valley Oak Woodland*

Valley oak woodland occurs between the Old River Road levee and the active channel of the Sacramento River, primarily along an approximately 35-foot-wide bench at the waterside levee toe, above the slope to the Sacramento River channel. This habitat can be described as valley oak woodland alliance, according to the California Manual of Vegetation (Sawyer et. al. 2009). This alliance is considered a sensitive natural community by CDFW (CDFW 2018).

Valley oak woodland on the project site is dominated by valley oak. Black walnut is an occasional species in this habitat assemblage. Oregon ash, box elder, black willow, and occasional red willow (*S. laevigata*) trees are present along and below the ordinary high-water mark (OHWM) elevation. Invasive stands of nonnative trees are largely absent from the valley oak woodland habitat within the project site, although honey locust (*Gleditsia triacanthos*), northern catalpa (*Catalpa speciosa*), she-oak (*Casuarina* sp.), white mulberry (*Morus alba*), and edible fig (*Ficus carica*) were recorded during the tree inventory. Button-willow was commonly observed along the active channel, and poison oak was commonly encountered low on the bench, often in dense clumps around tree trunks. California wild rose also occurs in patchy thickets, rooted approximately 2 feet above the plane of the OHWM. Nonnative grasses are present throughout the oak woodland; grass cover is sparse under the tree canopy and dense along the waterside bench and levee slopes. Typical grass species in this habitat include ripgut brome, rattail sixweeks grass, slender oat (*Avena barbata*), and Italian ryegrass. Forbs were sporadically encountered, likely based on the late-season timing of the field survey; forb species observed included western goldenrod (*Euthamia occidentalis*), chicory (*Cichorium intybus*), and common bedstraw (*Galium aparine*).

### *Aquatic Resources*

#### Sacramento River

Approximately 6.73 acres of the Sacramento River are present within the project site. The Sacramento River is a perennial stream characterized by a well-defined OHWM. The OHWM was identified by the absence of vegetation below this level in many locations, evidence of sediment deposits on trees, topographic changes, and scour lines. MBK Engineers has determined the 2-year water surface elevation at the I Street Bridge (River Mile 59.8) is 18.2 feet National Geodetic Vertical Datum of 1929 (NGDV 29). The project site is located approximately 4 miles upstream at River Mile 64. The Sacramento River is a traditionally navigable water subject to USACE jurisdiction under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act and is also regulated under Section 401 of the CWA. Data forms 1 and 2 in Attachment F provide additional information about the Sacramento River and the physical features that were identified in the field to establish the OHWM.

#### Sacramento Bypass

The project site includes a narrow strip of the Sacramento Bypass, waterside of the County Road 126 levee. The NWI identifies the Sacramento Bypass in its entirety as wetland habitat: PEM1Ah (palustrine emergent persistent, temporarily flooded wetlands that are diked or impounded) and PUSAh (palustrine unconsolidated shore, temporarily flooded wetlands that are diked or impounded). Vegetation observed in the Sacramento Bypass includes a mix of forbs and grasses with patches of hardstem bulrush (*Schoenoplectus acutus*) and rush (*Juncus* sp.) located near the weir and along the waterside levee toe. Approximately 2,200 feet west of the existing Sacramento Weir, riparian woodland is present along the northern edge of the Sacramento Bypass, as described above. Soils within the Sacramento Bypass are mapped by NRCS as Lang sandy loam soils (deep flooded) (Lc), and evidence of sand splays from the last opening of the Sacramento

Weir are evident on the surface. The 8.34-acre Sacramento Bypass Canal in the southwestern portion of the project site is inundated or saturated throughout the year. This area is topographically lower than surrounding areas in the Bypass and may have been the source of material for constructing the Sacramento Bypass North Levee.

Agricultural Drainage Ditch

A total of 6 acres of agricultural ditches and canals present in the project site have been previously described in the *Preliminary Delineation of Water of the United States, including Wetlands for the Lower Elkhorn Basin Levee Setback Project* (SPK-2016-00457) (DWR 2017). A portion of D-13, totaling 0.37 acre, has not been previously mapped and is described below.

An agricultural drainage ditch (D-13) occurs along the western toe of the Sierra Northern Railroad. Water in the agricultural ditch either flows north from a topographic high point located near the southern rail trestle towards an offsite pump which conveys water to the Sacramento River (Aceves, pers. comm. 2019), or west from the high point to the South Cross Canal. Because the agricultural drainage has a direct connection to the South Cross Canal and the Sacramento River, it may be subject to USACE jurisdiction under Section 404 of the CWA and may be regulated under Section 401 of the CWA.

Vegetation was generally absent from the agricultural drainage ditch during the field survey, with the exception of one location near the north end of the project site that was colonized by hydrophytes typical of seasonal wetland habitats in the Central Valley. The local reclamation district (RD 537) is responsible for maintaining the ditch, and vegetation clearing along the side-slopes and channel bottom was completed within the last 12 months (Aceves, pers. comm. 2019). The channel bottom was dry, and desiccated algal mats were observed at the time of the field survey. Data forms 4 and 5 in Attachment F provide additional information about the agricultural drainage ditch within the project site.

### *Critical Habitat*

Critical habitat is a geographic area containing features determined to be essential to the conservation of a species listed as threatened or endangered under the ESA. The project site does not include designated critical habitat for terrestrial species.

The Sacramento River is designated critical habitat for Federally-listed fish, including delta smelt, Central Valley steelhead, Central Valley spring-run Chinook salmon, and Sacramento River winter-run Chinook salmon. The Sacramento River is also designated as essential fish habitat (EFH) for Chinook salmon.

### Special-status Species

Special-status species are plants and animals that fall into any of the following categories:

- species officially listed by the Federal government or the State of California as endangered, threatened, or rare;
- candidate species for Federal or State listing as endangered or threatened;
- species proposed for Federal or State listing as endangered or threatened;
- taxa (i.e., taxonomic categories or groups) that meet the criteria for listing;
- taxa designated by NMFS or USFWS as a Federal species of concern;

- wildlife species identified by CDFW as species of special concern and plant taxa considered by CDFW to be "rare, threatened, or endangered in California;"
- species listed as Fully Protected under the FGC; or
- species afforded protection under local or regional planning documents.

Plant taxa are assigned by CDFW to one of the following six California Rare Plant Ranks (CRPRs):

- CRPR 1A—Plants presumed to be extinct in California;
- CRPR 1B—Plants that are rare, threatened, or endangered in California and elsewhere;
- CRPR 2A—Plants that are presumed extirpated in California, but are more common elsewhere;
- CRPR 2B—Plants that are rare, threatened, or endangered in California but more common elsewhere;
- CRPR 3—Plants about which more information is needed (a review list); or
- CRPR 4—Plants of limited distribution (a watch list).

All plants with a CRPR are considered "special plants" by CDFW. The term "special plants" is a broad term used by CDFW to refer to all plant taxa inventoried in the CNDDB, regardless of their legal or protection status. CDFW applies the term "California species of special concern" to wildlife species that are not listed under Federal or State endangered species acts but that are nonetheless declining at a rate that could result in listing, or that historically occurred in low numbers and are subject to current known threats to their persistence.

Figure 1 in Attachment B shows all CNDDB occurrences of plant and wildlife species that meet the definition of special-status species described above, occurring within 5 miles of the project site. Results of the CNDDB search (see Attachment B) yielded occurrences of a total of 49 special-status plants and animals within the USGS 9-quad search area; 22 of these species have been documented within 5 miles of the project site, and many of the occurrences are historical. (Note: Not all species tracked in the CNDDB and included in the search results in Attachment B meet the definition of a special-status species described above.)

Table 1 provides information on special-status plant species that were evaluated for potential to occur on the project site. Species included in the CNDDB or CNPS search results that occupy elevation ranges higher or lower than the project site or otherwise could be determined to have no potential to occur in the project vicinity were eliminated from consideration and are not included in Table 1. Based on the review of existing documentation and observations made during the field survey, habitat for most of the special-status plant species that were evaluated is absent from the project site. Three vascular plants were determined to have potential to occur on the project site: woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*) has potential to occur along the Sacramento River, and Suisun marsh aster (*Symphyotrichum lentum*) and Sanford's arrowhead (*Sagittaria sanfordii*) have potential to occur in the Sacramento Bypass.

**Table 1. Special-status Plants Evaluated for Potential to Occur on the Project Site**

| Species | Blooming Period | Status[1] | | Habitat Associations | Potential to Occur on the Project Site |
|---|---|---|---|---|---|
| | | Federal | State | | |
| Ferris' milkvetch *Astragalus tener* var. *ferrisiae* | April – May | – | 1B.1 | Vernally mesic meadows and seeps, valley and foothill grassland often on subalkaline flats | None; no suitable habitat is present on or adjacent to the project site. |

**Table 1. Special-status Plants Evaluated for Potential to Occur on the Project Site**

| Species | Blooming Period | Status[1] | | Habitat Associations | Potential to Occur on the Project Site |
|---|---|---|---|---|---|
| | | Federal | State | | |
| Alkali milk vetch *Astragalus tener* var. *tener* | March – June | – | 1B.2 | Alkaline soils in playas, valley and foothill grassland, and vernal pools, often on adobe clay | None; no suitable habitat is present on or adjacent to the project site. |
| Heartscale *Atriplex cordulata* var. *cordulata* | April – October | – | 1B.2 | Sandy soils in chenopod scrub, meadows and seeps, valley and foothill grassland | None; no suitable habitat is present on or adjacent to the project site. |
| Brittlescale *Atriplex depressa* | April – October | – | 1B.2 | Chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools | None; no suitable habitat is present on or adjacent to the project site. |
| Bristly sedge *Carex comosa* | May – September | – | 2B.1 | Marshes and swamps, lake margins, valley and foothill grassland | None; no suitable habitat is present on or adjacent to the project site. |
| Pappose tarplant *Centromadia parryi ssp. Parryi* | May – November | – | 1B.2 | Chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic valley and foothill grassland | None; no suitable habitat is present on or adjacent to the project site. |
| Palmate-bracted bird's-beak *Chloropyron palmatum* | May – October | E | E/1B.1 | Alkaline soil in chenopod scrub, and valley and foothill grassland. | None; no suitable habitat is present on or adjacent to the project site. |
| Dwarf downingia *Downingia pusilla* | March – May | – | 2B.2 | Mesic valley and foothill grassland and vernal pools | None; no suitable habitat is present on or adjacent to the project site. |
| Jepson's coyote thistle *Eryngium jepsonii* | April – August | – | 1B.2 | Clay soils in valley and foothill grassland and vernal pools | None; no suitable habitat is present on or adjacent to the project site. |
| San Joaquin spearscale *Extriplex joaquinana* | April – October | – | 1B.2 | Alkali playa, chenopod scrub, meadows and seeps, and valley and foothill grassland | None; no suitable habitat is present on or adjacent to the project site. |
| Bogg's Lake hedge hyssop *Gratiola heterosepala* | April – August | – | E/1B.2 | Clay soils in marshes and swamps, lake margins, and vernal pools. | None; no suitable habitat is present on or adjacent to the project site. |
| Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis* | June – September | – | 1B.2 | Often in riprap on sides of levees; marshes and swamps. | Could occur. Known CNDDB occurrence in vicinity of project site in Tule Canal. |

**Table 1. Special-status Plants Evaluated for Potential to Occur on the Project Site**

| Species | Blooming Period | Status[1] | | Habitat Associations | Potential to Occur on the Project Site |
|---|---|---|---|---|---|
| | | Federal | State | | |
| Legenere *Legenere limosa* | April – June | – | 1B.1 | Vernal pools | None; no suitable habitat is present on or adjacent to the project site. |
| Heckard's pepper-grass *Lepidium latipes* var. *heckardii* | March – May | – | 1B.2 | Alkaline flat in valley and foothill grassland | None; no suitable habitat is present on or adjacent to the project site. |
| Mason's lilaeopsis *Lilaeopsis masonii* | April – November | – | R/1B.1 | Brackish and freshwater marshes and swamps, riparian scrub; generally found in tidal zones, on bare depositional soils in the Delta. | None; no suitable habitat is present on or adjacent to the project site. |
| Baker's navarretia *Navarretia leucocephala* ssp. *bakeri* | April – July | – | 1B.1 | Mesic soils in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools | None; no suitable habitat is present on or adjacent to the project site. |
| Colusa grass *Neostapfia colusana* | May – August | T | E/1B.1 | Adobe soils in large playa-like vernal pools | None; no suitable habitat is present on or adjacent to the project site. |
| Bearded popcornflower *Plagiobothrys hystriculus* | April – May | – | 1B.1 | Often in vernal swales, and mesic valley and foothill grassland, and vernal pools margins | None; no suitable habitat is present on or adjacent to the project site. |
| California alkali grass *Puccinellia simplex* | March – May | – | 1B.2 | Alkaline, vernally mesic soils in sinks, flats, and lake margins, chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools. | None; no suitable habitat is present on or adjacent to the project site. |
| Sanford's arrowhead *Sagittaria sanfordii* | May – October | – | 1B.2 | Shallow waters in marshes and swamps | Could occur. Suitable habitat is present within the Sacramento Bypass approximately 2,200 feet south of the Sacramento Weir where standing water is present for prolonged duration. |
| Suisun marsh aster *Symphyotrichum lentum* | May – November | – | 1B.2 | Brackish and freshwater marshes and swamps | Could occur. Known CNDDB occurrence in vicinity of project site in Yolo Wildlife Area. |

**Table 1. Special-status Plants Evaluated for Potential to Occur on the Project Site**

| Species | Blooming Period | Status[1] Federal | Status[1] State | Habitat Associations | Potential to Occur on the Project Site |
|---|---|---|---|---|---|
| Saline clover *Trifolium hydrophilum* | April – June | – | 1B.2 | Alkaline soils in marshes and swamps, mesic valley and foothill grassland, and vernal pools. | None; no suitable habitat is present on or adjacent to the project site. |
| Crampton's tuctoria *Tuctoria mucronata* | April – August | E | E/1B.1 | Mesic valley and foothill grassland, and vernal pools. | None; no suitable habitat is present on or adjacent to the project site. |

Notes: CNDDB = California Natural Diversity Database; gray rows denote species determined to have reasonable potential to occur on the project site.

[1] Status Definitions

Federal and State Status

E = Endangered
T = Threatened
R = Rare under the California Native Plant Protection Act; this category is not used for newly listed plants, but some plants previously listed as rare retain this designation.
– = No status

California Rare Plant Ranks

1B = Considered rare or endangered in California and elsewhere
2B = Considered rare or endangered in California but more common elsewhere
– = No status

California Rare Plant Rank Extensions

.1 = Seriously endangered in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat)
.2 = Fairly endangered in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat)
.3 = Not very endangered in California

Sources: CDFW 2019; CNPS 2019; USFWS 2019a; data compiled by GEI Consultants, Inc. in 2019.

Table 2 provides information on special-status terrestrial wildlife species that were evaluated for potential to occur on the project site, because they were documented in the CNDDB 9-quad search or included on the IPaC list. Based on the review of existing documentation and observations made during field surveys, habitat on the project site is unsuitable or only marginally suitable for the special-status wildlife species that were evaluated. Therefore, potential for many of the species identified in database searches to occur onsite unlikely. Some species that are known to occur in the vicinity or that are highly mobile and use a variety of habitat types have potential to occur onsite. Wildlife species determined to have at least a reasonable potential to occur on or adjacent to the project site include: valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), giant garter snake (*Thamnophis gigas*), western pond turtle (*Emys marmorata*), Swainson's hawk (*Buteo swainsonii*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), "Modesto" song sparrow (*Melospiza melodia*), purple martin (*Progne subis*), and bank swallow (*Riparia riparia*). Valley elderberry longhorn beetle could occur in the dense thickets of elderberry shrubs that are present along the western slope of the Sierra Northern Railroad grade. Giant garter snake and western pond turtle could occur in the Sacramento Bypass. Black walnut and oak woodland provide potentially suitable nesting habitat for the raptor species and song sparrow, while bank swallow and purple martin could forage over the site.

**Table 2. Special-status Wildlife Evaluated for Potential to Occur on or Adjacent to the Project Site**

| Species | Status[1] | | Habitat Associations | Potential to Occur on or Adjacent to the Project Site |
|---|---|---|---|---|
| | Federal | State | | |
| Invertebrates | | | | |
| Conservancy fairy shrimp *Branchinecta conservatio* | E | – | Vernal pools and other seasonal wetlands, typically large, deep and turbid | No potential to occur. No suitable habitat is present on or adjacent to the project site. |
| Vernal pool fairy shrimp *Branchinecta lynchi* | T | – | Vernal pools and seasonal wetlands | No potential to occur. No suitable habitat is present on or adjacent to the project site. |
| Valley elderberry longhorn beetle *Desmocerus californicus dimorphus* | T | – | Blue elderberry is the obligate host plant for the beetle larvae | Could occur. Hundreds of elderberry shrubs are present along the western slope of the railroad grade in the project site. |
| Vernal pool tadpole shrimp *Lepidurus packardi* | T | – | Vernal pools and seasonal wetlands | No potential to occur. No suitable habitat is present on or adjacent to the project site. |
| Amphibians | | | | |
| California tiger salamander *Ambystoma californiense* | T | T | Annual grassland of lower hills and valleys; breeds in temporary and permanent ponds and vernal pools; uses rodent burrows and other subterranean retreats in surrounding uplands for shelter | No potential to occur. No suitable habitat is present on or adjacent to the project site. |
| California red-legged frog *Rana draytonii* | T | – | Lowlands and foothill streams, pool, and marshes in or near permanent or late season sources of deep water with dense, shrubby, riparian, or emergent vegetation (e.g. ponds, perennial drainages, well-developed riparian) | No potential to occur. No suitable habitat is present on or adjacent to the project site, and the site is outside the current range of this species. |

**Table 2. Special-status Wildlife Evaluated for Potential to Occur on or Adjacent to the Project Site**

| Species | Status[1] Federal | Status[1] State | Habitat Associations | Potential to Occur on or Adjacent to the Project Site |
|---|---|---|---|---|
| Reptiles | | | | |
| Western pond turtle *Emys marmorata* | – | SSC | Permanent or nearly permanent water bodies with abundant vegetation and rocky or muddy bottoms in a variety of habitat types; also requires basking sites such as logs, rocks, cattail mats, and exposed banks | Could occur. Suitable aquatic habitat occurs in the Sacramento Bypass in the southwestern portion of the of the project site (Sacramento River provides poor-quality habitat in this area). |
| Giant garter snake *Thamnophis gigas* | T | T | Open water associated with marshes, rivers, streams, sloughs, and irrigation/drainage ditches within the Central Valley; requires emergent herbaceous wetland vegetation for escape and foraging habitat, grassy banks, and opening in waterside vegetation for basking, and higher elevation upland habitat for cover and refuge from flooding | Could occur. Suitable aquatic habitat occurs in the Sacramento Bypass in the southwestern portion of the of the project site |
| Birds | | | | |
| Tricolored blackbird *Agelaius tricolor* | – | T | Forages in croplands, grassy fields, flooded land, and along edges of ponds. Nests in dense cattails, tules, and other dense vegetation, often near freshwater | Unlikely to occur. No suitable nesting habitat occurs within 0.25 mile of the project site, and small grassland patches provide poor-quality foraging habitat. |
| Grasshopper sparrow *Ammodramus savannarum* | – | SSC | Nests and forages in natural grasslands, with a mix of grasses, forbs, and scattered shrubs, on rolling hills and lowland plains | No potential to occur. No suitable habitat is present on or adjacent to the project site (grassland in the Sacramento Bypass is not suitable for this species). |

**Table 2. Special-status Wildlife Evaluated for Potential to Occur on or Adjacent to the Project Site**

| Species | Status[1] Federal | Status[1] State | Habitat Associations | Potential to Occur on or Adjacent to the Project Site |
|---|---|---|---|---|
| Burrowing owl *Athene cunicularia* | – | SSC | Nest and forages in grasslands and agricultural fields with natural of artificial burrows or friable soils. | Unlikely to occur. Marginally suitable habitat occurs along the Sacramento Bypass North Levee. The species was not detected during surveys conducted this year in vicinity of project site. |
| Swainson's hawk *Buteo swainsonii* | | T | Forages in grasslands and agricultural fields; nests in open woodland or scattered trees | Known to occur. One recently active nest site known from the project site, and others are located within 0.5 mile of the site. |
| Western snowy plover *Charadrius alexandrines nivosus* | T | – | Primarily a coastal species, but scattered inland breeding populations exist and individuals occasionally occur in the Sacramento Valley | No potential to occur. No suitable habitat is present on or adjacent to the project site. |
| Mountain plover *Charadrius montanus* | – | SSC | Flat areas with short vegetation and bare ground, including short grasslands, freshly plowed and sprouting fields | No potential to occur. No suitable habitat is present on or adjacent to the project site (grassland in the Sacramento Bypass is not suitable for this species). |
| Northern harrier *Circus cyaneus* | – | SSC | Nests and forages in grasslands, agricultural fields, and marshes | Likely to occur. Sacramento Bypass provides suitable nesting and foraging habitat. |
| Western yellow-billed cuckoo *Coccyzus americanus occidentalis* | T | E | Nests in extensive deciduous riparian thickets or forests with dense, low-level or understory vegetation. In the Sacramento Valley, also uses adjacent walnut orchards. | Unlikely to occur. Nearest potentially extant breeding population is more than 20 miles north of the project site; project site provides poor-quality habitat for migrants. |
| White-tailed kite *Elanus leucurus* | – | FP | Nests in woodlands and isolated trees and forages in grasslands, pasture, and agricultural fields | Known to occur. Likely nests in the project vicinity, along the Sacramento River and Bypass. |

**Table 2. Special-status Wildlife Evaluated for Potential to Occur on or Adjacent to the Project Site**

| Species | Status[1] Federal | Status[1] State | Habitat Associations | Potential to Occur on or Adjacent to the Project Site |
|---|---|---|---|---|
| California black rail *Laterallus jamaicensis coturniculus* | – | T, FP | Freshwater marshes, wet meadows and shallow margins of saltwater marshes | No potential to occur. No suitable habitat is present on or adjacent to the project site. |
| Song sparrow (“Modesto” population) *Melospiza melodia* | – | SSC | Nests and forages in emergent freshwater marsh and riparian scrub and woodland. | Could occur. Known historically to nest in the project vicinity. The species was not detected during surveys conducted this year in vicinity of project site. |
| Purple martin *Progne subis* | – | SSC | Nests in bridges in urban Sacramento area and forages in adjacent open habitat | Could occur. Unlikely to nest on project site, but individuals from nearby nest colonies could forage over the site |
| Bank swallow *Riparia riparia* | – | T | Forages in a variety of habitat and nests in vertical banks or bluffs of suitable soil, typically adjacent to water | Could occur. No recently active nest colonies in the project vicinity, but migrant individuals could forage over the project site. |
| Least Bell’s vireo *Vireo bellii pusillus* | E | E | Typically occurs in structurally diverse riparian habitat with dense shrub layer. | Unlikely to occur. Project site provides poor-quality habitat, and this species very rarely occurs in the Sacramento Valley. The species was not detected during surveys conducted this year in vicinity of project site. |
| Yellow-headed blackbird *Xanthocephalus xanthocephalus* | – | SSC | Nests in reedy marshes, prairies, and parks. Winters in open agricultural fields and pastures. | No potential to occur. No suitable habitat is present on or adjacent to the project site, and the site is outside the current range of this species. |
| Mammals | | | | |
| Pallid bat *Antrozous pallidus* | – | SSC | Variety of habitats, including woodland, forest, grassland, and desert; roosts in tree cavities, rock crevices, mines, caves, and human structures. | Unlikely to occur; No known occurrences in Sacramento or Yolo County since the 1960s. |

**Table 2. Special-status Wildlife Evaluated for Potential to Occur on or Adjacent to the Project Site**

| Species | Status[1] | | Habitat Associations | Potential to Occur on or Adjacent to the Project Site |
|---|---|---|---|---|
| | Federal | State | | |
| American badger *Taxidea taxus* | – | SSC | Various dry habitats, including open forest shrubland; requires friable soils and open ground for burrowing. | Unlikely to occur. Project site and adjacent areas provide poor-quality habitat. |

Note: Grey rows denote species determined to have reasonable potential to occur on or adjacent to the project site.

[1] Status Definitions
E = Endangered
T = Threatened
SSC = California Department of Fish and Wildlife Species of Special Concern
– = no status

Potential to Occur Designations
- *Known to occur:* The species, or evidence of its presence, was observed during reconnaissance-level surveys or was reported by others.
- *Likely to occur:* Habitat conditions, behavior of the species, known occurrences, or other factors indicate a relatively high likelihood that the species would occur.
- *Could occur:* Suitable habitat is available; however, there are few or no other indicators that the species may be present.
- *Unlikely to occur:* Potentially suitable habitat present but species unlikely to be present because of very restricted distribution.
- *No potential to occur:* Potentially suitable habitat is not present.

Sources: CDFW 2019, USFWS 2019a; data compiled by GEI Consultants, Inc. in 2019.

Special-status fish included on the IPaC resource list and NMFS list are included in Table 3, because the eastern boundary of the project site overlaps with the Sacramento River, and a small portion of the Sacramento Bypass is along the southern boundary. Native fish present in the Sacramento River and Bypass can be separated into anadromous species and resident species. Native anadromous species are typically expected to occur on a seasonal basis during migrations and rearing periods; native resident species can be found in the Sacramento River at all times of the year and to varying degrees in the Sacramento Bypass, depending on conditions.

**Table 3. Special-status Fish with Potential to Occur on the Project Site**

| Species | Status | | Occurrence |
|---|---|---|---|
| | Federal | State | |
| Green sturgeon *Acipenser medirostris* | T, X | SSC | Anadromous; expected to occur, primarily as adults migrating upstream; larvae and juveniles rearing and migrating downstream could also occur. |
| White sturgeon *Acipenser transmontanus* | – | SSC | Anadromous; expected to occur, primarily as adults migrating to upstream; larvae moving downstream could also occur. |
| Pacific lamprey *Entosphenus tridentatus* | – | SSC | Anadromous; adults and rearing juveniles may occur seasonally. |
| Delta smelt *Hypomesus transpacificus* | T | CE | Semi-anadromous; adults and juveniles may occur seasonally but typically occurs downstream of Isleton. |
| River lamprey *Lampetra ayresi* | – | SSC | Anadromous; distribution is not well known, but individuals have been documented in the Yolo Bypass and may occur adjacent to the project site. |
| Sacramento hitch *Lavinia exilicauda* | – | SSC | Resident; expected to occur. |
| Central Valley steelhead *Oncorhynchus mykiss* | T, X | – | Anadromous; expected to occur seasonally as adults migrating upstream and as rearing juveniles and smolts. |
| Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha* | T, X | T | Anadromous; expected to occur seasonally as adults migrating upstream and as migrating and rearing juveniles. |
| Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha* | E, X | E | Anadromous; Expected to occur seasonally as adults migrating upstream and as migrating and rearing juveniles. |
| Central Valley fall-/late fall- run Chinook salmon *Oncorhynchus tshawytscha* | SC | SSC | Anadromous; fall and late-fall run are expected to occur seasonally, as adults migrating upstream or as juveniles and smolts rearing and migrating downstream |
| Sacramento splittail *Pogonichthys macrolepidotus* | – | SSC | Resident/semi-anadromous; expected to be present during spawning and rearing periods. |
| Longfin smelt *Spirinchus thaleichthys* | C | T, SSC | Anadromous; adults and juveniles may occur seasonally but typically occurs downstream of Rio Vista. |

[1] Status:
C = Candidate
E = Endangered
T = Threatened
X = Designated Critical Habitat
SC = NMFS Species of Special Concern
SSC = CDFW Species of Special Concern
– = no status

Sources: CNDDB 2019, USFWS, 2019, NMFS 2019, Moyle 2002, Sommer et al. 2001

If you have any questions or concerns regarding this report, please contact me by phone at 916-631-4532 or e-mail at dsutton@geiconsultants.com.

Sincerely,

Drew Sutton
Project Manager

Sarah A. Norris
Senior Regulatory Specialist/Biologist

Attachment A: Project Location
Attachment B: Special-status Species Query Results
Attachment C: Representative Photographs
Attachment D: Habitat Map
Attachment E: Tree Inventory
Attachment F: Aquatic Resources Delineation
Attachment G: Vegetation Observed

1601100

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# Attachment A. Figures

**Figure 1. Regional Location**

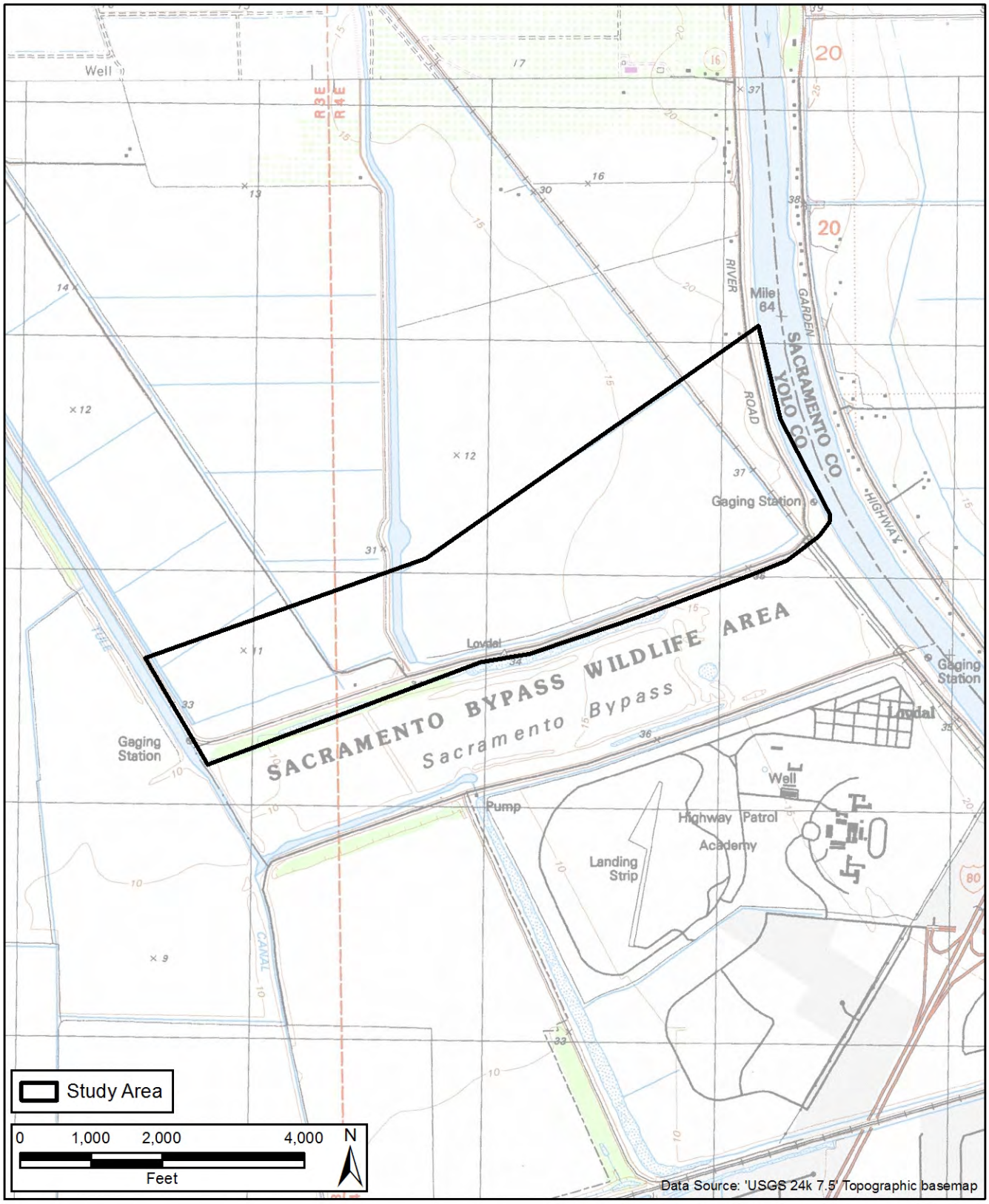
**Figure 2. Topographic Map**

**Figure 1. Project Location**

Z:\Projects\1601100\1601100_G168_SacWeir_RegionalLocation.mxd
15Aug2019 RS

Source: GEI Consultants, Inc. 2019

**Figure 2. Topographic Map**

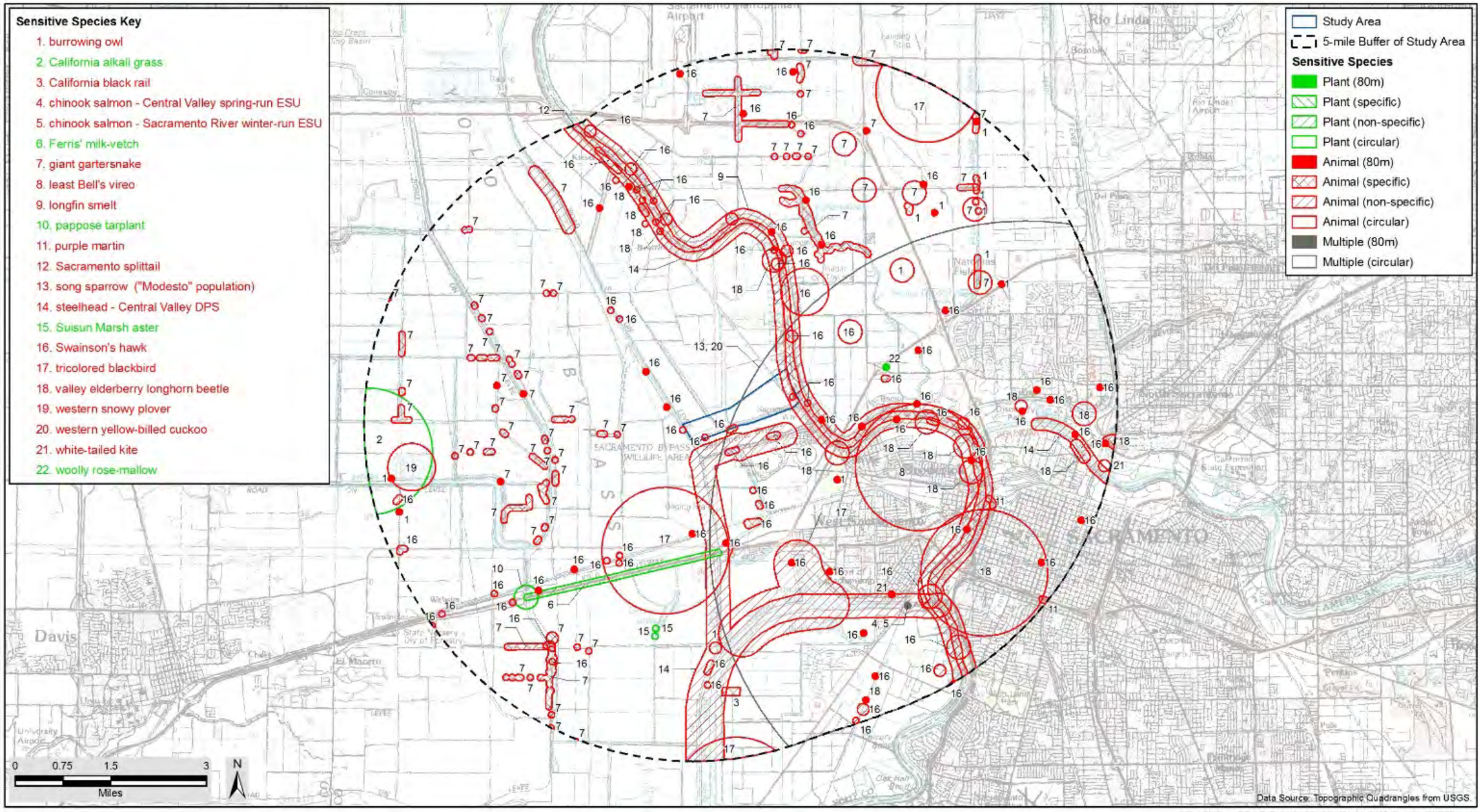



Z:\Projects\1601100\1601100_G166_SacWeir_USGS_Topo.mxd
15Aug2019 RS

Source: GEI Consultants, Inc. 2019

# Attachment B. Special-status Species Query Results

**Figure 2. Topographic Map**




Source: CDFW 2019; Data compiled by GEI Consultants, Inc. 2019

# Selected Elements by Scientific Name

## California Department of Fish and Wildlife

## California Natural Diversity Database

**Query Criteria:** Quad IS (Sacramento West (3812155) OR Clarksburg (3812145) OR Sacramento East (3812154) OR Florin (3812144) OR Saxon (3812146) OR Davis (3812156) OR Grays Bend (3812166) OR Taylor Monument (3812165) OR Rio Linda (3812164))

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Accipiter cooperii***<br>Cooper's hawk | ABNKC12040 | None | None | G5 | S4 | WL |
| ***Agelaius tricolor***<br>tricolored blackbird | ABPBXB0020 | None | Threatened | G2G3 | S1S2 | SSC |
| ***Ammodramus savannarum***<br>grasshopper sparrow | ABPBXA0020 | None | None | G5 | S3 | SSC |
| ***Antrozous pallidus***<br>pallid bat | AMACC10010 | None | None | G5 | S3 | SSC |
| ***Archoplites interruptus***<br>Sacramento perch | AFCQB07010 | None | None | G2G3 | S1 | SSC |
| ***Ardea alba***<br>great egret | ABNGA04040 | None | None | G5 | S4 | |
| ***Ardea herodias***<br>great blue heron | ABNGA04010 | None | None | G5 | S4 | |
| ***Astragalus tener var. ferrisiae***<br>Ferris' milk-vetch | PDFAB0F8R3 | None | None | G2T1 | S1 | 1B.1 |
| ***Astragalus tener var. tener***<br>alkali milk-vetch | PDFAB0F8R1 | None | None | G2T1 | S1 | 1B.2 |
| ***Athene cunicularia***<br>burrowing owl | ABNSB10010 | None | None | G4 | S3 | SSC |
| ***Atriplex cordulata var. cordulata***<br>heartscale | PDCHE040B0 | None | None | G3T2 | S2 | 1B.2 |
| ***Atriplex depressa***<br>brittlescale | PDCHE042L0 | None | None | G2 | S2 | 1B.2 |
| ***Bombus crotchii***<br>Crotch bumble bee | IIHYM24480 | None | None | G3G4 | S1S2 | |
| ***Bombus occidentalis***<br>western bumble bee | IIHYM24250 | None | None | G2G3 | S1 | |
| ***Branchinecta conservatio***<br>Conservancy fairy shrimp | ICBRA03010 | Endangered | None | G2 | S2 | |
| ***Branchinecta lynchi***<br>vernal pool fairy shrimp | ICBRA03030 | Threatened | None | G3 | S3 | |
| ***Branchinecta mesovallensis***<br>midvalley fairy shrimp | ICBRA03150 | None | None | G2 | S2S3 | |
| ***Buteo regalis***<br>ferruginous hawk | ABNKC19120 | None | None | G4 | S3S4 | WL |
| ***Buteo swainsoni***<br>Swainson's hawk | ABNKC19070 | None | Threatened | G5 | S3 | |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Carex comosa***<br>bristly sedge | PMCYP032Y0 | None | None | G5 | S2 | 2B.1 |
| ***Centromadia parryi ssp. parryi***<br>pappose tarplant | PDAST4R0P2 | None | None | G3T2 | S2 | 1B.2 |
| ***Charadrius alexandrinus nivosus***<br>western snowy plover | ABNNB03031 | Threatened | None | G3T3 | S2S3 | SSC |
| ***Charadrius montanus***<br>mountain plover | ABNNB03100 | None | None | G3 | S2S3 | SSC |
| ***Chloropyron palmatum***<br>palmate-bracted bird's-beak | PDSCR0J0J0 | Endangered | Endangered | G1 | S1 | 1B.1 |
| ***Cicindela hirticollis abrupta***<br>Sacramento Valley tiger beetle | IICOL02106 | None | None | G5TH | SH | |
| ***Coccyzus americanus occidentalis***<br>western yellow-billed cuckoo | ABNRB02022 | Threatened | Endangered | G5T2T3 | S1 | |
| ***Cuscuta obtusiflora var. glandulosa***<br>Peruvian dodder | PDCUS01111 | None | None | G5T4? | SH | 2B.2 |
| ***Desmocerus californicus dimorphus***<br>valley elderberry longhorn beetle | IICOL48011 | Threatened | None | G3T2 | S2 | |
| ***Downingia pusilla***<br>dwarf downingia | PDCAM060C0 | None | None | GU | S2 | 2B.2 |
| ***Egretta thula***<br>snowy egret | ABNGA06030 | None | None | G5 | S4 | |
| ***Elanus leucurus***<br>white-tailed kite | ABNKC06010 | None | None | G5 | S3S4 | FP |
| ***Elderberry Savanna***<br>Elderberry Savanna | CTT63440CA | None | None | G2 | S2.1 | |
| ***Emys marmorata***<br>western pond turtle | ARAAD02030 | None | None | G3G4 | S3 | SSC |
| ***Eryngium jepsonii***<br>Jepson's coyote-thistle | PDAPI0Z130 | None | None | G2 | S2 | 1B.2 |
| ***Extriplex joaquinana***<br>San Joaquin spearscale | PDCHE041F3 | None | None | G2 | S2 | 1B.2 |
| ***Falco columbarius***<br>merlin | ABNKD06030 | None | None | G5 | S3S4 | WL |
| ***Fritillaria agrestis***<br>stinkbells | PMLIL0V010 | None | None | G3 | S3 | 4.2 |
| ***Gratiola heterosepala***<br>Boggs Lake hedge-hyssop | PDSCR0R060 | None | Endangered | G2 | S2 | 1B.2 |
| ***Great Valley Cottonwood Riparian Forest***<br>Great Valley Cottonwood Riparian Forest | CTT61410CA | None | None | G2 | S2.1 | |
| ***Hibiscus lasiocarpos var. occidentalis***<br>woolly rose-mallow | PDMAL0H0R3 | None | None | G5T3 | S3 | 1B.2 |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Juglans hindsii***<br>Northern California black walnut | PDJUG02040 | None | None | G5 | S5 | CBR |
| ***Lasionycteris noctivagans***<br>silver-haired bat | AMACC02010 | None | None | G5 | S3S4 | |
| ***Lasiurus cinereus***<br>hoary bat | AMACC05030 | None | None | G5 | S4 | |
| ***Laterallus jamaicensis coturniculus***<br>California black rail | ABNME03041 | None | Threatened | G3G4T1 | S1 | FP |
| ***Legenere limosa***<br>legenere | PDCAM0C010 | None | None | G2 | S2 | 1B.1 |
| ***Lepidium latipes var. heckardii***<br>Heckard's pepper-grass | PDBRA1M0K1 | None | None | G4T1 | S1 | 1B.2 |
| ***Lepidurus packardi***<br>vernal pool tadpole shrimp | ICBRA10010 | Endangered | None | G4 | S3S4 | |
| ***Lilaeopsis masonii***<br>Mason's lilaeopsis | PDAPI19030 | None | Rare | G2 | S2 | 1B.1 |
| ***Linderiella occidentalis***<br>California linderiella | ICBRA06010 | None | None | G2G3 | S2S3 | |
| ***Melospiza melodia***<br>song sparrow ("Modesto" population) | ABPBXA3010 | None | None | G5 | S3? | SSC |
| ***Myrmosula pacifica***<br>Antioch multilid wasp | IIHYM15010 | None | None | GH | SH | |
| ***Navarretia leucocephala ssp. bakeri***<br>Baker's navarretia | PDPLM0C0E1 | None | None | G4T2 | S2 | 1B.1 |
| ***Neostapfia colusana***<br>Colusa grass | PMPOA4C010 | Threatened | Endangered | G1 | S1 | 1B.1 |
| ***Northern Claypan Vernal Pool***<br>Northern Claypan Vernal Pool | CTT44120CA | None | None | G1 | S1.1 | |
| ***Northern Hardpan Vernal Pool***<br>Northern Hardpan Vernal Pool | CTT44110CA | None | None | G3 | S3.1 | |
| ***Nycticorax nycticorax***<br>black-crowned night heron | ABNGA11010 | None | None | G5 | S4 | |
| ***Oncorhynchus mykiss irideus pop. 11***<br>steelhead - Central Valley DPS | AFCHA0209K | Threatened | None | G5T2Q | S2 | |
| ***Oncorhynchus tshawytscha pop. 6***<br>chinook salmon - Central Valley spring-run ESU | AFCHA0205A | Threatened | Threatened | G5 | S1 | |
| ***Oncorhynchus tshawytscha pop. 7***<br>chinook salmon - Sacramento River winter-run ESU | AFCHA0205B | Endangered | Endangered | G5 | S1 | |
| ***Phalacrocorax auritus***<br>double-crested cormorant | ABNFD01020 | None | None | G5 | S4 | WL |
| ***Plagiobothrys hystriculus***<br>bearded popcornflower | PDBOR0V0H0 | None | None | G2 | S2 | 1B.1 |

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| ***Plegadis chihi***<br>white-faced ibis | ABNGE02020 | None | None | G5 | S3S4 | WL |
| ***Pogonichthys macrolepidotus***<br>Sacramento splittail | AFCJB34020 | None | None | GNR | S3 | SSC |
| ***Progne subis***<br>purple martin | ABPAU01010 | None | None | G5 | S3 | SSC |
| ***Puccinellia simplex***<br>California alkali grass | PMPOA53110 | None | None | G3 | S2 | 1B.2 |
| ***Riparia riparia***<br>bank swallow | ABPAU08010 | None | Threatened | G5 | S2 | |
| ***Sagittaria sanfordii***<br>Sanford's arrowhead | PMALI040Q0 | None | None | G3 | S3 | 1B.2 |
| ***Spirinchus thaleichthys***<br>longfin smelt | AFCHB03010 | Candidate | Threatened | G5 | S1 | |
| ***Symphyotrichum lentum***<br>Suisun Marsh aster | PDASTE8470 | None | None | G2 | S2 | 1B.2 |
| ***Taxidea taxus***<br>American badger | AMAJF04010 | None | None | G5 | S3 | SSC |
| ***Thamnophis gigas***<br>giant gartersnake | ARADB36150 | Threatened | Threatened | G2 | S2 | |
| ***Trifolium hydrophilum***<br>saline clover | PDFAB400R5 | None | None | G2 | S2 | 1B.2 |
| ***Tuctoria mucronata***<br>Crampton's tuctoria or Solano grass | PMPOA6N020 | Endangered | Endangered | G1 | S1 | 1B.1 |
| ***Vireo bellii pusillus***<br>least Bell's vireo | ABPBW01114 | Endangered | Endangered | G5T2 | S2 | |
| ***Xanthocephalus xanthocephalus***<br>yellow-headed blackbird | ABPBXB3010 | None | None | G5 | S3 | SSC |

**Record Count: 75**

**IPaC** Information for Planning and Consultation **U.S. Fish & Wildlife Service**

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Sacramento and Yolo counties, California

## Local office

San Francisco Bay-Delta Fish And Wildlife

(916) 930-5603
(916) 930-5654

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814

http://kim_squires@fws.gov

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# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Birds

| NAME | STATUS |
|---|---|
| Least Bell's Vireo *Vireo bellii pusillus*<br>There is **final** critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/5945 | Endangered |

## Reptiles

| NAME | STATUS |
|---|---|
| Giant Garter Snake *Thamnophis gigas*<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/4482 | Threatened |

## Amphibians

| NAME | STATUS |
|---|---|
| California Red-legged Frog *Rana draytonii*<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/2891 | Threatened |
| California Tiger Salamander *Ambystoma californiense*<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/2076 | Threatened |

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## Fishes

| NAME | STATUS |
|---|---|
| Delta Smelt Hypomesus transpacificus<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/321 | Threatened |

## Insects

| NAME | STATUS |
|---|---|
| Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/7850 | Threatened |

## Crustaceans

| NAME | STATUS |
|---|---|
| Vernal Pool Fairy Shrimp Branchinecta lynchi<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/498 | Threatened |
| Vernal Pool Tadpole Shrimp Lepidurus packardi<br>There is final critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/2246 | Endangered |

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

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# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.) |
|---|---|
| **Burrowing Owl** Athene cunicularia<br>**This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA**<br>https://ecos.fws.gov/ecp/species/9737 | **Breeds Mar 15 to Aug 31** |
| Clark's Grebe Aechmophorus clarkii<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Jan 1 to Dec 31 |
| Common Yellowthroat Geothlypis trichas sinuosa<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/2084 | Breeds May 20 to Jul 31 |
| Costa's Hummingbird Calypte costae<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/9470 | Breeds Jan 15 to Jun 10 |
| Long-billed Curlew Numenius americanus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/5511 | Breeds elsewhere |
| Marbled Godwit Limosa fedoa<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9481 | Breeds elsewhere |
| Nuttall's Woodpecker Picoides nuttallii<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/9410 | Breeds Apr 1 to Jul 20 |
| **Oak Titmouse** Baeolophus inornatus<br>**This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.**<br>**https://ecos.fws.gov/ecp/species/9656** | **Breeds Mar 15 to Jul 15** |
| **Rufous Hummingbird** selasphorus rufus<br>**This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.**<br>**https://ecos.fws.gov/ecp/species/8002** | **Breeds elsewhere** |
| **Short-billed Dowitcher** Limnodromus griseus<br>**This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.**<br>**https://ecos.fws.gov/ecp/species/9480** | **Breeds elsewhere** |

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Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

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## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence (■)**

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

**Breeding Season ( )**
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort (|)**
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

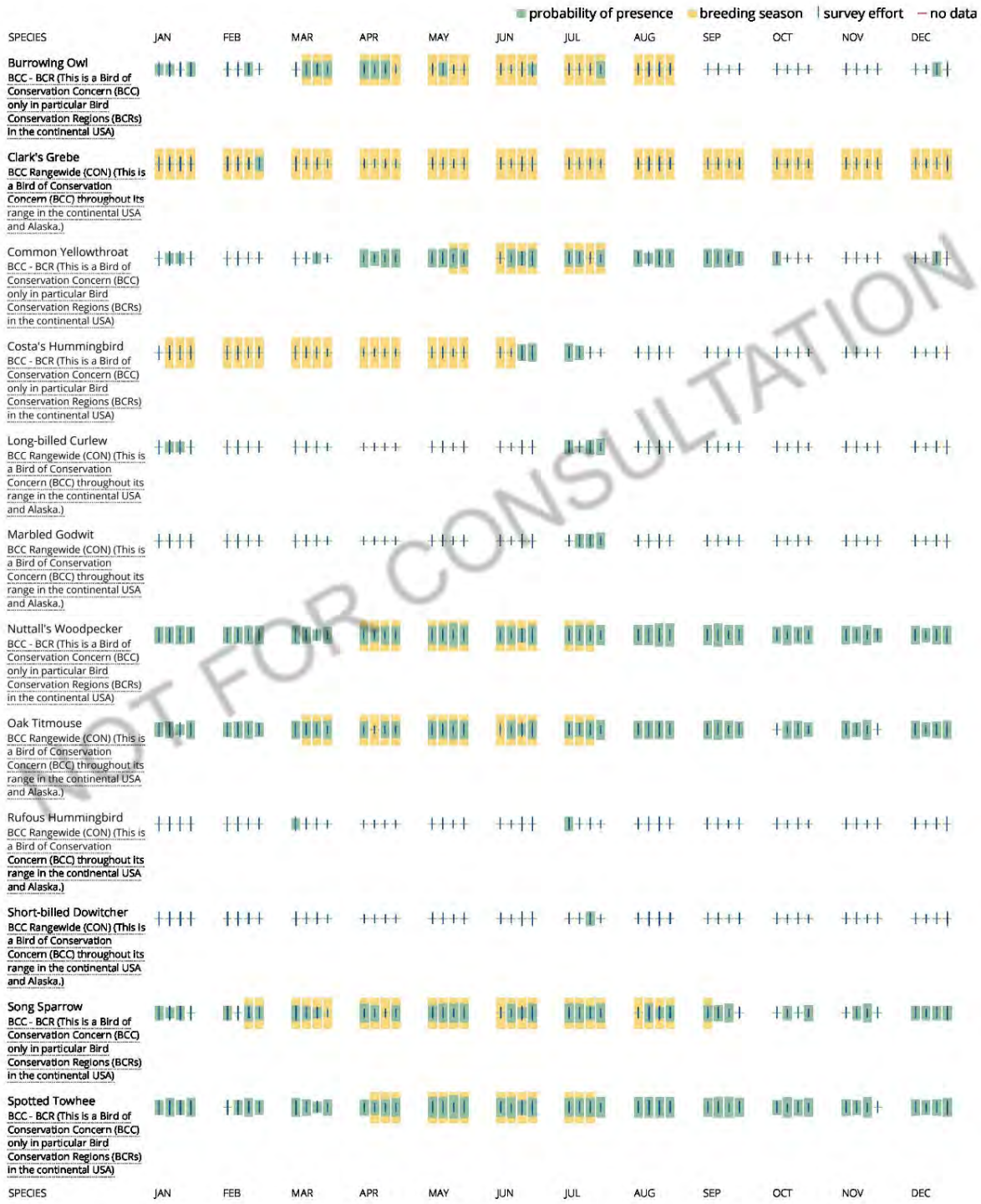
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data (–)**

A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

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For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

| LAND | ACRES |
|---|---|
| North Central Valley Wildlife Management Area | 15,106.47 acres |

(530) 934-2801
(530) 934-7814

C/o Sacramento Nwr Complex
752 County Road 99w
Willows, CA 95988-9639

https://www.fws.gov/refuges/profiles/index.cfm?id=81628

## Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

# Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Ah
- PEM1Ch
- PEM1/ABFx
- PEM1Cx
- PEM1Fx
- PEM1F

FRESHWATER FORESTED/SHRUB WETLAND

- PSSC
- PFOCh
- PFOC

FRESHWATER POND

- PUSAh
- PUBHx

RIVERINE

- R2UBH
- R1UBVx
- R2UBHx
- R5UBFx
- R4SBCx
- R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

**Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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CNPS California Native Plant Society Inventory of Rare and Endangered Plants

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

## Plant List

31 matches found. *Click on scientific name for details*

**Search Criteria**

Found in Quads 3812166, 3812165, 3812164, 3812156, 3812155, 3812154, 3812146 3812145 and 3812144;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

| Scientific Name | Common Name | Family | Lifeform | Blooming Period | CA Rare Plant Rank | State Listing Status | Federal Listing Status | Lowest Elevation | Highest Elevation | Habitats |
|---|---|---|---|---|---|---|---|---|---|---|
| Astragalus pauperculus | depauperate milk-vetch | Fabaceae | annual herb | Mar-Jun | 4.3 | | | 60 m | 1215 m | • Chaparral<br>• Cismontane woodland<br>• Valley and foothill grassland |
| Astragalus tener var. ferrisiae | Ferris' milk-vetch | Fabaceae | annual herb | Apr-May | 1B.1 | | | 2 m | 75 m | • Meadows and seeps (vernally mesic)<br>• Valley and foothill grassland (subalkaline flats) |
| Astragalus tener var. tener | alkali milk-vetch | Fabaceae | annual herb | Mar-Jun | 1B.2 | | | 1 m | 60 m | • Playas<br>• Valley and foothill grassland (adobe clay)<br>• Vernal pools |
| Atriplex cordulata var. cordulata | heartscale | Chenopodiaceae | annual herb | Apr-Oct | 1B.2 | | | 0 m | 560 m | • Chenopod scrub<br>• Meadows and seeps<br>• Valley and foothill grassland (sandy) |
| Atriplex depressa | brittlescale | Chenopodiaceae | annual herb | Apr-Oct | 1B.2 | | | 1 m | 320 m | • Chenopod scrub<br>• Meadows and seeps<br>• Playas<br>• Valley and foothill grassland<br>• Vernal pools |
| Brodiaea rosea ssp. vallicola | valley brodiaea | Themidaceae | perennial bulbiferous herb | Apr-May(Jun) | 4.2 | | | 10 m | 335 m | • Valley and foothill grassland (swales)<br>• Vernal pools |
| Carex comosa | bristly sedge | Cyperaceae | perennial rhizomatous herb | May-Sep | 2B.1 | | | 0 m | 625 m | • Coastal prairie<br>• Marshes and swamps (lake margins)<br>• Valley and foothill grassland |
| Centromadia parryi ssp. parryi | pappose tarplant | Asteraceae | annual herb | May-Nov | 1B.2 | | | 0 m | 420 m | • Chaparral<br>• Coastal prairie<br>• Meadows and seeps<br>• Marshes and swamps (coastal salt)<br>• Valley and foothill grassland (vernally mesic) |
| Centromadia parryi ssp. rudis | Parry's rough tarplant | Asteraceae | annual herb | May-Oct | 4.2 | | | 0 m | 100 m | • Valley and foothill grassland<br>• Vernal pools |
| Chloropyron palmatum | palmate-bracted bird's-beak | Orobanchaceae | annual herb (hemiparasitic) | May-Oct | 1B.1 | CE | FE | 5 m | 155 m | • Chenopod scrub<br>• Valley and foothill grassland |
| Cuscuta obtusiflora var. glandulosa | Peruvian dodder | Convolvulaceae | annual vine (parasitic) | Jul-Oct | 2B.2 | | | 15 m | 280 m | • Marshes and swamps (freshwater) |
| Downingia pusilla | dwarf downingia | Campanulaceae | annual herb | Mar-May | 2B.2 | | | 1 m | 445 m | • Valley and foothill grassland (mesic)<br>• Vernal pools |
| Eryngium lassenii | Jepson's coyote thistle | Apiaceae | perennial herb | Apr-Aug | 1B.2 | | | 3 m | 300 m | • Valley and foothill grassland<br>• Vernal pools |
| Extriplex joaquinana | San Joaquin spearscale | Chenopodiaceae | annual herb | Apr-Oct | 1B.2 | | | 1 m | 835 m | • Chenopod scrub<br>• Meadows and seeps<br>• Playas<br>• Valley and foothill grassland |
| Fritillaria agrestis | stinkbells | Liliaceae | perennial bulbiferous herb | Mar-Jun | 4.2 | | | 10 m | 1555 m | • Chaparral<br>• Cismontane woodland<br>• Pinyon and juniper woodland |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | • Valley and foothill grassland |
| Gratiola heterosepala | Boggs Lake hedge-hyssop | Plantaginaceae | annual herb | Apr-Aug | 1B.2 | CE | | 10 m | 2375 m | • Marshes and swamps (lake margins)<br>• Vernal pools |
| Hesperevax caulescens | hogwallow starfish | Asteraceae | annual herb | Mar-Jun | 4.2 | | | 0 m | 505 m | • Valley and foothill grassland (mesic, clay)<br>• Vernal pools (shallow) |
| Hibiscus lasiocarpos var. occidentalis | woolly rose-mallow | Malvaceae | perennial rhizomatous herb (emergent) | Jun-Sep | 1B.2 | | | 0 m | 120 m | • Marshes and swamps (freshwater) |
| Juglans hindsii | Northern California black walnut | Juglandaceae | perennial deciduous tree | Apr-May | 1B.1 | | | 0 m | 440 m | • Riparian forest<br>• Riparian woodland |
| Legenere limosa | legenere | Campanulaceae | annual herb | Apr-Jun | 1B.1 | | | 1 m | 880 m | • Vernal pools |
| Lepidium latipes var. heckardii | Heckard's pepper-grass | Brassicaceae | annual herb | Mar-May | 1B.2 | | | 2 m | 200 m | • Valley and foothill grassland (alkaline flats) |
| Lilaeopsis masonii | Mason's lilaeopsis | Apiaceae | perennial rhizomatous herb | Apr-Nov | 1B.1 | CR | | 0 m | 10 m | • Marshes and swamps (brackish or freshwater)<br>• Riparian scrub |
| Myosurus minimus ssp. apus | little mousetail | Ranunculaceae | annual herb | Mar-Jun | 3.1 | | | 20 m | 640 m | • Valley and foothill grassland<br>• Vernal pools (alkaline) |
| Navarretia leucocephala ssp. bakeri | Baker's navarretia | Polemoniaceae | annual herb | Apr-Jul | 1B.1 | | | 5 m | 1740 m | • Cismontane woodland<br>• Lower montane coniferous forest<br>• Meadows and seeps<br>• Valley and foothill grassland<br>• Vernal pools |
| Neostapfia colusana | Colusa grass | Poaceae | annual herb | May-Aug | 1B.1 | CE | FT | 5 m | 200 m | • Vernal pools (adobe, large) |
| Plagiobothrys hystriculus | bearded popcornflower | Boraginaceae | annual herb | Apr-May | 1B.1 | | | 0 m | 274 m | • Valley and foothill grassland (mesic)<br>• Vernal pools margins |
| Puccinellia simplex | California alkali grass | Poaceae | annual herb | Mar-May | 1B.2 | | | 2 m | 930 m | • Chenopod scrub<br>• Meadows and seeps<br>• Valley and foothill grassland<br>• Vernal pools |
| Sagittaria sanfordii | Sanford's arrowhead | Alismataceae | perennial rhizomatous herb (emergent) | May-Oct(Nov) | 1B.2 | | | 0 m | 650 m | • Marshes and swamps (assorted shallow freshwater) |
| Symphyotrichum lentum | Suisun Marsh aster | Asteraceae | perennial rhizomatous herb | (Apr)May-Nov | 1B.2 | | | 0 m | 3 m | • Marshes and swamps (brackish and freshwater) |
| Trifolium hydrophilum | saline clover | Fabaceae | annual herb | Apr-Jun | 1B.2 | | | 0 m | 300 m | • Marshes and swamps<br>• Valley and foothill grassland (mesic, alkaline)<br>• Vernal pools |
| Tuctoria mucronata | Crampton's tuctoria or Solano grass | Poaceae | annual herb | Apr-Aug | 1B.1 | CE | FE | 5 m | 10 m | • Valley and foothill grassland (mesic)<br>• Vernal pools |

**Suggested Citation**

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**Questions and Comments**
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Quad Name **Sacramento West**
Quad Number **38121-E5**

## ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

## ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat - **X**
SRWR Chinook Salmon Critical Habitat - **X**
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

## ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

**ESA Marine Invertebrates Critical Habitat**

Black Abalone Critical Habitat -

**ESA Sea Turtles**

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

**ESA Whales**

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

**ESA Pinnipeds**

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

**Essential Fish Habitat**

Coho EFH -
Chinook Salmon EFH - X
Groundfish EFH - X
Coastal Pelagics EFH -
Highly Migratory Species EFH -

**MMPA Species (See list at left)**

**ESA and MMPA Cetaceans/Pinnipeds**
**See list at left and consult the NMFS Long Beach office**
**562-980-4000**

# Attachment C. Representative Photographs

View of California walnut grove habitat along Sierra Nevada Railroad line.

View of elderberry thickets present along western slope of railroad grade.

View of agricultural drainage ditch located along Sierra Nevada Railroad line at the northern end of the project site.

View of unvegetated portion of the agricultural drainage ditch located along Sierra Nevada Railroad line near northern end of the project site.

View of agricultural drainage located north of County Road 126 that provides drainage for the adjacent walnut orchard.

View of oak trees topped to accommodate for utility lines along Old River Road.

View of the Sacramento Weir and the Sacramento Bypass.

View of the Sacramento Weir and the Sacramento River.

View of the along the OHWM of the Sacramento River at the southeast corner of the project site.

Evidence of high water on a valley oak tree along the Sacramento River.

View of the along the OHWM of the Sacramento River. OHWM was identified based on grade changes, changes in vegetation and scour.

View of the along the OHWM of the Sacramento River and bench area between Old River Road and the river.

View of the bench area between Old River Road and the Sacramento River near the north end of the project site.

View of the undeveloped parking area located at the south end of the project site.

# Attachment D. Habitat Map

**Figure 1. Habitat Map**

26Sep2019 RS Z:\Projects\1601100\1601100_G169_SacWeir_Habitat.mxd

Source: GEI Consultants, Inc. 2019

# Attachment E. Tree Inventory

## Part 1. Tree Map

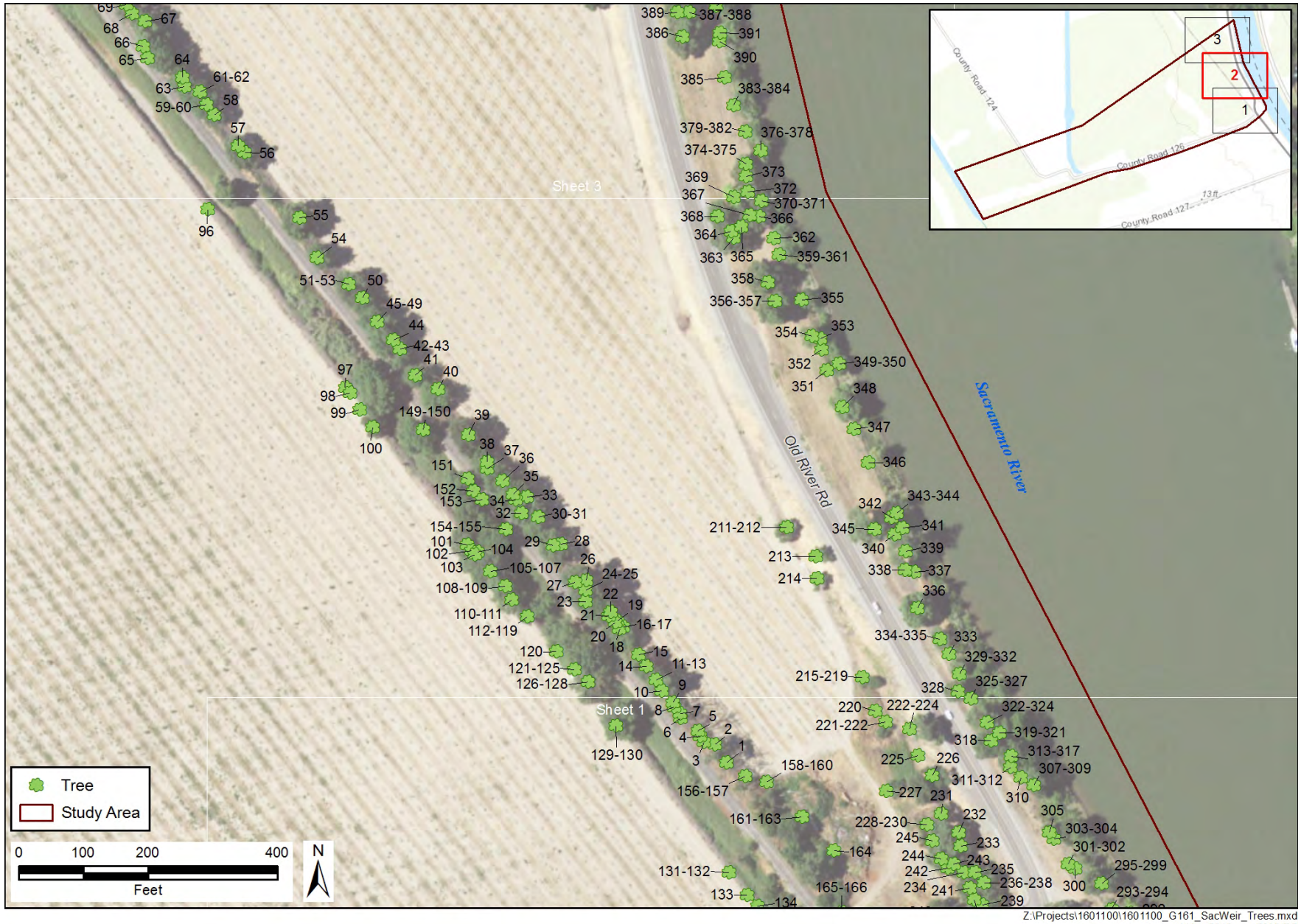
## Part 2. Tree Inventory Data

**Part 1. Figure 1 of 3. Tree Maps**

Z:\Projects\1601100\1601100_G161_SacWeir_Trees.mxd
14Aug2019 BMC/RS

**Source: GEI Consultants, Inc. 2019**

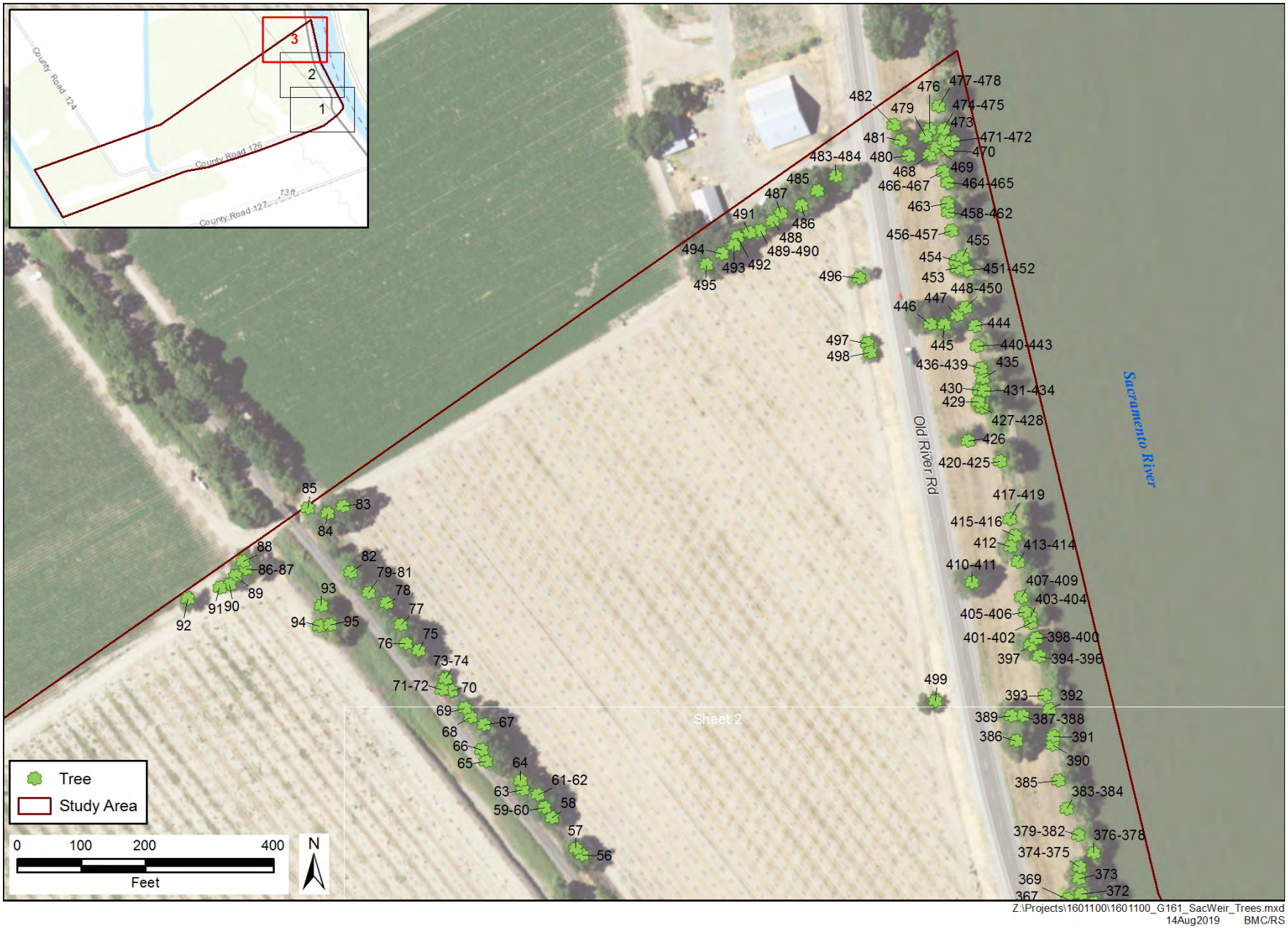
**Part 1. Figure 2 of 3. Tree Maps**




Z:\Projects\1601100\1601100_G161_SacWeir_Trees.mxd
14Aug2019 BMC/RS

**Source: GEI Consultants, Inc. 2019**

**Part 1. Figure 1 of 3. Tree Maps**




**Source: GEI Consultants, Inc. 2019**

## Part 2. Tree Inventory Data

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 1 | Juglans hindsii | Northern California black walnut | N | 44 | 44 | |
| 2 | Quercus lobata | valley oak | N | 24 | 24 | |
| 3 | Juglans hindsii | Northern California black walnut | Y | 25,21 | 46 | |
| 4 | Juglans hindsii | Northern California black walnut | N | 30 | 30 | |
| 5 | Juglans hindsii | Northern California black walnut | Y | 46,16.5 | 62.5 | |
| 6 | Juglans hindsii | Northern California black walnut | N | 18.5 | 18.5 | |
| 7 | Juglans hindsii | Northern California black walnut | Y | 22,20 | 42 | |
| 8 | Juglans hindsii | Northern California black walnut | N | 35 | 35 | |
| 9 | Juglans hindsii | Northern California black walnut | Y | 4,4 | 8 | |
| 10 | Quercus lobata | valley oak | N | 25 | 25 | |
| 11 | Juglans hindsii | Northern California black walnut | N | 7.5 | 7.5 | |
| 12 | Juglans hindsii | Northern California black walnut | N | 17 | 17 | |
| 13 | Juglans hindsii | Northern California black walnut | Y | 10,10 | 20 | |
| 14 | Juglans hindsii | Northern California black walnut | Y | 16.5,14 | 30.5 | |
| 15 | Quercus lobata | valley oak | N | 6 | 6 | |
| 16 | Juglans hindsii | Northern California black walnut | N | 10 | 10 | |
| 17 | Juglans hindsii | Northern California black walnut | Y | 13.5,11.5 | 25 | |
| 18 | Juglans hindsii | Northern California black walnut | N | 11 | 11 | |
| 19 | Juglans hindsii | Northern California black walnut | Y | 10,12,13 | 35 | |
| 20 | Juglans hindsii | Northern California black walnut | Y | 5,6,9.5 | 20.5 | |
| 21 | Juglans hindsii | Northern California black walnut | Y | 6,7 | 13 | |
| 22 | Juglans hindsii | Northern California black walnut | N | 39 | 39 | |
| 23 | Juglans hindsii | Northern California black walnut | N | 38.5 | 38.5 | |
| 24 | Quercus lobata | valley oak | N | 41 | 41 | |
| 25 | Juglans hindsii | Northern California black walnut | N | 4 | 4 | |
| 26 | Juglans hindsii | Northern California black walnut | N | 11 | 11 | |
| 27 | Juglans hindsii | Northern California black walnut | N | 11 | 11 | |
| 28 | Quercus lobata | valley oak | N | 16.5 | 16.5 | |
| 29 | Quercus lobata | valley oak | Y | 12,14.5,17.5 | 44 | x |
| 30 | Juglans hindsii | Northern California black walnut | Y | 14,14 | 28 | |
| 31 | Juglans regia | English walnut | Y | 12,14,16 | 42 | |
| 32 | Juglans hindsii | Northern California black walnut | N | 15 | 15 | |
| 33 | Juglans hindsii | Northern California black walnut | N | 16 | 16 | |
| 34 | Juglans hindsii | Northern California black walnut | N | 14 | 14 | |
| 35 | Juglans hindsii | Northern California black walnut | Y | 15.5,15,11.5 | 42 | |
| 36 | Juglans hindsii | Northern California black walnut | Y | 17.5,16,16.5 | 50 | |
| 37 | Juglans hindsii | Northern California black walnut | N | 18 | 18 | x |
| 38 | Juglans hindsii | Northern California black walnut | Y | 18,18.5 | 36.5 | |
| 39 | Quercus lobata | valley oak | N | 36 | 36 | |
| 40 | Juglans hindsii | Northern California black walnut | Y | 18,14,19 | 51 | |
| 41 | Juglans hindsii | Northern California black walnut | Y | 34,12,14 | 60 | |
| 42 | Juglans hindsii | Northern California black walnut | N | 13.5 | 13.5 | |
| 43 | Juglans hindsii | Northern California black walnut | N | 13 | 13 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 44 | Juglans hindsii | Northern California black walnut | N | 58.5 | 58.5 | |
| 45 | Juglans hindsii | Northern California black walnut | N | 5.5 | 5.5 | |
| 46 | Juglans hindsii | Northern California black walnut | N | 5.5 | 5.5 | |
| 47 | Juglans hindsii | Northern California black walnut | N | 10.5 | 10.5 | |
| 48 | Juglans hindsii | Northern California black walnut | N | 14 | 14 | |
| 49 | Juglans hindsii | Northern California black walnut | N | 23 | 23 | |
| 50 | Juglans hindsii | Northern California black walnut | N | 18.5 | 18.5 | |
| 51 | Quercus lobata | valley oak | N | 14 | 14 | |
| 52 | Quercus lobata | valley oak | Y | 12,22,8 | 42 | |
| 53 | Quercus lobata | valley oak | N | 14 | 14 | |
| 54 | Juglans hindsii | Northern California black walnut | N | 36.5 | 36.5 | |
| 55 | Quercus lobata | valley oak | N | 38.5 | 38.5 | |
| 56 | Quercus lobata | valley oak | N | 29.5 | 29.5 | |
| 57 | Quercus lobata | valley oak | N | 20.5 | 20.5 | |
| 58 | Quercus lobata | valley oak | N | 21 | 21 | |
| 59 | Quercus lobata | valley oak | N | 15.5 | 15.5 | |
| 60 | Quercus lobata | valley oak | N | 7.5 | 7.5 | |
| 61 | Juglans hindsii | Northern California black walnut | Y | 22,16.5,20.5,16 | 75 | |
| 62 | Juglans hindsii | Northern California black walnut | N | 22 | 22 | |
| 63 | Juglans hindsii | Northern California black walnut | N | 25 | 25 | |
| 64 | Quercus lobata | valley oak | N | 17 | 17 | |
| 65 | Juglans hindsii | Northern California black walnut | N | 38 | 38 | |
| 66 | Quercus lobata | valley oak | N | 32 | 32 | |
| 67 | Juglans hindsii | Northern California black walnut | Y | 21,13 | 34 | |
| 68 | Quercus lobata | valley oak | N | 32 | 32 | |
| 69 | Quercus lobata | valley oak | N | 14 | 14 | |
| 70 | Juglans hindsii | Northern California black walnut | Y | 5,5.5,6,5 | 21.5 | |
| 71 | Quercus lobata | valley oak | Y | 4,5 | 9 | |
| 72 | Juglans hindsii | Northern California black walnut | N | 4 | 4 | |
| 73 | Quercus lobata | valley oak | N | 12 | 12 | x |
| 74 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 75 | Quercus lobata | valley oak | N | 18 | 18 | |
| 76 | Juglans hindsii | Northern California black walnut | N | 44 | 44 | |
| 77 | Juglans hindsii | Northern California black walnut | N | 21 | 21 | x |
| 78 | Juglans hindsii | Northern California black walnut | Y | 16,16.5,17 | 49.5 | |
| 79 | Juglans hindsii | Northern California black walnut | N | 14 | 14 | |
| 80 | Quercus lobata | valley oak | N | 12 | 12 | |
| 81 | Quercus lobata | valley oak | Y | 12,9 | 21 | |
| 82 | Juglans hindsii | Northern California black walnut | N | 48.5 | 48.5 | |
| 83 | Quercus lobata | valley oak | N | 42 | 42 | |
| 84 | Quercus lobata | valley oak | N | 37.5 | 37.5 | |
| 85 | Quercus lobata | valley oak | N | 6.5 | 6.5 | |
| 86 | Quercus lobata | valley oak | N | 20 | 20 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 87 | Quercus lobata | valley oak | N | 8 | 8 | |
| 88 | Quercus lobata | valley oak | N | 14.5 | 14.5 | |
| 89 | Juglans hindsii | Northern California black walnut | N | 23.5 | 23.5 | |
| 90 | Juglans hindsii | Northern California black walnut | N | 23 | 23 | |
| 91 | Quercus lobata | valley oak | N | 11 | 11 | |
| 92 | Juglans hindsii | Northern California black walnut | Y | 17.5,13.5 | 31 | |
| 93 | Salix gooddingii | Goodding's black willow | Y | 14,18 | 32 | x |
| 94 | Salix gooddingii | Goodding's black willow | Y | 31,24 | 55 | x |
| 95 | Salix gooddingii | Goodding's black willow | Y | 22,18,16,12,10,8 | 118 | x |
| 96 | Quercus lobata | valley oak | N | 30 | 30 | x |
| 97 | Quercus lobata | valley oak | N | 7 | 7 | x |
| 98 | Juglans hindsii | Northern California black walnut | Y | 14,12,14,10,10 | 60 | x |
| 99 | Quercus lobata | valley oak | N | 30 | 30 | x |
| 100 | Quercus lobata | valley oak | Y | 26,10 | 36 | |
| 101 | Quercus lobata | valley oak | N | 33.5 | 33.5 | |
| 102 | Quercus lobata | valley oak | N | 16 | 16 | |
| 103 | Quercus lobata | valley oak | N | 34 | 34 | |
| 104 | Quercus lobata | valley oak | N | 14 | 14 | |
| 105 | Quercus lobata | valley oak | N | 19 | 19 | |
| 106 | Quercus lobata | valley oak | N | 18 | 18 | |
| 107 | Quercus lobata | valley oak | N | 23 | 23 | |
| 108 | Quercus lobata | valley oak | Y | 23.5,16.5 | 40 | |
| 109 | Quercus lobata | valley oak | N | 22 | 22 | |
| 110 | Quercus lobata | valley oak | N | 8.5 | 8.5 | |
| 111 | Juglans hindsii | Northern California black walnut | Y | 33.5,12,26 | 71.5 | |
| 112 | Quercus lobata | valley oak | Y | 5,16.5 | 21.5 | |
| 113 | Juglans hindsii | Northern California black walnut | N | 9 | 9 | x |
| 114 | Juglans hindsii | Northern California black walnut | N | 9 | 9 | x |
| 115 | Juglans hindsii | Northern California black walnut | N | 12 | 12 | x |
| 116 | Juglans hindsii | Northern California black walnut | N | 5 | 5 | x |
| 117 | Juglans hindsii | Northern California black walnut | N | 14 | 14 | x |
| 118 | Juglans hindsii | Northern California black walnut | Y | 10,12 | 22 | x |
| 119 | Juglans hindsii | Northern California black walnut | N | 7 | 7 | x |
| 120 | Juglans hindsii | Northern California black walnut | Y | 18,24 | 42 | x |
| 121 | Juglans hindsii | Northern California black walnut | N | 18 | 18 | x |
| 122 | Juglans hindsii | Northern California black walnut | N | 20 | 20 | x |
| 123 | Juglans hindsii | Northern California black walnut | Y | 18,17 | 35 | x |
| 124 | Juglans hindsii | Northern California black walnut | N | 6 | 6 | x |
| 125 | Juglans hindsii | Northern California black walnut | N | 10 | 10 | x |
| 126 | Juglans hindsii | Northern California black walnut | N | 30 | 30 | x |
| 127 | Juglans hindsii | Northern California black walnut | N | 24 | 24 | x |
| 128 | Juglans hindsii | Northern California black walnut | N | 24 | 24 | x |
| 129 | Quercus lobata | valley oak | N | 22 | 22 | x |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 130 | Quercus lobata | valley oak | N | 38 | 38 | x |
| 131 | Quercus lobata | valley oak | N | 7 | 7 | x |
| 132 | Juglans hindsii | Northern California black walnut | Y | 20,12 | 32 | x |
| 133 | Quercus lobata | valley oak | Y | 4,4,4 | 12 | x |
| 134 | Juglans hindsii | Northern California black walnut | Y | 10,8,14 | 32 | x |
| 135 | Juglans hindsii | Northern California black walnut | N | 6 | 6 | x |
| 136 | Juglans hindsii | Northern California black walnut | Y | 8,4.4 | 12.4 | x |
| 137 | Juglans hindsii | Northern California black walnut | N | 12 | 12 | x |
| 138 | Juglans hindsii | Northern California black walnut | N | 8 | 8 | x |
| 139 | Quercus lobata | valley oak | N | 4.4 | 4.4 | x |
| 140 | Morus alba | white mulberry | N | 24 | 24 | |
| 141 | Morus alba | white mulberry | N | 26 | 26 | |
| 142 | Juglans hindsii | Northern California black walnut | N | 10 | 10 | x |
| 143 | Juglans hindsii | Northern California black walnut | N | 10 | 10 | x |
| 144 | Juglans hindsii | Northern California black walnut | Y | 10,12 | 22 | x |
| 145 | Juglans hindsii | Northern California black walnut | N | 14 | 14 | x |
| 146 | Juglans hindsii | Northern California black walnut | N | 8 | 8 | x |
| 147 | Juglans hindsii | Northern California black walnut | N | 8 | 8 | x |
| 148 | Juglans hindsii | Northern California black walnut | N | 10 | 10 | x |
| 149 | Juglans hindsii | Northern California black walnut | N | 22.5 | 22.5 | |
| 150 | Juglans hindsii | Northern California black walnut | Y | 16,16,14.5 | 46.5 | |
| 151 | Juglans hindsii | Northern California black walnut | Y | 16,12 | 28 | x |
| 152 | Juglans hindsii | Northern California black walnut | N | 6 | 6 | x |
| 153 | Quercus lobata | valley oak | N | 28 | 28 | x |
| 154 | Juglans hindsii | Northern California black walnut | N | 12 | 12 | x |
| 155 | Juglans hindsii | Northern California black walnut | N | 18 | 18 | x |
| 156 | Juglans hindsii | Northern California black walnut | N | 32 | 32 | x |
| 157 | Juglans hindsii | Northern California black walnut | Y | 4,4 | 8 | x |
| 158 | Juglans hindsii | Northern California black walnut | N | 5.5 | 5.5 | x |
| 159 | Juglans regia | English walnut | N | 6 | 6 | x |
| 160 | Juglans hindsii | Northern California black walnut | N | 8 | 8 | x |
| 161 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 162 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 163 | Juglans regia | English walnut | N | 6 | 6 | x |
| 164 | Quercus lobata | valley oak | N | 26 | 26 | |
| 165 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,4 | 24 | x |
| 166 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,4 | 24 | x |
| 167 | Juglans hindsii | Northern California black walnut | N | 15.5 | 15.5 | |
| 168 | Juglans hindsii | Northern California black walnut | Y | 15.5,19 | 34.5 | |
| 169 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 170 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 171 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 172 | Juglans hindsii | Northern California black walnut | N | - | - | - |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 173 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 174 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 175 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 176 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 177 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 178 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 179 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 180 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 181 | Juglans hindsii | Northern California black walnut | N | - | - | - |
| 182 | Quercus lobata | valley oak | N | - | - | - |
| 183 | Juglans hindsii | Northern California black walnut | N | 6 | 6 | x |
| 184 | Juglans hindsii | Northern California black walnut | N | 14 | 14 | x |
| 185 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,4 | 24 | x |
| 186 | Quercus lobata | valley oak | N | 8 | 8 | x |
| 187 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4 | 20 | x |
| 188 | Quercus lobata | valley oak | N | 40 | 40 | |
| 189 | Quercus lobata | valley oak | N | 5.5 | 5.5 | x |
| 190 | Salix gooddingii | Goodding's black willow | Y | 5,7,10 | 22 | x |
| 191 | Juglans hindsii | Northern California black walnut | Y | 20,24,32 | 76 | x |
| 192 | Quercus lobata | valley oak | N | 25.5 | 25.5 | |
| 193 | Juglans hindsii | Northern California black walnut | N | 12 | 12 | x |
| 194 | Quercus lobata | valley oak | N | 4 | 4 | x |
| 195 | Quercus lobata | valley oak | N | 46 | 46 | x |
| 196 | Quercus lobata | valley oak | N | 24 | 24 | x |
| 197 | Quercus lobata | valley oak | N | 22 | 22 | |
| 198 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,4 | 24 | x |
| 199 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,4,4,4 | 32 | x |
| 200 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,4 | 24 | x |
| 201 | Quercus lobata | valley oak | N | 37 | 37 | |
| 202 | Quercus lobata | valley oak | Y | 22,25 | 47 | |
| 203 | Quercus lobata | valley oak | N | 25 | 25 | |
| 204 | Quercus lobata | valley oak | N | 19.5 | 19.5 | |
| 205 | Quercus lobata | valley oak | N | 59.5 | 59.5 | |
| 206 | Juglans hindsii | Northern California black walnut | N | 26.5 | 26.5 | |
| 207 | Juglans hindsii | Northern California black walnut | Y | 6,6,6,8,8,10 | 44 | x |
| 208 | Juglans hindsii | Northern California black walnut | Y | 8,8,10.6 | 26.6 | |
| 209 | Juglans hindsii | Northern California black walnut | Y | 6,6,8 | 20 | |
| 210 | Quercus lobata | valley oak | N | 5 | 5 | |
| 211 | Quercus lobata | valley oak | N | 12 | 12 | |
| 212 | Quercus lobata | valley oak | Y | 18.5 | 18.5 | |
| 213 | Quercus lobata | valley oak | Y | 12,14.5 | 26.5 | |
| 214 | Quercus lobata | valley oak | Y | 10,12 | 22 | |
| 215 | Quercus lobata | valley oak | N | 4 | 4 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 216 | Quercus lobata | valley oak | N | 4 | 4 | |
| 217 | Quercus lobata | valley oak | Y | 6,5,5 | 16 | |
| 218 | Quercus lobata | valley oak | Y | 4,5 | 9 | |
| 219 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,4,5,5,5,6 | 51 | |
| 220 | Quercus lobata | valley oak | Y | 5,4 | 9 | |
| 221 | Quercus lobata | valley oak | Y | 8,6,4 | 18 | |
| 222 | Juglans hindsii | Northern California black walnut | Y | 4,4,4,4,6 | 22 | x |
| 223 | Fraxinus latifolia | Oregon ash | Y | 10,12,12 | 34 | x |
| 224 | Quercus lobata | valley oak | N | 26 | 26 | |
| 225 | Quercus lobata | valley oak | Y | 4,4,4,4,4 | 20 | |
| 226 | Quercus lobata | valley oak | N | 36 | 36 | |
| 227 | Quercus lobata | valley oak | Y | 6,6,4 | 16 | |
| 228 | Quercus lobata | valley oak | N | 6 | 6 | |
| 229 | Quercus lobata | valley oak | N | 14.5 | 14.5 | |
| 230 | Quercus lobata | valley oak | N | 5 | 5 | |
| 231 | Juglans regia | English walnut | Y | 20,14 | 34 | x |
| 232 | Quercus lobata | valley oak | N | 30 | 30 | x |
| 233 | Quercus lobata | valley oak | Y | 10,7 | 17 | |
| 234 | Juglans hindsii | Northern California black walnut | N | 11.5 | 11.5 | |
| 235 | Juglans hindsii | Northern California black walnut | N | 12 | 12 | |
| 236 | Juglans hindsii | Northern California black walnut | N | 8 | 8 | |
| 237 | Quercus lobata | valley oak | N | 8 | 8 | |
| 238 | Juglans hindsii | Northern California black walnut | Y | 15,10.5 | 25.5 | |
| 239 | Juglans hindsii | Northern California black walnut | Y | 13.5,13,12,14.5 | 53 | |
| 240 | Juglans hindsii | Northern California black walnut | Y | 13,12.5 | 25.5 | |
| 241 | Quercus lobata | valley oak | N | 18 | 18 | |
| 242 | Quercus lobata | valley oak | N | 8 | 8 | |
| 243 | Quercus lobata | valley oak | Y | 13,9 | 22 | |
| 244 | Quercus lobata | valley oak | Y | 14,18 | 32 | x |
| 245 | Quercus lobata | valley oak | Y | 10,9 | 19 | |
| 246 | Quercus lobata | valley oak | Y | 14,18 | 32 | |
| 247 | Juglans hindsii | Northern California black walnut | N | 11 | 11 | |
| 248 | Quercus lobata | valley oak | Y | 14,14.5 | 28.5 | |
| 249 | Quercus lobata | valley oak | Y | 6,14.5 | 20.5 | |
| 250 | Quercus lobata | valley oak | Y | 6,5 | 11 | |
| 251 | Quercus lobata | valley oak | N | 4 | 4 | |
| 252 | Quercus lobata | valley oak | Y | 10.5,9,21 | 40.5 | |
| 253 | Juglans hindsii | Northern California black walnut | N | 11 | 11 | |
| 254 | Quercus lobata | valley oak | Y | 9,10,12 | 31 | |
| 255 | Quercus lobata | valley oak | N | 7.5 | 7.5 | |
| 256 | Quercus lobata | valley oak | N | 11 | 11 | |
| 257 | Juglans hindsii | Northern California black walnut | Y | 8,12 | 20 | |
| 258 | Juglans hindsii | Northern California black walnut | Y | 13.5,15.5 | 29 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 259 | Quercus lobata | valley oak | N | 12 | 12 | |
| 260 | Quercus lobata | valley oak | N | 7.5 | 7.5 | |
| 261 | Juglans hindsii | Northern California black walnut | Y | 19,18,24.5 | 61.5 | |
| 262 | Quercus lobata | valley oak | N | 5 | 5 | |
| 263 | Quercus lobata | valley oak | N | 9 | 9 | |
| 264 | Quercus lobata | valley oak | Y | 10.5,12 | 22.5 | |
| 265 | Quercus lobata | valley oak | Y | 9.5,13.5 | 23 | |
| 266 | Quercus lobata | valley oak | Y | 6.5,6,6 | 18.5 | |
| 267 | Quercus lobata | valley oak | N | 7 | 7 | |
| 268 | Quercus lobata | valley oak | Y | 18.5,18 | 36.5 | |
| 269 | Juglans hindsii | Northern California black walnut | N | 11.5 | 11.5 | |
| 270 | Quercus lobata | valley oak | Y | 10,10 | 20 | |
| 271 | Quercus lobata | valley oak | N | 5.5 | 5.5 | |
| 272 | Quercus lobata | valley oak | N | 16 | 16 | |
| 273 | Quercus lobata | valley oak | N | 9.5 | 9.5 | |
| 274 | Quercus lobata | valley oak | Y | 10,13 | 23 | |
| 275 | Quercus lobata | valley oak | Y | 18,14 | 32 | x |
| 276 | Juglans hindsii | Northern California black walnut | Y | 8,8,10 | 26 | x |
| 277 | Quercus lobata | valley oak | Y | 14,19.5 | 33.5 | |
| 278 | Quercus lobata | valley oak | N | 23 | 23 | |
| 279 | Quercus lobata | valley oak | N | 24 | 24 | |
| 280 | Quercus lobata | valley oak | N | 16 | 16 | |
| 281 | Quercus lobata | valley oak | Y | 10,7 | 17 | x |
| 282 | Quercus lobata | valley oak | N | 4 | 4 | |
| 283 | Quercus lobata | valley oak | N | 19 | 19 | |
| 284 | Quercus lobata | valley oak | N | 22 | 22 | |
| 285 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 286 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 287 | Robinia pseudoacaci | black locust | N | 8 | 8 | |
| 288 | Quercus lobata | valley oak | N | 22 | 22 | |
| 289 | Quercus lobata | valley oak | N | 34.5 | 34.5 | |
| 290 | Fraxinus latifolia | Oregon ash | N | 7.5 | 7.5 | |
| 291 | Quercus lobata | valley oak | N | 7 | 7 | |
| 292 | Catalpa speciosa | northern catalpa | N | 26 | 26 | |
| 293 | Quercus lobata | valley oak | N | 10.5 | 10.5 | |
| 294 | Quercus lobata | valley oak | N | 7 | 7 | |
| 295 | Quercus lobata | valley oak | Y | 7,4 | 11 | |
| 296 | Quercus lobata | valley oak | N | 10 | 10 | |
| 297 | Quercus lobata | valley oak | N | 15 | 15 | |
| 298 | Quercus lobata | valley oak | N | 11 | 11 | |
| 299 | Quercus lobata | valley oak | N | 9 | 9 | |
| 300 | Quercus lobata | valley oak | N | 5 | 5 | |
| 301 | Quercus lobata | valley oak | N | 12 | 12 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 302 | Populus fremontii | Fremont's cottonwood | Y | 10,10,8 | 28 | |
| 303 | Fraxinus latifolia | Oregon ash | Y | 10,12 | 22 | |
| 304 | Quercus lobata | valley oak | N | 14 | 14 | |
| 305 | Quercus lobata | valley oak | Y | 9,12,5 | 26 | |
| 306 | Quercus lobata | valley oak | N | 30 | 30 | |
| 307 | Quercus lobata | valley oak | N | 18 | 18 | x |
| 308 | Quercus lobata | valley oak | N | 12 | 12 | x |
| 309 | Quercus lobata | valley oak | N | 6.5 | 6.5 | |
| 310 | Fraxinus latifolia | Oregon ash | Y | 4,5 | 9 | x |
| 311 | Juglans hindsii | Northern California black walnut | Y | 12,10,14,8 | 44 | x |
| 312 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 313 | Quercus lobata | valley oak | N | 8 | 8 | x |
| 314 | Quercus lobata | valley oak | Y | 10,10,6 | 26 | x |
| 315 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 316 | Quercus lobata | valley oak | N | 12 | 12 | x |
| 317 | Juglans hindsii | Northern California black walnut | Y | 6,5 | 11 | x |
| 318 | Quercus lobata | valley oak | N | 25 | 25 | |
| 319 | Quercus lobata | valley oak | N | 5 | 5 | x |
| 320 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 321 | Quercus lobata | valley oak | N | 12 | 12 | x |
| 322 | Quercus lobata | valley oak | N | 6 | 6 | x |
| 323 | Quercus lobata | valley oak | N | 5 | 5 | x |
| 324 | Quercus lobata | valley oak | Y | 14,19.5 | 33.5 | |
| 325 | Quercus lobata | valley oak | N | 4 | 4 | x |
| 326 | Fraxinus latifolia | Oregon ash | Y | 4,6,6 | 16 | x |
| 327 | Quercus lobata | valley oak | N | 6 | 6 | x |
| 328 | Quercus lobata | valley oak | N | 21 | 21 | |
| 329 | Quercus lobata | valley oak | N | 4 | 4 | x |
| 330 | Fraxinus latifolia | Oregon ash | Y | 4,5 | 9 | x |
| 331 | Quercus lobata | valley oak | N | 4 | 4 | x |
| 332 | Fraxinus latifolia | Oregon ash | Y | 6,6,5,4 | 21 | x |
| 333 | Acer negundo | box elder | N | 7 | 7 | |
| 334 | Fraxinus latifolia | Oregon ash | Y | 5,4,4 | 13 | |
| 335 | Fraxinus latifolia | Oregon ash | Y | 6.5,4.5,4,5 | 20 | |
| 336 | Quercus lobata | valley oak | N | 35.5 | 35.5 | |
| 337 | Quercus lobata | valley oak | N | 8 | 8 | |
| 338 | Fraxinus latifolia | Oregon ash | Y | 7,6,5,6.5,5 | 29.5 | |
| 339 | Populus fremontii | Fremont's cottonwood | Y | 50,24 | 74 | |
| 340 | Fraxinus latifolia | Oregon ash | N | 7.5 | 7.5 | |
| 341 | Quercus lobata | valley oak | N | 4 | 4 | |
| 342 | Quercus lobata | valley oak | Y | 5,5,5.5 | 15.5 | |
| 343 | Fraxinus latifolia | Oregon ash | N | 6 | 6 | x |
| 344 | Quercus lobata | valley oak | N | 8 | 8 | x |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 345 | Populus fremontii | Fremont's cottonwood | N | 54 | 54 | |
| 346 | Salix gooddingii | Goodding's black willow | Y | 26,14 | 40 | |
| 347 | Catalpa speciosa | northern catalpa | Y | 5,5 | 10 | x |
| 348 | Quercus lobata | valley oak | Y | 14,11.5,15.5,28.5 | 69.5 | |
| 349 | Fraxinus latifolia | Oregon ash | N | 15 | 15 | |
| 350 | Salix gooddingii | Goodding's black willow | N | 16 | 16 | x |
| 351 | Quercus lobata | valley oak | N | 7.5 | 7.5 | |
| 352 | Fraxinus latifolia | Oregon ash | Y | 6,6,8,5,7 | 32 | x |
| 353 | Quercus lobata | valley oak | N | 4 | 4 | |
| 354 | Quercus lobata | valley oak | Y | 14,13 | 27 | |
| 355 | Fraxinus latifolia | Oregon ash | Y | 10,8,12 | 30 | |
| 356 | Quercus lobata | valley oak | N | 34 | 34 | |
| 357 | Quercus lobata | valley oak | Y | 16,16.5 | 32.5 | |
| 358 | Quercus lobata | valley oak | N | 26 | 26 | |
| 359 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 360 | Robinia pseudoacacia | black locust | N | 4 | 4 | x |
| 361 | Salix gooddingii | Goodding's black willow | N | 18 | 18 | |
| 362 | Fraxinus latifolia | Oregon ash | Y | 6,8,4 | 18 | |
| 363 | Quercus lobata | valley oak | N | 25 | 25 | |
| 364 | Quercus lobata | valley oak | N | 17.5 | 17.5 | |
| 365 | Casuarina sp. | she-oak | N | 23.5 | 23.5 | |
| 366 | Quercus lobata | valley oak | N | 11 | 11 | |
| 367 | Quercus lobata | valley oak | N | 24 | 24 | |
| 368 | Quercus lobata | valley oak | N | 26.5 | 26.5 | |
| 369 | Catalpa speciosa | northern catalpa | N | 34 | 34 | |
| 370 | Acer negundo | box elder | Y | 4,4,5.5 | 13.5 | |
| 371 | Quercus lobata | valley oak | Y | 6.5,18.5 | 25 | |
| 372 | Quercus lobata | valley oak | N | 19 | 19 | |
| 373 | Quercus lobata | valley oak | N | 24 | 24 | |
| 374 | Catalpa speciosa | northern catalpa | N | 6 | 6 | |
| 375 | Fraxinus latifolia | Oregon ash | Y | 6,8,4.5,9 | 27.5 | |
| 376 | Salix gooddingii | Goodding's black willow | N | 14 | 14 | x |
| 377 | Salix gooddingii | Goodding's black willow | Y | 12,12,10,10 | 44 | x |
| 378 | Acer negundo | box elder | N | 8 | 8 | |
| 379 | Fraxinus latifolia | Oregon ash | N | 6 | 6 | |
| 380 | Quercus lobata | valley oak | N | 8 | 8 | |
| 381 | Quercus lobata | valley oak | N | 10 | 10 | |
| 382 | Fraxinus latifolia | Oregon ash | N | 12 | 12 | |
| 383 | Fraxinus latifolia | Oregon ash | Y | 14,12 | 26 | x |
| 384 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 385 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 386 | Quercus lobata | valley oak | N | 27.5 | 27.5 | |
| 387 | Quercus lobata | valley oak | N | 17 | 17 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 388 | Quercus lobata | valley oak | N | 22 | 22 | |
| 389 | Quercus lobata | valley oak | N | 20.5 | 20.5 | |
| 390 | Quercus lobata | valley oak | N | 11 | 11 | |
| 391 | Fraxinus latifolia | Oregon ash | Y | 6,14 | 20 | x |
| 392 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 393 | Fraxinus latifolia | Oregon ash | Y | 6,5,16 | 27 | x |
| 394 | Quercus lobata | valley oak | N | 7 | 7 | x |
| 395 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 396 | Salix gooddingii | Goodding's black willow | Y | 12,10 | 22 | x |
| 397 | Quercus lobata | valley oak | N | 26 | 26 | |
| 398 | Quercus lobata | valley oak | N | 4 | 4 | |
| 399 | Fraxinus latifolia | Oregon ash | N | 4 | 4 | x |
| 400 | Fraxinus latifolia | Oregon ash | Y | 12,5 | 17 | x |
| 401 | Quercus lobata | valley oak | N | 7.5 | 7.5 | |
| 402 | Gleditsia triacanthos | honey locust | Y | 4.5,4.5,6 | 15 | |
| 403 | Quercus lobata | valley oak | N | 10 | 10 | |
| 404 | Acer negundo | box elder | Y | 4,4,6,5 | 19 | |
| 405 | Acer negundo | box elder | N | 5.5 | 5.5 | |
| 406 | Gleditsia triacanthos | honey locust | Y | 5,5,6,4 | 20 | |
| 407 | Gleditsia triacanthos | honey locust | Y | 6,7,6 | 19 | |
| 408 | Gleditsia triacanthos | honey locust | N | 6 | 6 | |
| 409 | Fraxinus latifolia | Oregon ash | Y | 6,6 | 12 | |
| 410 | Quercus lobata | valley oak | N | 21 | 21 | |
| 411 | Quercus lobata | valley oak | N | 27.5 | 27.5 | |
| 412 | Quercus lobata | valley oak | N | 27 | 27 | |
| 413 | Fraxinus latifolia | Oregon ash | Y | 6,6 | 12 | x |
| 414 | Fraxinus latifolia | Oregon ash | Y | 14,6 | 20 | x |
| 415 | Salix gooddingii | Goodding's black willow | Y | 12,14 | 26 | |
| 416 | Fraxinus latifolia | Oregon ash | Y | 6,5,6 | 17 | |
| 417 | Fraxinus latifolia | Oregon ash | Y | 6,55 | 61 | x |
| 418 | Salix gooddingii | Goodding's black willow | N | 28 | 28 | x |
| 419 | Acer negundo | box elder | Y | 14,10 | 24 | x |
| 420 | Gleditsia triacanthos | honey locust | N | 4 | 4 | |
| 421 | Salix gooddingii | Goodding's black willow | N | 32 | 32 | x |
| 422 | Fraxinus latifolia | Oregon ash | Y | 12,12,10 | 34 | x |
| 423 | Quercus lobata | valley oak | N | 5 | 5 | x |
| 424 | Fraxinus latifolia | Oregon ash | Y | 5,4 | 9 | x |
| 425 | Quercus lobata | valley oak | N | 8 | 8 | |
| 426 | Gleditsia triacanthos | honey locust | N | 32 | 32 | |
| 427 | Salix gooddingii | Goodding's black willow | Y | 14,14,12 | 40 | x |
| 428 | Quercus lobata | valley oak | N | 14 | 14 | x |
| 429 | Quercus lobata | valley oak | N | 10.5 | 10.5 | |
| 430 | Quercus lobata | valley oak | Y | 10,9 | 19 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 431 | Gleditsia triacanthos | honey locust | N | 8 | 8 | x |
| 432 | Gleditsia triacanthos | honey locust | N | 5 | 5 | x |
| 433 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 434 | Salix gooddingii | Goodding's black willow | N | 12 | 12 | x |
| 435 | Fraxinus latifolia | Oregon ash | Y | 4,6 | 10 | |
| 436 | Quercus lobata | valley oak | N | 12 | 12 | |
| 437 | Fraxinus latifolia | Oregon ash | N | 6 | 6 | |
| 438 | Quercus lobata | valley oak | Y | 8,10 | 18 | |
| 439 | Gleditsia triacanthos | honey locust | N | 10 | 10 | |
| 440 | Salix gooddingii | Goodding's black willow | Y | 14,10,10,8 | 42 | x |
| 441 | Salix gooddingii | Goodding's black willow | N | 28 | 28 | x |
| 442 | Quercus lobata | valley oak | N | 6 | 6 | x |
| 443 | Fraxinus latifolia | Oregon ash | Y | 4.5,4.5 | 9 | |
| 444 | Fraxinus latifolia | Oregon ash | N | 7 | 7 | |
| 445 | Fraxinus latifolia | Oregon ash | Y | 15,16.5 | 31.5 | |
| 446 | Quercus lobata | valley oak | Y | 25.5,28 | 53.5 | |
| 447 | Fraxinus latifolia | Oregon ash | N | 18 | 18 | |
| 448 | Fraxinus latifolia | Oregon ash | N | 4.5 | 4.5 | |
| 449 | Quercus lobata | valley oak | Y | 12.5,14.5 | 27 | |
| 450 | Salix gooddingii | Goodding's black willow | Y | 8,7 | 15 | |
| 451 | Salix gooddingii | Goodding's black willow | N | 14 | 14 | x |
| 452 | Salix gooddingii | Goodding's black willow | Y | 8,8 | 16 | x |
| 453 | Quercus lobata | valley oak | N | 20.5 | 20.5 | |
| 454 | Quercus lobata | valley oak | N | 6.5 | 6.5 | |
| 455 | Fraxinus latifolia | Oregon ash | Y | 10,8 | 18 | |
| 456 | Quercus lobata | valley oak | Y | 10,8 | 18 | x |
| 457 | Quercus lobata | valley oak | Y | 6.5,5.5 | 12 | |
| 458 | Quercus lobata | valley oak | N | 6 | 6 | x |
| 459 | Quercus lobata | valley oak | N | 6 | 6 | x |
| 460 | Gleditsia triacanthos | honey locust | Y | 7,8 | 15 | x |
| 461 | Quercus lobata | valley oak | N | 14.5 | 14.5 | |
| 462 | Gleditsia triacanthos | honey locust | Y | 6,4,4 | 14 | x |
| 463 | Salix gooddingii | Goodding's black willow | Y | 8,8,6 | 22 | x |
| 464 | Quercus lobata | valley oak | N | 15 | 15 | |
| 465 | Fraxinus latifolia | Oregon ash | Y | 5,5,6 | 16 | x |
| 466 | Quercus lobata | valley oak | N | 16.5 | 16.5 | |
| 467 | Quercus lobata | valley oak | N | 5 | 5 | x |
| 468 | Catalpa speciosa | northern catalpa | N | 25 | 25 | |
| 469 | Quercus lobata | valley oak | Y | 10,14.5 | 24.5 | |
| 470 | Gleditsia triacanthos | honey locust | N | 5 | 5 | |
| 471 | Salix gooddingii | Goodding's black willow | N | 5 | 5 | x |
| 472 | Salix gooddingii | Goodding's black willow | N | 10 | 10 | x |
| 473 | Populus fremontii | Fremont's cottonwood | N | 5 | 5 | |

| Tree ID # | Scientific Name | Common Name | Multi-trunk | DBH | DBH Total | DBH Visially Estimated |
|---|---|---|---|---|---|---|
| 474 | Quercus lobata | valley oak | N | 6 | 6 | x |
| 475 | Quercus lobata | valley oak | N | 10 | 10 | x |
| 476 | Quercus lobata | valley oak | N | 7 | 7 | |
| 477 | Quercus lobata | valley oak | Y | 8,5 | 13 | |
| 478 | Populus fremontii | Fremont's cottonwood | Y | 12,14 | 26 | |
| 479 | Ornamental | not identified - ornamental | Y | 9.5,12 | 21.5 | |
| 480 | Quercus lobata | valley oak | N | 24.5 | 24.5 | |
| 481 | Quercus lobata | valley oak | N | 20 | 20 | |
| 482 | Quercus lobata | valley oak | Y | 9,9 | 18 | |
| 483 | Quercus lobata | valley oak | N | 16 | 16 | |
| 484 | Quercus lobata | valley oak | N | 22.5 | 22.5 | |
| 485 | Quercus lobata | valley oak | N | 26 | 26 | |
| 486 | Quercus lobata | valley oak | N | 40 | 40 | x |
| 487 | Quercus lobata | valley oak | Y | 20,24 | 44 | x |
| 488 | Quercus lobata | valley oak | Y | 12,19.5,20 | 51.5 | |
| 489 | Quercus lobata | valley oak | N | 12.5 | 12.5 | |
| 490 | Quercus lobata | valley oak | N | 4 | 4 | |
| 491 | Quercus lobata | valley oak | N | 15 | 15 | |
| 492 | Juglans hindsii | Northern California black walnut | N | 24 | 24 | x |
| 493 | Quercus lobata | valley oak | N | 19 | 19 | |
| 494 | Quercus lobata | valley oak | N | 32 | 32 | |
| 495 | Juglans hindsii | Northern California black walnut | N | 30 | 30 | |
| 496 | Quercus lobata | valley oak | N | 20.5 | 20.5 | |
| 497 | Quercus lobata | valley oak | N | 15.5 | 15.5 | |
| 498 | Quercus lobata | valley oak | N | 16.5 | 16.5 | |
| 499 | Quercus lobata | valley oak | N | 24.5 | 24.5 | |

# Attachment F. Aquatic Resources Delineation

## Part 1. Aquatic Resources Maps

## Part 2. Data Forms

**Part 1. Figure 1 of 10. Aquatic Resource Delineation Maps**

Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019.

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.

**September 26, 2019**

0 50 100 200
Feet
N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 2 of 10. Aquatic Resource Delineation Maps**

Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019.

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.

**September 26, 2019**

0 50 100 200
Feet

N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1.** **Figure 3 of 10. Aquatic Resource Delineation Maps**

Sample Point

Study Area (465.42 acres)

**Potential Jurisdictional Features**

River/Canal (18.66 acres)

Ditch (6.37 acres)

**Potential Jurisdictional Features**

| Feature | Acres |
|---|---|
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.

**September 26, 2019**

0 50 100 200 Feet

N

Aerial Imagery from USDA, NAIP 2016

26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 4 of 10. Aquatic Resource Delineation Maps**

Sample Point

Study Area (465.42 acres)

**Potential Jurisdictional Features**

River/Canal (18.66 acres)

Ditch (6.37 acres)

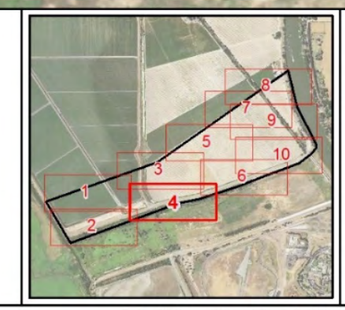
| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.




**September 26, 2019**

0 50 100 200 Feet

N

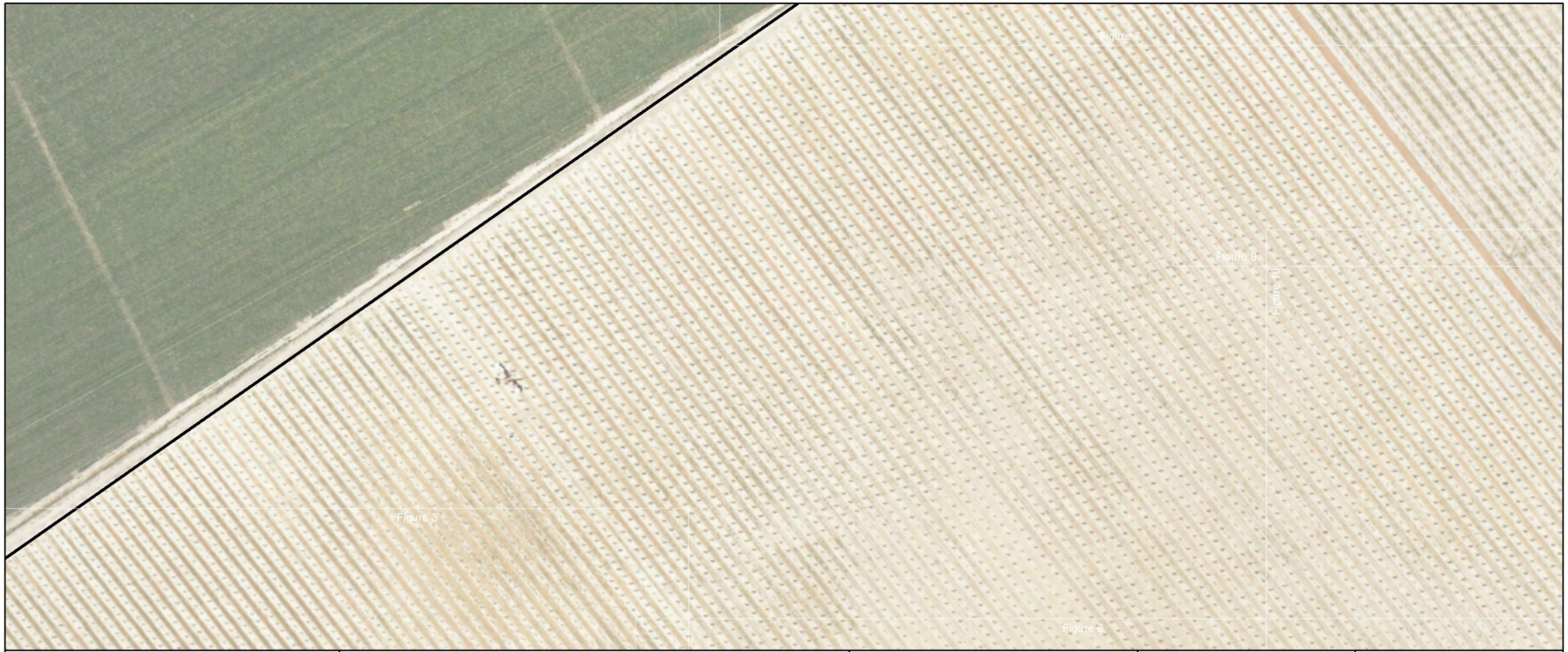
Aerial Imagery from USDA, NAIP 2016

26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 5 of 10. Aquatic Resource Delineation Maps**




Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019.

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.

**September 26, 2019**

0 50 100 200
Feet

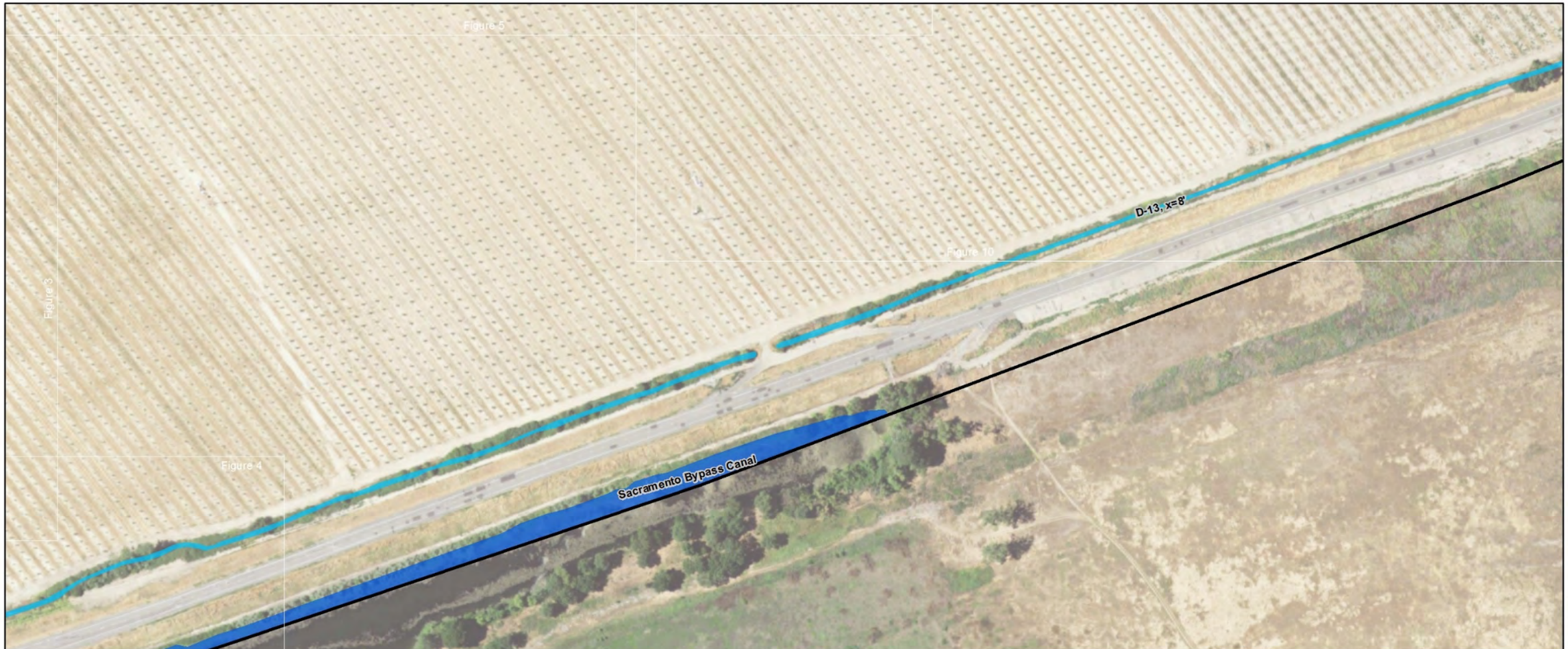
N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 6 of 10. Aquatic Resource Delineation Maps**




Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019.

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.

**September 26, 2019**

0 50 100 200
Feet

N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 7 of 10. Aquatic Resource Delineation Maps**

Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |
| Data compiled by GEI Consultants, Inc. in 2019. | |

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.

**September 26, 2019**

0 50 100 200
Feet

N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 8 of 10. Aquatic Resource Delineation Maps**

Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

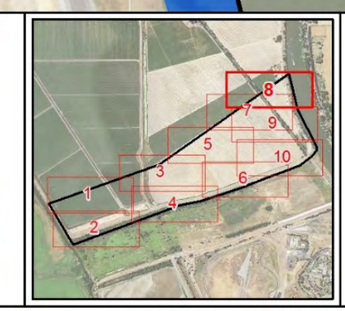
| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |

Data compiled by GEI Consultants, Inc. in 2019.

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.




**September 26, 2019**

0 50 100 200
Feet

N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 9 of 10. Aquatic Resource Delineation Maps**

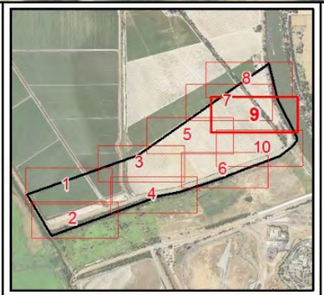
Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |
| Data compiled by GEI Consultants, Inc. in 2019. | |

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.




**September 26, 2019**

0 50 100 200
Feet

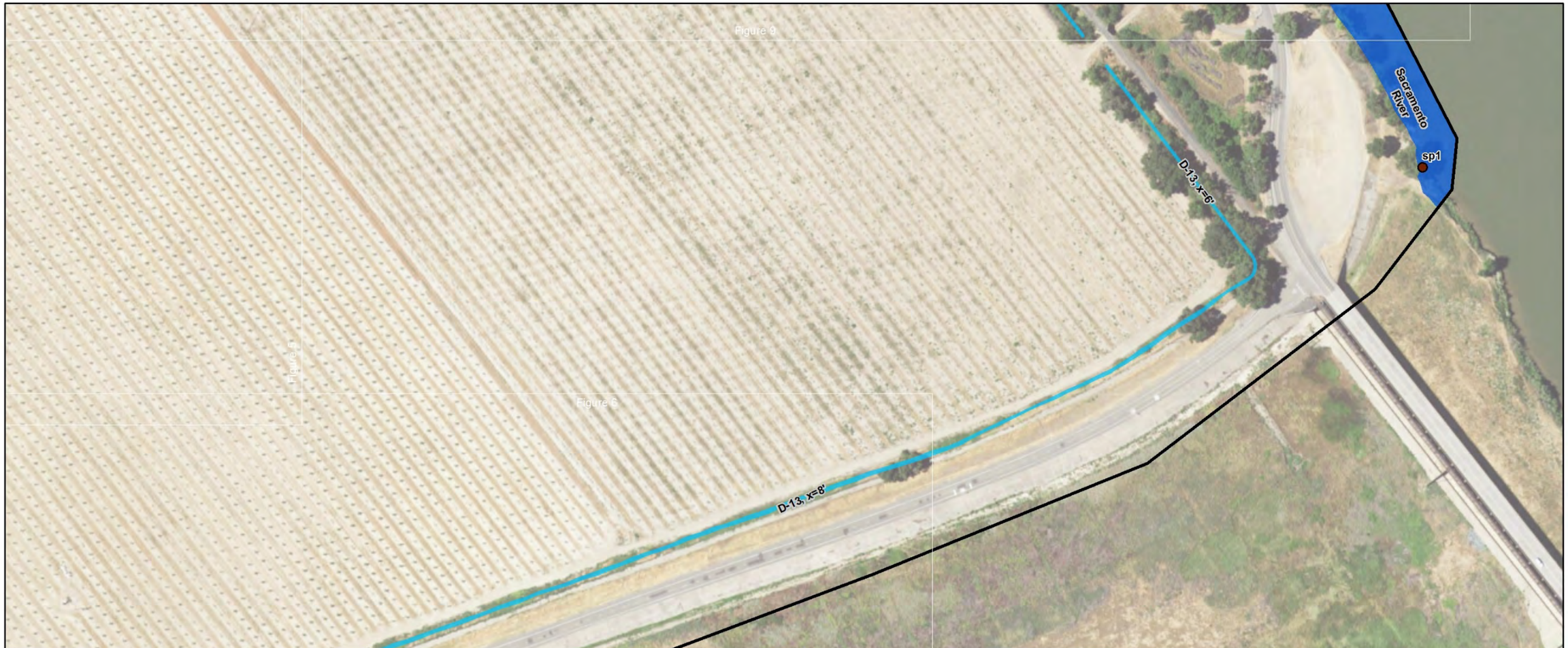
N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

**Part 1. Figure 10 of 10. Aquatic Resource Delineation Maps**



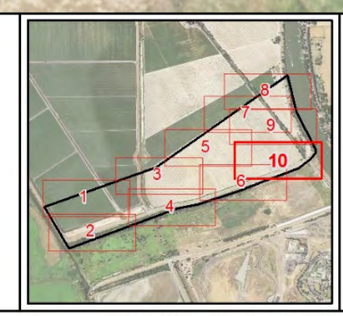

Sample Point
Study Area (465.42 acres)
**Potential Jurisdictional Features**
River/Canal (18.66 acres)
Ditch (6.37 acres)

| Potential Jurisdictional Features | |
|---|---|
| **Feature** | **Acres** |
| Sacramento River | 6.73 |
| South Cross Canal | 3.59 |
| Sacramento Bypass Canal | 8.34 |
| Ditch D-7 | 3.70 |
| Ditch D-11 | 0.35 |
| Ditch D-12 | 0.03 |
| Ditch D-13 | 1.54 |
| Ditch D-8 | 0.75 |
| **Total Potential Waters of the United States** | **25.03** |
| Data compiled by GEI Consultants, Inc. in 2019 | |

Note: A portion of this aquatic resources delineation overlaps with LEBLS (SPK-2016-00457) and feature nomenclature has been retained for consistency.

**DELINEATED BY:**
S. Norris, B. Constantz, and S. Ramirez on July 29-30, 2019.

**DIRECTIONS (FROM SACRAMENTO):**
I-80 West, exit Harbor Blvd, turn east into pullout area off of Old River Road.




**September 26, 2019**

0 50 100 200
Feet

N

Aerial Imagery from USDA, NAIP 2016
26Sep2019 RS 1601100_G0164

26Sep2019 RS Z:\Projects\1601100\1601100_G164_SacWeir_WetlandDelineation.mxd

Source: GEI Consultants, Inc. 2019

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sacramento Weir City/County: Yolo County Sampling Date: 7/30/2019

Applicant/Owner: USACE State: CA Sampling Point: SP1

Investigator(s): S. Morris, B. Constantz, S. Lonnein Section, Township, Range: Sacramento Meridian, Unsectioned, T9N, R4E

Landform (hillslope, terrace, etc.): river Local relief (concave, convex, none): Concave Slope (%): ____

Subregion (LRR): C-17 Sacramento & Sol Valley Lat: 38.60790 Long: -121.55926 Datum: WGS84

Soil Map Unit Name: Sycamore Silty clay loam 0-1% Slopes NWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ | No X | Is the Sampled Area within a Wetland? Yes ____ No X |
| Hydric Soil Present? | Yes ____ | No ____ | WOUS. - TNW |
| Wetland Hydrology Present? | Yes X | No ____ | |

Remarks:
OHWM - Sacramento River

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 20x10) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Diospyros virginiana | 5 | y | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 5 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 20x10)** | | | |
| 1. Rosa californica | 1 | N | FAC |
| 2. Toxicodendron diversilobum | 3 | N | FACU |
| 3. Salix exigua | 10 | y | FACW |
| 4. Cephanthalus occidentalis | 3 | N | OBL |
| 5. | | | |
| | 17 = Total Cover | | |
| **Herb Stratum (Plot size: 20x10)** | | | |
| 1. Cynodon dactylon | 15 | y | FACU |
| 2. Melilotus albus | 2 | N | NL |
| 3. Festuca humata | 3 | | FACW |
| 4. Rubus armeniacus | 1 | | FAC |
| 5. Asclepias | <1 | | – |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 20 = Total Cover | | |
| **Woody Vine Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No X

Remarks:
Vegetation rooted at or below OHWM.

## SOIL

Sampling Point: \

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) **(LRR C)**
- __ 1 cm Muck (A9) **(LRR D)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- __ 1 cm Muck (A9) **(LRR C)**
- __ 2 cm Muck (A10) **(LRR B)**
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No _____

Remarks:

No soil pit - below OHWM

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) **(Nonriverine)**
- __ Sediment Deposits (B2) **(Nonriverine)**
- __ Drift Deposits (B3) **(Nonriverine)**
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- __ Drift Deposits (B3) **(Riverine)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes X No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

**Wetland Hydrology Present?** Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Evidence of scour on banks, water marks on trees, scour of soil, exposed tree roots.
~10' above WSE today - 7/30/2019.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sacramento Weir City/County: Yolo Co. Sampling Date: 7/30/2019

Applicant/Owner: USACE State: CA Sampling Point: SP 2

Investigator(s): S. Norris, B. Constantz, S. Ramirez Section, Township, Range: — T9N, R4E

Landform (hillslope, terrace, etc.): river Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): C-17 Lat: 38.61419 Long: -121.56239 Datum: WGS84

Soil Map Unit Name: Sycamore silty clay loam 0-1% slopes NWI classification: R2UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? Yes X No ____ | Is the Sampled Area within a Wetland? | WOUS - TNW |
| Hydric Soil Present? Yes ____ No ____ | | |
| Wetland Hydrology Present? Yes X No ____ | Yes ____ No X | |

Remarks:
OHWM of Sacramento River

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 20 x 10) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix gooddingii | 15 | y | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 15 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 20x10)** | | | |
| 1. Fraxinus latifolia | 5 | y | FACW |
| 2. Rosa californica | 10 | y | FAC |
| 3. Cephalanthus occidentalis | 1 | N | OBL |
| 4. | | | |
| 5. | | | |
| | 15 = Total Cover | | |
| **Herb Stratum (Plot size: 20x10)** | | | |
| 1. Cynodon dactylon | 20 | y | FACU |
| 2. Asclepia | 3 | N | — |
| 3. Artemisia douglasiana | 5 | y | FAC |
| 4. Nicotiniana glauca | 2 | y | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 30 = Total Cover | | |
| **Woody Vine Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust ____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:

## SOIL

Sampling Point: SP2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No _____

Remarks:

No soil - WOUS pit

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- X Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes X No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Fine roots exposed, soil erosion surrounding trees & shrubs
Multiple terracing for high water events
Sediment marks on tree trunks.

Summer WSE 8-10' below OHWM

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sacramento Weir City/County: Yolo Co Sampling Date: 7/30/2019

Applicant/Owner: USACE State: CA Sampling Point: SP3

Investigator(s): S. Norris, B. Constantz, S. Rennie Section, Township, Range: ~ T9N, R4E

Landform (hillslope, terrace, etc.): levee bench Local relief (concave, convex, none): none Slope (%): 1-3

Subregion (LRR): C-17 Lat: 38.614176 Long: -121.562255 Datum: WGS84

Soil Map Unit Name: Sycamore silty clay loam 0-1% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X | No ____ | Is the Sampled Area within a Wetland? Yes ____ No X |
| Hydric Soil Present? | Yes ____ | No X | |
| Wetland Hydrology Present? | Yes ____ | No X | |

Remarks:
Bench above Ottwm.
Narrative annual grassland

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 20x20) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Fraxinus latifolia | 5 | y | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 5 = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: ____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |

| Herb Stratum (Plot size: 20x20) | | | |
|---|---|---|---|
| 1. Festuca perennis | 70 | y | FAC |
| 2. Chiscorinium intybus | 3 | N | FACU |
| 3. Plantago lanceolata | 5 | | FAC |
| 4. Rumex crispus | 1 | | FAC |
| 5. Verbena litoralis | 10 | | NL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 98 = Total Cover | | |

| Woody Vine Stratum (Plot size: ____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust ____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:

## SOIL

Sampling Point: SP3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No _____

Remarks:

No soil pit. Compare veg. & hydro of SP1 & SP2

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology above OHWM. Sample pt. located on bench below road surface and above OHWM.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sacramento Weir City/County: Yolo Co. Sampling Date: 7/30/2019
Applicant/Owner: USACE State: CA Sampling Point: SP4
Investigator(s): S. Norris, D. Constantz, S. Ramirez Section, Township, Range: —, T9N, R4E
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1-3
Subregion (LRR): C-T Lat: 38.612630 Long: -121.56566 Datum: WGS84
Soil Map Unit Name: Sycamore Silty clay loam 0-1% NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No ____ | Is the Sampled Area within a Wetland? | non-APW, WOUS<br>Yes ____ No X |
| Hydric Soil Present? | Yes X No ____ | | |
| Wetland Hydrology Present? | Yes X No ____ | | |

Remarks:
Agricultural Drainage Ditch (South of SP5)

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |

| Sapling/Shrub Stratum (Plot size: ____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |

| Herb Stratum (Plot size: 10x10) | | | |
|---|---|---|---|
| 1. Schoenoplectus acutus | 25 | Y | OBL |
| 2. Sorghum halepense | 3 | N | FACU |
| 3. Dysphania ambrosioides | 10 | Y | FAC |
| 4. Cyperus eragrostis | 1 | N | FACW |
| 5. Persicaria lapathifolia (white flowers) | 2 | N | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 35 = Total Cover | | |

| Woody Vine Stratum (Plot size: ____) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum 65 % Cover of Biotic Crust ____

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:
Small patch of OBL/FACW veg in irrigation/drainage canal that otherwise looks like it's defunct.
X = 15' wide

## SOIL

Sampling Point: SP4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0- | 7.5YR 4/1 | 97 | 7.5YR 5/8 | 3. | PL | M | silty clay | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes X No ____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- X Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

X=12'

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sacramento Weir City/County: Yolo Co Sampling Date: 7/30/2019

Applicant/Owner: USACE State: CA Sampling Point: SP5

Investigator(s): S. Norris, B. Constantz, S. Ramirez Section, Township, Range: — T9N, R4E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1-3

Subregion (LRR): C-17 Lat: 38.612981 Long: -121.56600 Datum: WGS84

Soil Map Unit Name: Sycamore silty clay loam 0-1% NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No ____ | Is the Sampled Area within a Wetland? | Yes ____ No X |
| Hydric Soil Present? | Yes X No ____ | | |
| Wetland Hydrology Present? | Yes X No ____ | | |

non-RPW, WOUS

Remarks:
Agricultural drainage ditch (north of SP4)

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 10x10) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix goodingii | 40 | y | FACW |
| 2. Rooted above channel bank | | | |
| 3. | | | |
| 4. | | | |
| | 40 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: ____)** | | | |
| 1. Rubus armeniacus | 10 | y | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 10 = Total Cover | | |
| **Herb Stratum (Plot size: 10 x 6)** | | | |
| 1. Epilobium brachycarpum | 1 | N | NL |
| 2. Carex erangistis | <1 | N | FACW |
| 3. Sorghum halepense | 5 | y | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 6 = Total Cover | | |
| **Woody Vine Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust ____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:

## SOIL

Sampling Point: SP5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10YR 5/2 | 87 | 10YR 6/8 | 3 | C | M | Silty clay | |
| | | | 10YR 3/1 | 10 | D | M | U | U |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** Yes X No ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
more north of SP4 - no evidence of active or recent hydrology.
more narrow - x = 6'
No obvious culvert to North

# Attachment G. Vegetation Observed

| Vegetation Observed | | |
|---|---|---|
| July 29-30, 2019 | | |
| Scientific Name | Common Name | NWPL Status |
| *Abutilon theophrasti* | Velvetleaf | UPL |
| *Acer negundo* | Box elder | FACW |
| *Ambrosia psilostachya* | Western ragweed | NL |
| *Anthoxanthum odoratum* | Sweet vernal grass | FAC |
| *Artemisia douglasiana* | Mugwort | FAC |
| *Asclepias* sp. | Milkweed | |
| *Atriplex prostrata* | Fat hen | FACW |
| *Avena barbata* | Slender oat | NL |
| *Avena fatua* | Wild oat | NL |
| *Brassica nigra* | Black mustard | NL |
| *Briza minor* | Little quaking grass | FAC |
| *Bromus diandrus* | Ripgut brome | NL |
| *Bromus hordeaceus* | Soft chess | FACU |
| *Carduus pycnocephalus* | Italian thistle | NL |
| *Carex barbarae* | Santa Barbara sedge | FAC |
| *Casuarina* sp. | She-oak | NL |
| *Catalpa speciosa* | Northern catalpa | FAC |
| *Centaurea solstitialis* | Yellow starthistle | NL |
| *Centromadia pungens* | Common tarweed | FAC |
| *Cephalanthus occidentalis* | Button-willow | OBL |
| *Chenopodium album* | Lamb's quarters | FACU |
| *Cichorium intybus* | Chicory | FACU |
| *Cirsium vulgare* | Bull thistle | FACU |
| *Conium maculatum* | Poison hemlock | FACW |
| *Convolvulus arvensis* | Field bindweed | NL |
| *Croton setiger* | Turkey mullein | NL |
| *Cynodon dactylon* | Bermudagrass | FACU |
| *Cyperus eragrostis* | Tall nutsedge | FACW |
| *Cyperus erythrorhizos* | Redroot flatsedge | OBL |
| *Distichlis spicata* | Salt grass | FAC |
| *Dysphania ambrosioides* | Mexican tea | FAC |
| *Elymus glaucus* | Blue wild rye | FACU |
| *Epilobium brachycarpum* | Fireweed | NL |
| *Epilobium ciliatum* | Fringed willowherb | FACW |
| *Equisetum hyemale* | Common scouring rush | FACW |
| *Erigeron canadensis* | Horseweed | FACU |
| *Euphorbia maculata* | Spotted spurge | UPL |
| *Euthamia occidentalis* | Western goldenrod | FACW |
| *Festuca myuros* | Rattail sixweeks grass | FACU |

| | | |
|---|---|---|
| *Festuca perennis* | Italian ryegrass | FAC |
| *Ficus carica* | Edible fig | FACU |
| *Foeniculum vulgare* | Sweet fennel | NL |
| *Fraxinus latifolia* | Oregon ash | FACW |
| *Galium aparine* | Common bedstraw | FACU |
| *Geranium dissectum* | Cut-leaf geranium | NL |
| *Gleditsia triacanthos* | Honey locust | FAC |
| *Glycyrrhiza lepidota* | Wild licorice | NL |
| *Gnaphalium palustre* | Western marsh cudweed | FACW |
| *Grindelia camporum* | Gumplant | FACW |
| *Helianthus annuus* | Common sunflower | FACU |
| *Helminthotheca echioides* | Bristly oxtongue | FAC |
| *Hordeum murinum* | Foxtail barley | FACU |
| *Hypericum perforatum* | St. John's wort | FACU |
| *Hypochaeris radicata* | Hairy cat's ear | FACU |
| *Juglans hindsii* | Northern California black walnut | FAC |
| *Juglans regia* | English walnut | NL |
| *Juncus effusus* | Common rush | FACW |
| *Lactuca serriola* | Prickly lettuce | FAC |
| *Medicago polymorpha* | Bur clover | FACU |
| *Melilotus albus* | White clover | NL |
| *Morus alba* | White mulberry | FACU |
| *Nicotiana glauca* | Tree tabacco | FAC |
| *Persicaria lapathifolia* | Pale smartweed | FACW |
| *Phalaris aquatica* | Harding grass | FACU |
| *Phytolacca americana* var. *americana* | Pokeweed | FAC |
| *Plantago lanceolata* | English plantain | FAC |
| *Poa annua* | Annual bluegrass | FACU |
| *Polygonum aviculare* | Prostrate knotweed | FAC |
| *Polypogon monspeliensis* | Rabbitsfoot grass | FACW |
| *Populus fremontii* | Fremont's cottonwood | FAC |
| *Quercus lobata* | Valley oak | FACU |
| *Raphanus raphanistrum* | Jointed charlock | NL |
| *Raphanus sativus* | Wild radish | NL |
| *Robinia pseudoacacia* | Black locust | FACU |
| *Rosa californica* | Wild rose | FAC |
| *Rubus armeniacus* | Himalayan blackberry | FAC |
| *Rumex crispus* | Curly dock | FAC |
| *Salix exigua* | Narrowleaf willow | FACW |
| *Salix gooddingii* | Black willow | FACW |
| *Salix laevigata* | Red willow | FACW |
| *Sambucus nigra* ssp. *caerulea* | Blue elderberry | FACU |
| *Schoenoplectus acutus* | Hardstem bulrush | OBL |

| | | |
|---|---|---|
| *Senecio vulgaris* | Common groundsel | FACU |
| *Sesbania punicea* | Red sesbania | FACW |
| *Silybum marianum* | Blessed milkthistle | NL |
| *Sonchus oleraceus* | Common sowthistle | UPL |
| *Sorghum halepense* | Johnsongrass | FACU |
| *Spergularia rubra* | Ruby sandspurry | FAC |
| *Torilis arvensis* | Common hedge parsley | NL |
| *Toxicodendron diversilobum* | Poison oak | FACU |
| *Tribulus terrestris* | Puncturevine | NL |
| *Typha angustifolia* | Narrow-leaved cattail | OBL |
| *Urtica dioica* | Stinging nettle | FAC |
| *Verbena litoralis* | Seashore vervain | NL |
| *Vicia sativa* | Common vetch | FACU |
| *Vicia villosa* | Hairy vetch | NL |
| *Vitis californica* | California wild grape | FACU |
| *Xanthium strumarium* | Rough cocklebur | FAC |

Notes: Nomenclature follows The Jepson Manual (Baldwin et. al. 2012).

FAC = Facultative; FACU = Facultative Upland; FACW = Facultative Wetland;

OBL = Obligate Wetland; UPL = Upland; NL= Not Listed

Data compiled by GEI Consultants, Inc. in 2019, Lichvar et. al. 2016

# Appendix C. Air Quality Modeling Results

RCEM Input and Output Files

For each contract, the following are attached:

- Unmitigated Input and Output
- On-Road Mitigated Output
- On-Road and Off-Road Mitigated Output

*Sacramento Weir Widening*

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | 2021 Sac Weir | |
| Construction Start Year | 2021 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 8.80 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 1.30 | miles |
| Total Project Area | 482.00 | acres |
| Maximum Area Disturbed/Day | 40.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 1136.00 |
| | Grading/Excavation | 15.00 | 2148.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.80 | 0.88 | 3/1/2021 | 1/1/2021 |
| Grading/Excavation | 8.00 | 3.52 | 3/26/2021 | 1/26/2021 |
| Drainage/Utilities/Sub-Grade | 0.00 | 3.08 | | 9/27/2021 |
| Paving | 0.00 | 1.32 | | 9/27/2021 |
| **Totals (Months)** | 9 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used. | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| Soil Hauling Emissions | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 1.20 | | | 76 | 91.20 |
| Miles/round trip: Grading/Excavation | 60.00 | | | 144 | 8640.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.02 | 0.09 | 0.73 | 0.02 | 0.01 | 0.00 | 324.61 | 0.00 | 0.01 | 327.92 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 2.86 | 0.00 | 0.00 | 2.89 |
| Pounds per day - Grading/Excavation | 1.94 | 8.24 | 69.44 | 2.19 | 0.98 | 0.29 | 30,752.89 | 0.09 | 1.04 | 31,065.78 |
| Tons per const. Period - Grading/Excavation | 0.17 | 0.73 | 6.11 | 0.19 | 0.09 | 0.03 | 2,706.25 | 0.01 | 0.09 | 2,733.79 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.17 | 0.73 | 6.12 | 0.19 | 0.09 | 0.03 | 2,709.11 | 0.01 | 0.09 | 2,736.67 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| Asphalt Hauling Emissions | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 40 | | 80 | 1,600.00 |
| No. of employees: Grading/Excavation | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Grading/Excavation (grams/mile) | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Grading/Excavation (grams/trip) | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.23 | 3.90 | 0.39 | 0.17 | 0.07 | 0.01 | 1,284.42 | 0.03 | 0.02 | 1,289.97 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 11.30 | 0.00 | 0.00 | 11.35 |
| Pounds per day - Grading/Excavation | 0.43 | 7.30 | 0.73 | 0.31 | 0.13 | 0.02 | 2,408.28 | 0.05 | 0.03 | 2,418.68 |
| Tons per const. Period - Grading/Excavation | 0.04 | 0.64 | 0.06 | 0.03 | 0.01 | 0.00 | 211.93 | 0.00 | 0.00 | 212.84 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.04 | 0.68 | 0.07 | 0.03 | 0.01 | 0.00 | 223.23 | 0.01 | 0.00 | 224.20 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 3 | | 40.00 | | 120.00 |
| Grading/Excavation - Exhaust | 3 | | 40.00 | | 120.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.03 | 0.11 | 0.96 | 0.03 | 0.01 | 0.00 | 427.12 | 0.00 | 0.01 | 431.47 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 3.76 | 0.00 | 0.00 | 3.80 |
| Pounds per day - Grading/Excavation | 0.03 | 0.11 | 0.96 | 0.03 | 0.01 | 0.00 | 427.12 | 0.00 | 0.01 | 431.47 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.01 | 0.08 | 0.00 | 0.00 | 0.00 | 37.59 | 0.00 | 0.00 | 37.97 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.09 | 0.00 | 0.00 | 0.00 | 41.35 | 0.00 | 0.00 | 41.77 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 400.00 | 3.52 | 83.20 | 0.73 |
| Fugitive Dust - Grading/Excavation | | | 400.00 | 35.20 | 83.20 | 7.32 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tier | Excavators | 0.89 | 12.66 | 8.33 | 0.40 | 0.37 | 0.02 | 1,935.08 | 0.63 | 0.02 | 1,955.95 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.45 | 4.61 | 3.96 | 0.21 | 0.21 | 0.01 | 778.79 | 0.04 | 0.01 | 781.53 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | | Model Default Tier | Off-Highway Trucks | 3.77 | 22.42 | 32.73 | 1.20 | 1.10 | 0.08 | 7,951.02 | 2.57 | 0.07 | 8,036.66 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 5.10 | 39.68 | 45.02 | 1.81 | 1.69 | 0.11 | 10,664.89 | 3.24 | 0.09 | 10,774.14 |
| | Grubbing/Land Clearing | | tons per phase | 0.04 | 0.35 | 0.40 | 0.02 | 0.01 | 0.00 | 93.85 | 0.03 | 0.00 | 94.81 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Bore/Drill Rigs | 0.30 | 2.42 | 3.52 | 0.11 | 0.10 | 0.01 | 1,062.70 | 0.34 | 0.01 | 1,074.19 |
| 4.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.29 | 1.54 | 1.84 | 0.07 | 0.07 | 0.00 | 252.58 | 0.03 | 0.00 | 253.87 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cranes | 2.02 | 9.70 | 23.72 | 0.96 | 0.89 | 0.03 | 2,733.23 | 0.88 | 0.02 | 2,762.68 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tier | Excavators | 0.89 | 12.66 | 8.33 | 0.40 | 0.37 | 0.02 | 1,935.08 | 0.63 | 0.02 | 1,955.95 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Generator Sets | 0.89 | 9.21 | 7.92 | 0.42 | 0.42 | 0.02 | 1,557.59 | 0.08 | 0.01 | 1,563.07 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | | Model Default Tier | Off-Highway Trucks | 3.77 | 22.42 | 32.73 | 1.20 | 1.10 | 0.08 | 7,951.02 | 2.57 | 0.07 | 8,036.66 |
| 1.00 | | | Model Default Tier | Other Construction Equipment | 0.52 | 5.07 | 5.48 | 0.29 | 0.26 | 0.01 | 748.16 | 0.24 | 0.01 | 756.23 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Pumps | 0.95 | 9.35 | 8.03 | 0.44 | 0.44 | 0.02 | 1,557.59 | 0.08 | 0.01 | 1,563.21 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.29 | 2.44 | 2.57 | 0.19 | 0.17 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.47 | 5.71 | 4.79 | 0.28 | 0.26 | 0.01 | 760.01 | 0.25 | 0.01 | 768.19 |
| 1.00 | | | Model Default Tier | Trenchers | 0.50 | 3.38 | 4.56 | 0.33 | 0.30 | 0.00 | 424.37 | 0.14 | 0.00 | 428.94 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 10.89 | 83.89 | 103.48 | 4.70 | 4.40 | 0.20 | 19,290.04 | 5.34 | 0.17 | 19,474.00 |
| | Grading/Excavation | | tons per phase | 0.96 | 7.38 | 9.11 | 0.41 | 0.39 | 0.02 | 1,697.52 | 0.47 | 0.01 | 1,713.71 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 1.00 | 7.73 | 9.50 | 0.43 | 0.40 | 0.02 | 1,791.37 | 0.50 | 0.02 | 1,808.52 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2021 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 5.38 | 43.78 | 47.11 | 402.03 | 2.03 | 400.00 | 84.98 | 1.78 | 83.20 | 0.13 | 12,701.05 | 3.27 | 0.14 | 12,823.49 |
| **Grading/Excavation** | 13.29 | 99.56 | 174.61 | 407.22 | 7.22 | 400.00 | 88.72 | 5.52 | 83.20 | 0.52 | 52,878.33 | 5.49 | 1.26 | 53,389.93 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 13.29 | 99.56 | 174.61 | 407.22 | 7.22 | 400.00 | 88.72 | 5.52 | 83.20 | 0.52 | 52,878.33 | 5.49 | 1.26 | 53,389.93 |
| **Total (tons/construction project)** | 1.22 | 9.15 | 15.78 | 39.37 | 0.65 | 38.72 | 8.56 | 0.50 | 8.05 | 0.05 | 4,765.06 | 0.51 | 0.11 | 4,811.16 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 9 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 1136 | 0 | 91 | 0 | 1,600 | 120 |
| Grading/Excavation | 2,148 | 0 | 8,640 | 0 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2021 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.05 | 0.39 | 0.41 | 3.54 | 0.02 | 3.52 | 0.75 | 0.02 | 0.73 | 0.00 | 111.77 | 0.03 | 0.00 | 102.37 |
| **Grading/Excavation** | 1.17 | 8.76 | 15.37 | 35.84 | 0.64 | 35.20 | 7.81 | 0.49 | 7.32 | 0.05 | 4,653.29 | 0.48 | 0.11 | 4,262.28 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.17 | 8.76 | 15.37 | 35.84 | 0.64 | 35.20 | 7.81 | 0.49 | 7.32 | 0.05 | 4653.29 | 0.48 | 0.11 | 4,262.28 |
| **Total (tons/construction project)** | 1.22 | 9.15 | 15.78 | 39.37 | 0.65 | 38.72 | 8.56 | 0.50 | 8.05 | 0.05 | 4765.06 | 0.51 | 0.11 | 4,364.66 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2021 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 5.36 | 43.75 | 46.08 | 402.03 | 2.03 | 400.00 | 84.97 | 1.77 | 83.20 | 0.13 | 12,675.47 | 3.27 | 0.14 | 12,797.42 |
| **Grading/Excavation** | 12.62 | 98.34 | 131.80 | 406.99 | 6.99 | 400.00 | 88.50 | 5.30 | 83.20 | 0.51 | 51,817.48 | 5.45 | 1.19 | 52,308.61 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 12.62 | 98.34 | 131.80 | 406.99 | 6.99 | 400.00 | 88.50 | 5.30 | 83.20 | 0.51 | 51,817.48 | 5.45 | 1.19 | 52,308.61 |
| **Total (tons/construction project)** | 1.16 | 9.04 | 12.00 | 39.35 | 0.63 | 38.72 | 8.54 | 0.48 | 8.05 | 0.05 | 4,671.48 | 0.51 | 0.11 | 4,715.78 |

| Notes: | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 9 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 1136 | 0 | 91 | 0 | 1,600 | 120 |
| Grading/Excavation | 2,148 | 0 | 8,640 | 0 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2021 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.05 | 0.38 | 0.41 | 3.54 | 0.02 | 3.52 | 0.75 | 0.02 | 0.73 | 0.00 | 111.54 | 0.03 | 0.00 | 102.17 |
| **Grading/Excavation** | 1.11 | 8.65 | 11.60 | 35.82 | 0.62 | 35.20 | 7.79 | 0.47 | 7.32 | 0.05 | 4,559.94 | 0.48 | 0.10 | 4,175.96 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.11 | 8.65 | 11.60 | 35.82 | 0.62 | 35.20 | 7.79 | 0.47 | 7.32 | 0.05 | 4559.94 | 0.48 | 0.10 | 4,175.96 |
| **Total (tons/construction project)** | 1.16 | 9.04 | 12.00 | 39.35 | 0.63 | 38.72 | 8.54 | 0.48 | 8.05 | 0.05 | 4671.48 | 0.51 | 0.11 | 4,278.12 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2021 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 3.59 | 67.86 | 7.72 | 400.55 | 0.55 | 400.00 | 83.59 | 0.39 | 83.20 | 0.13 | 12,675.47 | 3.27 | 0.14 | 12,797.42 |
| **Grading/Excavation** | 7.74 | 134.56 | 44.38 | 403.02 | 3.02 | 400.00 | 84.77 | 1.57 | 83.20 | 0.51 | 51,817.48 | 5.45 | 1.19 | 52,308.61 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 7.74 | 134.56 | 44.38 | 403.02 | 3.02 | 400.00 | 84.77 | 1.57 | 83.20 | 0.51 | 51,817.48 | 5.45 | 1.19 | 52,308.61 |
| **Total (tons/construction project)** | 0.71 | 12.44 | 3.97 | 38.99 | 0.27 | 38.72 | 8.20 | 0.14 | 8.05 | 0.05 | 4,671.48 | 0.51 | 0.11 | 4,715.78 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 9 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 1136 | 0 | 91 | 0 | 1,600 | 120 |
| Grading/Excavation | 2,148 | 0 | 8,640 | 0 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2021 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.03 | 0.60 | 0.07 | 3.52 | 0.00 | 3.52 | 0.74 | 0.00 | 0.73 | 0.00 | 111.54 | 0.03 | 0.00 | 102.17 |
| **Grading/Excavation** | 0.68 | 11.84 | 3.91 | 35.47 | 0.27 | 35.20 | 7.46 | 0.14 | 7.32 | 0.05 | 4,559.94 | 0.48 | 0.10 | 4,175.96 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.68 | 11.84 | 3.91 | 35.47 | 0.27 | 35.20 | 7.46 | 0.14 | 7.32 | 0.05 | 4559.94 | 0.48 | 0.10 | 4,175.96 |
| **Total (tons/construction project)** | 0.71 | 12.44 | 3.97 | 38.99 | 0.27 | 38.72 | 8.20 | 0.14 | 8.05 | 0.05 | 4671.48 | 0.51 | 0.11 | 4,278.12 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
**Version 8.1.0**

## Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | 2022 Sac Weir | |
| Construction Start Year | 2022 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 12.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 1.30 | miles |
| Total Project Area | 482.00 | acres |
| Maximum Area Disturbed/Day | 40.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 0.00 |
| | Grading/Excavation | 15.00 | 94.00 | 163.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | 15.00 | 0.00 | 0.00 |
| | Grading/Excavation | 15.00 | 88.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 1.20 | | 1/1/2022 |
| Grading/Excavation | 12.00 | 4.80 | | 1/1/2022 |
| Drainage/Utilities/Sub-Grade | 0.00 | 4.20 | | 1/1/2023 |
| Paving | 0.00 | 1.80 | | 1/1/2023 |
| **Totals (Months)** | 12 | | | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 61.00 | | | 18 | 1098.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.24 | 1.04 | 7.82 | 0.27 | 0.12 | 0.04 | 3,864.88 | 0.01 | 0.13 | 3,904.21 |
| Tons per const. Period - Grading/Excavation | 0.03 | 0.14 | 1.03 | 0.04 | 0.02 | 0.00 | 510.16 | 0.00 | 0.02 | 515.36 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.03 | 0.14 | 1.03 | 0.04 | 0.02 | 0.00 | 510.16 | 0.00 | 0.02 | 515.36 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 60.00 | | | 6 | 360.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.08 | 0.34 | 2.57 | 0.09 | 0.04 | 0.01 | 1,267.17 | 0.00 | 0.04 | 1,280.07 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.04 | 0.34 | 0.01 | 0.01 | 0.00 | 167.27 | 0.00 | 0.01 | 168.97 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.04 | 0.34 | 0.01 | 0.01 | 0.00 | 167.27 | 0.00 | 0.01 | 168.97 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 0 | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.40 | 6.75 | 0.66 | 0.31 | 0.13 | 0.02 | 2,329.85 | 0.05 | 0.03 | 2,339.21 |
| Tons per const. Period - Grading/Excavation | 0.05 | 0.89 | 0.09 | 0.04 | 0.02 | 0.00 | 307.54 | 0.01 | 0.00 | 308.78 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.05 | 0.89 | 0.09 | 0.04 | 0.02 | 0.00 | 307.54 | 0.01 | 0.00 | 308.78 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 3 | | 40.00 | | 120.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.03 | 0.11 | 0.86 | 0.03 | 0.01 | 0.00 | 422.39 | 0.00 | 0.01 | 426.69 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.01 | 0.11 | 0.00 | 0.00 | 0.00 | 55.76 | 0.00 | 0.00 | 56.32 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.11 | 0.00 | 0.00 | 0.00 | 55.76 | 0.00 | 0.00 | 56.32 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 400.00 | 52.80 | 83.20 | 10.98 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.29 | 1.54 | 1.84 | 0.07 | 0.07 | 0.00 | 252.58 | 0.03 | 0.00 | 253.87 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cranes | 1.82 | 9.26 | 20.47 | 0.85 | 0.78 | 0.03 | 2,733.67 | 0.88 | 0.02 | 2,763.14 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tier | Excavators | 0.78 | 12.59 | 6.87 | 0.33 | 0.31 | 0.02 | 1,934.40 | 0.63 | 0.02 | 1,955.25 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Generator Sets | 0.82 | 9.19 | 7.32 | 0.37 | 0.37 | 0.02 | 1,557.59 | 0.07 | 0.01 | 1,562.93 |
| 1.00 | | | Model Default Tier | Graders | 0.70 | 5.53 | 6.52 | 0.36 | 0.33 | 0.01 | 757.00 | 0.24 | 0.01 | 765.14 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | | Model Default Tier | Off-Highway Trucks | 3.29 | 20.89 | 24.96 | 0.91 | 0.83 | 0.08 | 7,953.90 | 2.57 | 0.07 | 8,039.53 |
| 1.00 | | | Model Default Tier | Other Construction Equipment | 0.47 | 5.03 | 4.77 | 0.25 | 0.23 | 0.01 | 747.91 | 0.24 | 0.01 | 755.99 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Other Material Handling Equipment | 0.33 | 4.68 | 2.79 | 0.15 | 0.14 | 0.01 | 695.43 | 0.22 | 0.01 | 702.93 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Paving Equipment | 0.22 | 3.16 | 2.16 | 0.11 | 0.10 | 0.01 | 489.35 | 0.16 | 0.00 | 494.63 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Pumps | 0.44 | 4.66 | 3.71 | 0.19 | 0.19 | 0.01 | 778.79 | 0.04 | 0.01 | 781.53 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Rubber Tired Dozers | 1.07 | 8.76 | 10.81 | 0.49 | 0.45 | 0.01 | 1,077.83 | 0.35 | 0.01 | 1,089.41 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Scrapers | 1.01 | 7.86 | 11.03 | 0.43 | 0.40 | 0.02 | 1,812.83 | 0.59 | 0.02 | 1,832.37 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Surfacing Equipment | 0.22 | 1.95 | 2.62 | 0.10 | 0.09 | 0.01 | 790.45 | 0.26 | 0.01 | 798.98 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.42 | 5.65 | 4.23 | 0.23 | 0.21 | 0.01 | 760.86 | 0.25 | 0.01 | 769.05 |
| 1.00 | | | Model Default Tier | Trenchers | 0.47 | 3.37 | 4.39 | 0.31 | 0.29 | 0.00 | 424.41 | 0.14 | 0.00 | 428.97 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 12.60 | 106.51 | 116.74 | 5.30 | 4.93 | 0.24 | 23,074.73 | 6.77 | 0.20 | 23,304.77 |
| | Grading/Excavation | | tons per phase | 1.66 | 14.06 | 15.41 | 0.70 | 0.65 | 0.03 | 3,045.86 | 0.89 | 0.03 | 3,076.23 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 1.66 | 14.06 | 15.41 | 0.70 | 0.65 | 0.03 | 3,045.86 | 0.89 | 0.03 | 3,076.23 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2022 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 13.34 | 114.76 | 128.64 | 406.00 | 6.00 | 400.00 | 88.43 | 5.23 | 83.20 | 0.32 | 30,959.02 | 6.83 | 0.42 | 31,254.95 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 13.34 | 114.76 | 128.64 | 406.00 | 6.00 | 400.00 | 88.43 | 5.23 | 83.20 | 0.32 | 30,959.02 | 6.83 | 0.42 | 31,254.95 |
| **Total (tons/construction project)** | 1.76 | 15.15 | 16.98 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4,086.59 | 0.90 | 0.06 | 4,125.65 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 12 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 40 |
| Grading/Excavation | 257 | 88 | 1,098 | 360 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2022 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 1.76 | 15.15 | 16.98 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4,086.59 | 0.90 | 0.06 | 3,742.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.76 | 15.15 | 16.98 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4086.59 | 0.90 | 0.06 | 3,742.77 |
| **Total (tons/construction project)** | 1.76 | 15.15 | 16.98 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4086.59 | 0.90 | 0.06 | 3,742.77 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2022 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 13.24 | 114.56 | 122.24 | 405.97 | 5.97 | 400.00 | 88.40 | 5.20 | 83.20 | 0.31 | 30,792.39 | 6.82 | 0.41 | 31,084.88 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 13.24 | 114.56 | 122.24 | 405.97 | 5.97 | 400.00 | 88.40 | 5.20 | 83.20 | 0.31 | 30,792.39 | 6.82 | 0.41 | 31,084.88 |
| **Total (tons/construction project)** | 1.75 | 15.12 | 16.14 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4,064.59 | 0.90 | 0.05 | 4,103.20 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 12 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 40 |
| Grading/Excavation | 257 | 88 | 1,098 | 360 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2022 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 1.75 | 15.12 | 16.14 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4,064.59 | 0.90 | 0.05 | 3,722.40 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.75 | 15.12 | 16.14 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4064.59 | 0.90 | 0.05 | 3,722.40 |
| **Total (tons/construction project)** | 1.75 | 15.12 | 16.14 | 53.59 | 0.79 | 52.80 | 11.67 | 0.69 | 10.98 | 0.04 | 4064.59 | 0.90 | 0.05 | 3,722.40 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2022 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 7.88 | 150.77 | 24.02 | 401.51 | 1.51 | 400.00 | 84.25 | 1.05 | 83.20 | 0.31 | 30,792.39 | 6.82 | 0.41 | 31,084.88 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 7.88 | 150.77 | 24.02 | 401.51 | 1.51 | 400.00 | 84.25 | 1.05 | 83.20 | 0.31 | 30,792.39 | 6.82 | 0.41 | 31,084.88 |
| **Total (tons/construction project)** | 1.04 | 19.90 | 3.17 | 53.00 | 0.20 | 52.80 | 11.12 | 0.14 | 10.98 | 0.04 | 4,064.59 | 0.90 | 0.05 | 4,103.20 |

| Notes: | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 12 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 40 |
| Grading/Excavation | 257 | 88 | 1,098 | 360 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2022 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 1.04 | 19.90 | 3.17 | 53.00 | 0.20 | 52.80 | 11.12 | 0.14 | 10.98 | 0.04 | 4,064.59 | 0.90 | 0.05 | 3,722.40 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.04 | 19.90 | 3.17 | 53.00 | 0.20 | 52.80 | 11.12 | 0.14 | 10.98 | 0.04 | 4064.59 | 0.90 | 0.05 | 3,722.40 |
| **Total (tons/construction project)** | 1.04 | 19.90 | 3.17 | 53.00 | 0.20 | 52.80 | 11.12 | 0.14 | 10.98 | 0.04 | 4064.59 | 0.90 | 0.05 | 3,722.40 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | 2023 Sac Weir | |
| Construction Start Year | 2023 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 10.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 1.30 | miles |
| Total Project Area | 482.00 | acres |
| Maximum Area Disturbed/Day | 40.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 0.00 |
| | Grading/Excavation | 15.00 | 9.00 | 2905.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | 15.00 | 0.00 | 0.00 |
| | Grading/Excavation | 15.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 1.00 | | 1/1/2023 |
| Grading/Excavation | 10.00 | 4.00 | | 1/1/2023 |
| Drainage/Utilities/Sub-Grade | 0.00 | 3.50 | | 11/2/2023 |
| Paving | 0.00 | 1.50 | | 11/2/2023 |
| **Totals (Months)** | 10 | | | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 1.40 | | | 195 | 273.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.04 | 0.22 | 0.79 | 0.06 | 0.02 | 0.01 | 928.01 | 0.00 | 0.03 | 937.45 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.02 | 0.09 | 0.01 | 0.00 | 0.00 | 102.08 | 0.00 | 0.00 | 103.12 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.02 | 0.09 | 0.01 | 0.00 | 0.00 | 102.08 | 0.00 | 0.00 | 103.12 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 0 | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.37 | 6.26 | 0.59 | 0.31 | 0.13 | 0.02 | 2,249.60 | 0.04 | 0.02 | 2,258.05 |
| Tons per const. Period - Grading/Excavation | 0.04 | 0.69 | 0.07 | 0.03 | 0.01 | 0.00 | 247.46 | 0.00 | 0.00 | 248.39 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.04 | 0.69 | 0.07 | 0.03 | 0.01 | 0.00 | 247.46 | 0.00 | 0.00 | 248.39 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | | | | | 0.00 |
| Grading/Excavation - Exhaust | 3 | | 40.00 | | 120.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.02 | 0.10 | 0.35 | 0.03 | 0.01 | 0.00 | 407.92 | 0.00 | 0.01 | 412.06 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 44.87 | 0.00 | 0.00 | 45.33 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 44.87 | 0.00 | 0.00 | 45.33 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 400.00 | 44.00 | 83.20 | 9.15 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.15 | 0.77 | 0.92 | 0.04 | 0.04 | 0.00 | 126.29 | 0.01 | 0.00 | 126.93 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Cranes | 0.86 | 4.49 | 9.33 | 0.39 | 0.36 | 0.01 | 1,366.81 | 0.44 | 0.01 | 1,381.54 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tier | Excavators | 0.73 | 12.60 | 5.99 | 0.29 | 0.27 | 0.02 | 1,934.75 | 0.63 | 0.02 | 1,955.60 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Generator Sets | 0.76 | 9.17 | 6.79 | 0.32 | 0.32 | 0.02 | 1,557.59 | 0.07 | 0.01 | 1,562.79 |
| 1.00 | | | Model Default Tier | Graders | 0.62 | 5.46 | 5.61 | 0.31 | 0.28 | 0.01 | 756.84 | 0.24 | 0.01 | 764.97 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | | | Model Default Tier | Off-Highway Trucks | 3.13 | 20.45 | 22.19 | 0.80 | 0.74 | 0.08 | 7,959.51 | 2.57 | 0.07 | 8,045.19 |
| 1.00 | | | Model Default Tier | Other Construction Equipment | 0.44 | 5.00 | 4.30 | 0.22 | 0.21 | 0.01 | 747.83 | 0.24 | 0.01 | 755.90 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Other Material Handling Equipment | 0.32 | 4.67 | 2.61 | 0.14 | 0.13 | 0.01 | 695.43 | 0.22 | 0.01 | 702.93 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Paving Equipment | 0.21 | 3.17 | 1.99 | 0.10 | 0.09 | 0.01 | 489.35 | 0.16 | 0.00 | 494.63 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Pumps | 0.41 | 4.66 | 3.44 | 0.17 | 0.17 | 0.01 | 778.79 | 0.04 | 0.01 | 781.43 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Rubber Tired Dozers | 1.00 | 8.29 | 9.91 | 0.45 | 0.42 | 0.01 | 1,078.19 | 0.35 | 0.01 | 1,089.77 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Scrapers | 0.97 | 7.57 | 10.21 | 0.40 | 0.37 | 0.02 | 1,812.63 | 0.59 | 0.02 | 1,832.16 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Surfacing Equipment | 0.22 | 1.95 | 2.48 | 0.09 | 0.09 | 0.01 | 790.19 | 0.26 | 0.01 | 798.72 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.23 | 2.40 | 2.13 | 0.14 | 0.13 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.38 | 5.64 | 3.88 | 0.19 | 0.18 | 0.01 | 761.71 | 0.25 | 0.01 | 769.91 |
| 1.00 | | | Model Default Tier | Trenchers | 0.45 | 3.36 | 4.20 | 0.29 | 0.27 | 0.00 | 424.73 | 0.14 | 0.00 | 429.30 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 10.88 | 99.65 | 95.98 | 4.35 | 4.04 | 0.22 | 21,588.36 | 6.30 | 0.19 | 21,802.82 |
| | Grading/Excavation | | tons per phase | 1.20 | 10.96 | 10.56 | 0.48 | 0.44 | 0.02 | 2,374.72 | 0.69 | 0.02 | 2,398.31 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 1.20 | 10.96 | 10.56 | 0.48 | 0.44 | 0.02 | 2,374.72 | 0.69 | 0.02 | 2,398.31 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2023 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 11.31 | 106.23 | 97.70 | 404.74 | 4.74 | 400.00 | 87.41 | 4.21 | 83.20 | 0.26 | 25,173.90 | 6.35 | 0.26 | 25,410.39 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 11.31 | 106.23 | 97.70 | 404.74 | 4.74 | 400.00 | 87.41 | 4.21 | 83.20 | 0.26 | 25,173.90 | 6.35 | 0.26 | 25,410.39 |
| **Total (tons/construction project)** | 1.24 | 11.69 | 10.75 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2,769.13 | 0.70 | 0.03 | 2,795.14 |

| Notes: | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 10 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 2,914 | 0 | 273 | 0 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2023 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 1.24 | 11.69 | 10.75 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2,769.13 | 0.70 | 0.03 | 2,535.74 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.24 | 11.69 | 10.75 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2769.13 | 0.70 | 0.03 | 2,535.74 |
| **Total (tons/construction project)** | 1.24 | 11.69 | 10.75 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2769.13 | 0.70 | 0.03 | 2,535.74 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2023 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 11.31 | 106.23 | 97.61 | 404.74 | 4.74 | 400.00 | 87.41 | 4.21 | 83.20 | 0.26 | 25,172.37 | 6.35 | 0.26 | 25,408.42 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 11.31 | 106.23 | 97.61 | 404.74 | 4.74 | 400.00 | 87.41 | 4.21 | 83.20 | 0.26 | 25,172.37 | 6.35 | 0.26 | 25,408.42 |
| **Total (tons/construction project)** | 1.24 | 11.69 | 10.74 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2,768.96 | 0.70 | 0.03 | 2,794.93 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 10 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 2,914 | 0 | 273 | 0 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2023 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 1.24 | 11.69 | 10.74 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2,768.96 | 0.70 | 0.03 | 2,535.54 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.24 | 11.69 | 10.74 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2768.96 | 0.70 | 0.03 | 2,535.54 |
| **Total (tons/construction project)** | 1.24 | 11.69 | 10.74 | 44.52 | 0.52 | 44.00 | 9.61 | 0.46 | 9.15 | 0.03 | 2768.96 | 0.70 | 0.03 | 2,535.54 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2023 Sac Weir

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 7.17 | 140.45 | 18.11 | 401.13 | 1.13 | 400.00 | 84.04 | 0.84 | 83.20 | 0.26 | 25,172.37 | 6.35 | 0.26 | 25,408.42 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 7.17 | 140.45 | 18.11 | 401.13 | 1.13 | 400.00 | 84.04 | 0.84 | 83.20 | 0.26 | 25,172.37 | 6.35 | 0.26 | 25,408.42 |
| **Total (tons/construction project)** | 0.79 | 15.45 | 1.99 | 44.12 | 0.12 | 44.00 | 9.24 | 0.09 | 9.15 | 0.03 | 2,768.96 | 0.70 | 0.03 | 2,794.93 |

| Notes: | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 10 |
| Total Project Area (acres) -> | 482 |
| Maximum Area Disturbed/Day (acres) -> | 40 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 2,914 | 0 | 273 | 0 | 3,000 | 120 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2023 Sac Weir

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.79 | 15.45 | 1.99 | 44.12 | 0.12 | 44.00 | 9.24 | 0.09 | 9.15 | 0.03 | 2,768.96 | 0.70 | 0.03 | 2,535.54 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.79 | 15.45 | 1.99 | 44.12 | 0.12 | 44.00 | 9.24 | 0.09 | 9.15 | 0.03 | 2768.96 | 0.70 | 0.03 | 2,535.54 |
| **Total (tons/construction project)** | 0.79 | 15.45 | 1.99 | 44.12 | 0.12 | 44.00 | 9.24 | 0.09 | 9.15 | 0.03 | 2768.96 | 0.70 | 0.03 | 2,535.54 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Barge Emissions Calculations**
**ARCF 2016**
**Sacramento Weir - 2021**

| Basic Assumptions | |
|---|---|
| CY per Barge[1] | 909 |
| CY Imported | 25,000 |
| Miles/ hr per barge | 5 |
| Extra Empty Trips | 2 |
| Total Hrs per Day | 10 |
| lbs/ tons | 2000 |
| lbs/MT | 2204.62 |

| | San Rafael to Rio Vista (in SFNA) | San Rafael to Rio Vista (in BAAQMD) | Rio Vista to Sac Weir (in SFNA) |
|---|---|---|---|
| No. of Barge in Tow | 4 | 4 | 1 |
| Miles (one-way) | 10.4 | 45 | 47 |
| **Total Tow-Hours** | **18** | **80** | **277** |

| | PM10 | PM2.5 | NOx | ROG | CO | SO2 | CO2 | CH4 | N2O | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| Two-Engine Push Boat Emissions (lb/hr) | 1.61 | 1.44 | 35.71 | 2.09 | 8.97 | 0.01 | 1417.70 | 0.06 | 0.01 | 1422.56 |
| Tug Boat Emissions (lb/hr) | 0.37 | 0.33 | 6.47 | 0.54 | 1.90 | 0.00 | 456.06 | 0.02 | 0.00 | 457.63 |
| **Total Emissions for Push Boat - In SFNA (Tons)** | **0.01** | **0.01** | **0.33** | **0.02** | **0.08** | **0.00** | **13.09** | **0.00** | **0.00** | **11.91** |
| **Total Emission for Push Boat- In BAAQMD (Tons)[2]** | **0.06** | **0.06** | **1.43** | **0.08** | **0.36** | **0.00** | **56.62** | **0.00** | **0.00** | **51.54** |
| **Total Emissions for Tug Boat - In SFNA (Tons)** | **0.05** | **0.05** | **0.90** | **0.08** | **0.26** | **0.00** | **63.23** | **0.00** | **0.00** | **57.56** |
| **Sum of Emissions in SFNA (Tons)** | **0.07** | **0.06** | **1.23** | **0.09** | **0.35** | **0.00** | **76.32** | **0.00** | **0.00** | **69.5** |

Notes: [1] https://ihsmarkit.com/country-industry-forecasting.html?ID=106593483 , one barge has the capacity of 1500 tons and assuming 1.65 tons/cy of quarry rock

[2] BAAQMD NOx Threshold is 54 lb/day (Not relevent to General Conformity)

**Barge Emissions Calculations**
**ARCF 2016**
**Sacramento Weir - 2023**

| Basic Assumptions | |
|---|---|
| CY per Barge[1] | 909 |
| CY Imported | 75,000 |
| Miles/ hr per barge | 5 |
| Extra Empty Trips | 2 |
| Total Hrs per Day | 10 |
| lbs/ tons | 2000 |
| lbs/MT | 2204.62 |

| | San Rafael to Rio Vista (in SFNA) | San Rafael to Rio Vista (in BAAQMD) | Rio Vista to Sac Weir (in SFNA) |
|---|---|---|---|
| No. of Barge in Tow | 4 | 4 | 1 |
| Miles (one-way) | 10.4 | 45 | 47 |
| **Total Tow-Hours** | **47** | **204** | **794** |

| | PM10 | PM2.5 | NOx | ROG | CO | SO2 | CO2 | CH4 | N2O | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| Two-Engine Push Boat Emissions (lb/hr) | 1.61 | 1.44 | 35.71 | 2.09 | 8.97 | 0.01 | 1417.70 | 0.06 | 0.01 | 1422.56 |
| Tug Boat Emissions (lb/hr) | 0.37 | 0.33 | 6.47 | 0.54 | 1.90 | 0.00 | 456.06 | 0.02 | 0.00 | 457.63 |
| **Total Emissions for Push Boat - In SFNA (Tons)** | **0.04** | **0.03** | **0.84** | **0.05** | **0.21** | **0.00** | **33.36** | **0.00** | **0.00** | **30.37** |
| **Total Emission for Push Boat- In BAAQMD (Tons)[2]** | **0.16** | **0.15** | **3.64** | **0.21** | **0.91** | **0.00** | **144.34** | **0.01** | **0.00** | **131.39** |
| **Total Emissions for Tug Boat - In SFNA (Tons)** | **0.15** | **0.13** | **2.57** | **0.22** | **0.76** | **0.00** | **181.12** | **0.01** | **0.00** | **164.88** |
| **Sum of Emissions in SFNA (Tons)** | **0.19** | **0.17** | **3.41** | **0.27** | **0.97** | **0.00** | **214.48** | **0.01** | **0.00** | **195.2** |

Notes: [1] https://ihsmarkit.com/country-industry-forecasting.html?ID=106593483 , one barge has the capacity of 1500 tons and assuming 1.65 tons/cy of quarry rock

[2] BAAQMD NOx Threshold is 54 lb/day (Not relevent to General Conformity)

*Erosion Protection*

American River

Sacramento River

## Road Construction Emissions Model
**Version 8.1.0**

## Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | American River Erosion Contract ' | |
| Construction Start Year | 2020 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 3.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 2.40 | miles |
| Total Project Area | 29.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 167.00 |
| | Grading/Excavatior | 15.00 | 1914.00 | 2045.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavatior | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigatior | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.33 | 4/5/2022 | 1/1/2020 |
| Grading/Excavatior | 3.00 | 1.49 | 4/15/2022 | 1/11/2020 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.99 | | 4/12/2020 |
| Paving | 0.00 | 0.50 | | 4/12/2020 |
| **Totals (Months)** | 3 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 28.00 | | | 12 | 336.00 |
| Miles/round trip: Grading/Excavatio | 61.00 | | | 264 | 16104.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.07 | 0.32 | 2.39 | 0.08 | 0.04 | 0.01 | 1,182.70 | 0.00 | 0.04 | 1,194.73 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 3.90 | 0.00 | 0.00 | 3.94 |
| Pounds per day - Grading/Excavatio | 3.47 | 15.24 | 114.76 | 3.99 | 1.75 | 0.54 | 56,684.93 | 0.16 | 1.92 | 57,261.75 |
| Tons per const. Period - Grading/Excavatio | 0.11 | 0.50 | 3.79 | 0.13 | 0.06 | 0.02 | 1,870.60 | 0.01 | 0.06 | 1,889.64 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.11 | 0.50 | 3.79 | 0.13 | 0.06 | 0.02 | 1,874.51 | 0.01 | 0.06 | 1,893.58 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | Calculated Daily Trips | Calculated Daily VMT |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | | |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 40 | | 80 | 1,600.00 |
| No. of employees: Grading/Excavatio | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Grading/Excavation (grams/mile | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Grading/Excavation (grams/trip | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.21 | 3.60 | 0.35 | 0.16 | 0.07 | 0.01 | 1,242.58 | 0.03 | 0.01 | 1,247.58 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 4.10 | 0.00 | 0.00 | 4.12 |
| Pounds per day - Grading/Excavatio | 0.40 | 6.75 | 0.66 | 0.31 | 0.13 | 0.02 | 2,329.85 | 0.05 | 0.03 | 2,339.21 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.22 | 0.02 | 0.01 | 0.00 | 0.00 | 76.88 | 0.00 | 0.00 | 77.19 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.01 | 0.23 | 0.02 | 0.01 | 0.00 | 0.00 | 80.99 | 0.00 | 0.00 | 81.31 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | 0 | | | | 0.00 |
| Paving | 0 | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.29 | 0.01 | 0.00 | 0.00 | 140.80 | 0.00 | 0.00 | 142.23 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.47 |
| Pounds per day - Grading/Excavatio | 0.01 | 0.04 | 0.29 | 0.01 | 0.00 | 0.00 | 140.80 | 0.00 | 0.00 | 142.23 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 4.65 | 0.00 | 0.00 | 4.69 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 5.11 | 0.00 | 0.00 | 5.16 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 5.00 | | 50.00 | 0.17 | 10.40 | 0.03 |
| Fugitive Dust - Grading/Excavatio | 0.50 | | 5.00 | 0.17 | 1.04 | 0.03 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.57 | 25.19 | 13.75 | 0.66 | 0.61 | 0.04 | 3,868.79 | 1.25 | 0.04 | 3,910.51 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.41 | 4.59 | 3.66 | 0.18 | 0.18 | 0.01 | 778.79 | 0.04 | 0.01 | 781.46 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.65 | 34.43 | 22.36 | 1.10 | 1.04 | 0.06 | 5,325.16 | 1.43 | 0.05 | 5,374.74 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.11 | 0.07 | 0.00 | 0.00 | 0.00 | 17.57 | 0.00 | 0.00 | 17.74 |

| **Grading/Excavation** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Cranes | 0.91 | 4.63 | 10.23 | 0.42 | 0.39 | 0.01 | 1,366.84 | 0.44 | 0.01 | 1,381.57 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Excavators | 0.52 | 8.40 | 4.58 | 0.22 | 0.20 | 0.01 | 1,289.60 | 0.42 | 0.01 | 1,303.50 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.41 | 4.59 | 3.66 | 0.18 | 0.18 | 0.01 | 778.79 | 0.04 | 0.01 | 781.46 |
| 2.00 | | | Model Default Tie | Graders | 1.39 | 11.05 | 13.05 | 0.73 | 0.67 | 0.02 | 1,514.01 | 0.49 | 0.01 | 1,530.28 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Off-Highway Trucks | 1.31 | 8.36 | 9.98 | 0.36 | 0.33 | 0.03 | 3,181.56 | 1.03 | 0.03 | 3,215.81 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.47 | 5.03 | 4.77 | 0.25 | 0.23 | 0.01 | 747.91 | 0.24 | 0.01 | 755.99 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.45 | 4.84 | 4.22 | 0.26 | 0.24 | 0.01 | 620.05 | 0.20 | 0.01 | 626.74 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.33 | 4.68 | 2.79 | 0.15 | 0.14 | 0.01 | 695.43 | 0.22 | 0.01 | 702.93 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Rubber Tired Dozers | 2.14 | 17.52 | 21.62 | 0.99 | 0.91 | 0.02 | 2,155.67 | 0.70 | 0.02 | 2,178.82 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 3.00 | | | Model Default Tie | Skid Steer Loaders | 0.26 | 5.20 | 3.48 | 0.13 | 0.12 | 0.01 | 751.47 | 0.24 | 0.01 | 759.57 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.42 | 5.65 | 4.23 | 0.23 | 0.21 | 0.01 | 760.86 | 0.25 | 0.01 | 769.05 |
| 2.00 | | | Model Default Tie | Trenchers | 0.94 | 6.75 | 8.77 | 0.62 | 0.57 | 0.01 | 848.81 | 0.27 | 0.01 | 857.95 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 10.23 | 91.34 | 96.35 | 4.80 | 4.44 | 0.16 | 15,388.57 | 4.68 | 0.14 | 15,546.45 |
| | Grading/Excavation | | tons per phase | 0.34 | 3.01 | 3.18 | 0.16 | 0.15 | 0.01 | 507.82 | 0.15 | 0.00 | 513.03 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.35 | 3.13 | 3.25 | 0.16 | 0.15 | 0.01 | 525.40 | 0.16 | 0.00 | 530.77 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> American River Erosion Contract 1

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.95 | 38.39 | 25.39 | 51.36 | 1.36 | 50.00 | 11.55 | 1.15 | 10.40 | 0.08 | 7,891.24 | 1.46 | 0.11 | 7,959.28 |
| **Grading/Excavation** | 14.11 | 113.36 | 212.05 | 14.11 | 9.11 | 5.00 | 7.37 | 6.33 | 1.04 | 0.73 | 74,544.15 | 4.89 | 2.09 | 75,289.65 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 14.11 | 113.36 | 212.05 | 51.36 | 9.11 | 50.00 | 11.55 | 6.33 | 10.40 | 0.73 | 74,544.15 | 4.89 | 2.09 | 75,289.65 |
| **Total (tons/construction project)** | 0.48 | 3.87 | 7.08 | 0.64 | 0.31 | 0.33 | 0.28 | 0.21 | 0.07 | 0.02 | 2,486.00 | 0.17 | 0.07 | 2,510.82 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 29 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 167 | 0 | 336 | 0 | 1,600 | 40 |
| Grading/Excavation | 3,959 | 0 | 16,104 | 0 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> American River Erosion Contract 1

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.13 | 0.08 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.04 | 0.00 | 0.00 | 23.83 |
| **Grading/Excavation** | 0.47 | 3.74 | 7.00 | 0.47 | 0.30 | 0.17 | 0.24 | 0.21 | 0.03 | 0.02 | 2,459.96 | 0.16 | 0.07 | 2,253.98 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.47 | 3.74 | 7.00 | 0.47 | 0.30 | 0.17 | 0.24 | 0.21 | 0.03 | 0.02 | 2459.96 | 0.16 | 0.07 | 2,253.98 |
| **Total (tons/construction project)** | 0.48 | 3.87 | 7.08 | 0.64 | 0.31 | 0.33 | 0.28 | 0.21 | 0.07 | 0.02 | 2486.00 | 0.17 | 0.07 | 2,277.80 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> American River Erosion Contract 1

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.92 | 38.34 | 23.86 | 51.35 | 1.35 | 50.00 | 11.54 | 1.14 | 10.40 | 0.08 | 7,851.53 | 1.45 | 0.10 | 7,918.76 |
| **Grading/Excavation** | 13.01 | 111.32 | 146.49 | 13.77 | 8.77 | 5.00 | 7.04 | 6.00 | 1.04 | 0.71 | 72,839.33 | 4.84 | 1.98 | 73,549.71 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 13.01 | 111.32 | 146.49 | 51.35 | 8.77 | 50.00 | 11.54 | 6.00 | 10.40 | 0.71 | 72,839.33 | 4.84 | 1.98 | 73,549.71 |
| **Total (tons/construction project)** | 0.44 | 3.80 | 4.91 | 0.62 | 0.29 | 0.33 | 0.27 | 0.20 | 0.07 | 0.02 | 2,429.61 | 0.16 | 0.07 | 2,453.27 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 29 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 167 | 0 | 336 | 0 | 1,600 | 40 |
| Grading/Excavation | 3,959 | 0 | 16,104 | 0 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> American River Erosion Contract 1

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.13 | 0.08 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 25.91 | 0.00 | 0.00 | 23.71 |
| **Grading/Excavation** | 0.43 | 3.67 | 4.83 | 0.45 | 0.29 | 0.17 | 0.23 | 0.20 | 0.03 | 0.02 | 2,403.70 | 0.16 | 0.07 | 2,201.89 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.43 | 3.67 | 4.83 | 0.45 | 0.29 | 0.17 | 0.23 | 0.20 | 0.03 | 0.02 | 2403.70 | 0.16 | 0.07 | 2,201.89 |
| **Total (tons/construction project)** | 0.44 | 3.80 | 4.91 | 0.62 | 0.29 | 0.33 | 0.27 | 0.20 | 0.07 | 0.02 | 2429.61 | 0.16 | 0.07 | 2,225.59 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 1

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.02 | 45.60 | 9.99 | 50.60 | 0.60 | 50.00 | 10.83 | 0.43 | 10.40 | 0.08 | 7,851.53 | 1.45 | 0.10 | 7,918.76 |
| **Grading/Excavation** | 7.75 | 120.95 | 69.78 | 9.64 | 4.64 | 5.00 | 3.22 | 2.18 | 1.04 | 0.71 | 72,839.33 | 4.84 | 1.98 | 73,549.71 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 7.75 | 120.95 | 69.78 | 50.60 | 4.64 | 50.00 | 10.83 | 2.18 | 10.40 | 0.71 | 72,839.33 | 4.84 | 1.98 | 73,549.71 |
| **Total (tons/construction project)** | 0.26 | 4.14 | 2.34 | 0.49 | 0.16 | 0.33 | 0.14 | 0.07 | 0.07 | 0.02 | 2,429.61 | 0.16 | 0.07 | 2,453.27 |

| Notes: | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 29 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 167 | 0 | 336 | 0 | 1,600 | 40 |
| Grading/Excavation | 3,959 | 0 | 16,104 | 0 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 1

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.15 | 0.03 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 25.91 | 0.00 | 0.00 | 23.71 |
| **Grading/Excavation** | 0.26 | 3.99 | 2.30 | 0.32 | 0.15 | 0.17 | 0.11 | 0.07 | 0.03 | 0.02 | 2,403.70 | 0.16 | 0.07 | 2,201.89 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.26 | 3.99 | 2.30 | 0.32 | 0.15 | 0.17 | 0.11 | 0.07 | 0.03 | 0.02 | 2403.70 | 0.16 | 0.07 | 2,201.89 |
| **Total (tons/construction project)** | 0.26 | 4.14 | 2.34 | 0.49 | 0.16 | 0.33 | 0.14 | 0.07 | 0.07 | 0.02 | 2429.61 | 0.16 | 0.07 | 2,225.59 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

# Road Construction Emissions Model
## Data Entry Worksheet

**Version 8.1.0**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | American River Erosion Contract 2 | |
| Construction Start Year | 2021 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 3.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 6.10 | miles |
| Total Project Area | 74.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 182.00 |
| | Grading/Excavatior | 15.00 | 10642.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavatior | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigatior | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.33 | 4/5/2021 | 1/1/2021 |
| Grading/Excavatior | 3.00 | 1.49 | 4/15/2021 | 1/11/2021 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.99 | | 4/13/2021 |
| Paving | 0.00 | 0.50 | | 4/13/2021 |
| **Totals (Months)** | 3 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 28.00 | | | 13 | 364.00 |
| Miles/round trip: Grading/Excavatio | 85.00 | | | 710 | 60350.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.08 | 0.35 | 2.93 | 0.09 | 0.04 | 0.01 | 1,295.61 | 0.00 | 0.04 | 1,308.79 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 4.28 | 0.00 | 0.00 | 4.32 |
| Pounds per day - Grading/Excavatio | 13.52 | 57.57 | 485.00 | 15.26 | 6.88 | 2.05 | 214,807.51 | 0.63 | 7.28 | 216,993.03 |
| Tons per const. Period - Grading/Excavatio | 0.45 | 1.90 | 16.01 | 0.50 | 0.23 | 0.07 | 7,088.65 | 0.02 | 0.24 | 7,160.77 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.45 | 1.90 | 16.01 | 0.50 | 0.23 | 0.07 | 7,092.92 | 0.02 | 0.24 | 7,165.09 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 40 | | 80 | 1,600.00 |
| No. of employees: Grading/Excavatio | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Grading/Excavation (grams/mile | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Grading/Excavation (grams/trip | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.23 | 3.90 | 0.39 | 0.17 | 0.07 | 0.01 | 1,284.42 | 0.03 | 0.02 | 1,289.97 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 4.24 | 0.00 | 0.00 | 4.26 |
| Pounds per day - Grading/Excavatio | 0.43 | 7.30 | 0.73 | 0.31 | 0.13 | 0.02 | 2,408.28 | 0.05 | 0.03 | 2,418.68 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.24 | 0.02 | 0.01 | 0.00 | 0.00 | 79.47 | 0.00 | 0.00 | 79.82 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.02 | 0.25 | 0.03 | 0.01 | 0.00 | 0.00 | 83.71 | 0.00 | 0.00 | 84.07 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 5 | | 40.00 | | 200.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.32 | 0.01 | 0.00 | 0.00 | 142.37 | 0.00 | 0.00 | 143.82 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 0.47 |
| Pounds per day - Grading/Excavatio | 0.04 | 0.19 | 1.61 | 0.05 | 0.02 | 0.01 | 711.87 | 0.00 | 0.02 | 719.12 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 23.49 | 0.00 | 0.00 | 23.73 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 23.96 | 0.00 | 0.00 | 24.21 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 5.00 | | 50.00 | 0.17 | 10.40 | 0.03 |
| Fugitive Dust - Grading/Excavatio | 2.50 | | 25.00 | 0.83 | 5.20 | 0.17 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.77 | 25.32 | 16.66 | 0.81 | 0.74 | 0.04 | 3,870.16 | 1.25 | 0.04 | 3,911.89 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.45 | 4.61 | 3.96 | 0.21 | 0.21 | 0.01 | 778.79 | 0.04 | 0.01 | 781.53 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.29 | 2.44 | 2.57 | 0.19 | 0.17 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.94 | 34.62 | 25.89 | 1.31 | 1.23 | 0.06 | 5,326.53 | 1.43 | 0.05 | 5,376.19 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.11 | 0.09 | 0.00 | 0.00 | 0.00 | 17.58 | 0.00 | 0.00 | 17.74 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Cranes | 3.03 | 14.55 | 35.58 | 1.44 | 1.33 | 0.04 | 4,099.84 | 1.33 | 0.04 | 4,144.02 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.77 | 25.32 | 16.66 | 0.81 | 0.74 | 0.04 | 3,870.16 | 1.25 | 0.04 | 3,911.89 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tie | Generator Sets | 1.34 | 13.82 | 11.87 | 0.63 | 0.63 | 0.02 | 2,336.38 | 0.12 | 0.02 | 2,344.60 |
| 4.00 | | | Model Default Tie | Graders | 3.20 | 22.52 | 30.62 | 1.71 | 1.57 | 0.03 | 3,027.78 | 0.98 | 0.03 | 3,060.33 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Off-Highway Trucks | 4.52 | 26.90 | 39.28 | 1.44 | 1.32 | 0.10 | 9,541.22 | 3.09 | 0.09 | 9,643.99 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.52 | 5.07 | 5.48 | 0.29 | 0.26 | 0.01 | 748.16 | 0.24 | 0.01 | 756.23 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.53 | 4.93 | 4.90 | 0.34 | 0.31 | 0.01 | 620.05 | 0.20 | 0.01 | 626.74 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.37 | 4.71 | 3.31 | 0.17 | 0.15 | 0.01 | 695.43 | 0.22 | 0.01 | 702.93 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Rubber Tired Dozers | 6.64 | 54.52 | 68.55 | 3.13 | 2.88 | 0.07 | 6,462.63 | 2.09 | 0.06 | 6,532.07 |
| 4.00 | | | Model Default Tie | Rubber Tired Loaders | 1.69 | 7.88 | 19.03 | 0.63 | 0.58 | 0.03 | 2,981.41 | 0.96 | 0.03 | 3,013.61 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 3.00 | | | Model Default Tie | Skid Steer Loaders | 0.28 | 5.21 | 3.76 | 0.15 | 0.14 | 0.01 | 750.74 | 0.24 | 0.01 | 758.84 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.29 | 2.44 | 2.57 | 0.19 | 0.17 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 3.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.71 | 8.56 | 7.18 | 0.42 | 0.39 | 0.01 | 1,140.01 | 0.37 | 0.01 | 1,152.28 |
| 2.00 | | | Model Default Tie | Trenchers | 0.99 | 6.77 | 9.12 | 0.66 | 0.61 | 0.01 | 848.74 | 0.27 | 0.01 | 857.88 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Grading/Excavation | pounds per day | 26.32 | 205.45 | 260.62 | 12.12 | 11.21 | 0.39 | 37,800.14 | 11.51 | 0.34 | 38,188.17 |
| | Grading/Excavation | tons per phase | 0.87 | 6.78 | 8.60 | 0.40 | 0.37 | 0.01 | 1,247.40 | 0.38 | 0.01 | 1,260.21 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.88 | 6.89 | 8.69 | 0.40 | 0.37 | 0.01 | 1,264.98 | 0.38 | 0.01 | 1,277.95 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 3.26 | 38.90 | 29.52 | 51.58 | 1.58 | 50.00 | 11.75 | 1.35 | 10.40 | 0.08 | 8,048.93 | 1.46 | 0.11 | 8,118.77 |
| **Grading/Excavation** | 40.31 | 270.51 | 747.96 | 52.74 | 27.74 | 25.00 | 23.44 | 18.24 | 5.20 | 2.47 | 255,727.80 | 12.19 | 7.67 | 258,319.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 40.31 | 270.51 | 747.96 | 52.74 | 27.74 | 50.00 | 23.44 | 18.24 | 10.40 | 2.47 | 255,727.80 | 12.19 | 7.67 | 258,319.01 |
| **Total (tons/construction project)** | 1.34 | 9.06 | 24.78 | 1.91 | 0.92 | 0.99 | 0.81 | 0.61 | 0.21 | 0.08 | 8,465.58 | 0.41 | 0.25 | 8,551.32 |

| Notes: | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 74 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 182 | 0 | 364 | 0 | 1,600 | 40 |
| Grading/Excavation | 10,642 | 0 | 60,350 | 0 | 3,000 | 200 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.13 | 0.10 | 0.17 | 0.01 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.56 | 0.00 | 0.00 | 24.31 |
| **Grading/Excavation** | 1.33 | 8.93 | 24.68 | 1.74 | 0.92 | 0.83 | 0.77 | 0.60 | 0.17 | 0.08 | 8,439.02 | 0.40 | 0.25 | 7,733.40 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.33 | 8.93 | 24.68 | 1.74 | 0.92 | 0.83 | 0.77 | 0.60 | 0.17 | 0.08 | 8439.02 | 0.40 | 0.25 | 7,733.40 |
| **Total (tons/construction project)** | 1.34 | 9.06 | 24.78 | 1.91 | 0.92 | 0.99 | 0.81 | 0.61 | 0.21 | 0.08 | 8465.58 | 0.41 | 0.25 | 7,757.71 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 3.23 | 38.84 | 27.55 | 51.57 | 1.57 | 50.00 | 11.74 | 1.34 | 10.40 | 0.08 | 8,000.00 | 1.46 | 0.11 | 8,068.90 |
| **Grading/Excavation** | 35.68 | 262.11 | 452.01 | 51.14 | 26.14 | 25.00 | 21.90 | 16.70 | 5.20 | 2.40 | 248,395.07 | 11.98 | 7.22 | 250,844.82 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 35.68 | 262.11 | 452.01 | 51.57 | 26.14 | 50.00 | 21.90 | 16.70 | 10.40 | 2.40 | 248,395.07 | 11.98 | 7.22 | 250,844.82 |
| **Total (tons/construction project)** | 1.19 | 8.78 | 15.01 | 1.86 | 0.87 | 0.99 | 0.76 | 0.56 | 0.21 | 0.08 | 8,223.44 | 0.40 | 0.24 | 8,304.51 |

| Notes: | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 74 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 182 | 0 | 364 | 0 | 1,600 | 40 |
| Grading/Excavation | 10,642 | 0 | 60,350 | 0 | 3,000 | 200 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.13 | 0.09 | 0.17 | 0.01 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.40 | 0.00 | 0.00 | 24.16 |
| **Grading/Excavation** | 1.18 | 8.65 | 14.92 | 1.69 | 0.86 | 0.83 | 0.72 | 0.55 | 0.17 | 0.08 | 8,197.04 | 0.40 | 0.24 | 7,509.64 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.18 | 8.65 | 14.92 | 1.69 | 0.86 | 0.83 | 0.72 | 0.55 | 0.17 | 0.08 | 8197.04 | 0.40 | 0.24 | 7,509.64 |
| **Total (tons/construction project)** | 1.19 | 8.78 | 15.01 | 1.86 | 0.87 | 0.99 | 0.76 | 0.56 | 0.21 | 0.08 | 8223.44 | 0.40 | 0.24 | 7,533.80 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.04 | 45.92 | 10.15 | 50.61 | 0.61 | 50.00 | 10.83 | 0.43 | 10.40 | 0.08 | 8,000.00 | 1.46 | 0.11 | 8,068.90 |
| **Grading/Excavation** | 21.34 | 288.94 | 225.04 | 40.39 | 15.39 | 25.00 | 11.96 | 6.76 | 5.20 | 2.40 | 248,395.07 | 11.98 | 7.22 | 250,844.82 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 21.34 | 288.94 | 225.04 | 50.61 | 15.39 | 50.00 | 11.96 | 6.76 | 10.40 | 2.40 | 248,395.07 | 11.98 | 7.22 | 250,844.82 |
| **Total (tons/construction project)** | 0.71 | 9.69 | 7.46 | 1.50 | 0.51 | 0.99 | 0.43 | 0.22 | 0.21 | 0.08 | 8,223.44 | 0.40 | 0.24 | 8,304.51 |

| Notes: | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 74 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 182 | 0 | 364 | 0 | 1,600 | 40 |
| Grading/Excavation | 10,642 | 0 | 60,350 | 0 | 3,000 | 200 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.15 | 0.03 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.40 | 0.00 | 0.00 | 24.16 |
| **Grading/Excavation** | 0.70 | 9.54 | 7.43 | 1.33 | 0.51 | 0.83 | 0.39 | 0.22 | 0.17 | 0.08 | 8,197.04 | 0.40 | 0.24 | 7,509.64 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.70 | 9.54 | 7.43 | 1.33 | 0.51 | 0.83 | 0.39 | 0.22 | 0.17 | 0.08 | 8197.04 | 0.40 | 0.24 | 7,509.64 |
| **Total (tons/construction project)** | 0.71 | 9.69 | 7.46 | 1.50 | 0.51 | 0.99 | 0.43 | 0.22 | 0.21 | 0.08 | 8223.44 | 0.40 | 0.24 | 7,533.80 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

# Road Construction Emissions Model
**Version 8.1.0**

## Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | American River Erosion Contract 2 | |
| Construction Start Year | 2022 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 3.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 6.10 | miles |
| Total Project Area | 74.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 182.00 |
| | Grading/Excavatior | 15.00 | 10642.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavatior | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigatior | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.33 | 4/5/2022 | 1/1/2022 |
| Grading/Excavatior | 3.00 | 1.49 | 4/15/2022 | 1/11/2022 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.99 | | 4/13/2022 |
| Paving | 0.00 | 0.50 | | 4/13/2022 |
| **Totals (Months)** | 3 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 28.00 | | | 13 | 364.00 |
| Miles/round trip: Grading/Excavatio | 85.00 | | | 710 | 60350.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.08 | 0.34 | 2.59 | 0.09 | 0.04 | 0.01 | 1,281.25 | 0.00 | 0.04 | 1,294.29 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 4.23 | 0.00 | 0.00 | 4.27 |
| Pounds per day - Grading/Excavatio | 13.02 | 57.10 | 430.07 | 14.94 | 6.57 | 2.03 | 212,427.69 | 0.60 | 7.20 | 214,589.35 |
| Tons per const. Period - Grading/Excavatio | 0.43 | 1.88 | 14.19 | 0.49 | 0.22 | 0.07 | 7,010.11 | 0.02 | 0.24 | 7,081.45 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.43 | 1.89 | 14.20 | 0.49 | 0.22 | 0.07 | 7,014.34 | 0.02 | 0.24 | 7,085.72 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | Calculated Daily Trips | Calculated Daily VMT |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | | |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 40 | | 80 | 1,600.00 |
| No. of employees: Grading/Excavatio | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Grading/Excavation (grams/mile | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Grading/Excavation (grams/trip | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.21 | 3.60 | 0.35 | 0.16 | 0.07 | 0.01 | 1,242.58 | 0.03 | 0.01 | 1,247.58 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 4.10 | 0.00 | 0.00 | 4.12 |
| Pounds per day - Grading/Excavatio | 0.40 | 6.75 | 0.66 | 0.31 | 0.13 | 0.02 | 2,329.85 | 0.05 | 0.03 | 2,339.21 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.22 | 0.02 | 0.01 | 0.00 | 0.00 | 76.88 | 0.00 | 0.00 | 77.19 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.01 | 0.23 | 0.02 | 0.01 | 0.00 | 0.00 | 80.99 | 0.00 | 0.00 | 81.31 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 5 | | 40.00 | | 200.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.29 | 0.01 | 0.00 | 0.00 | 140.80 | 0.00 | 0.00 | 142.23 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.47 |
| Pounds per day - Grading/Excavatio | 0.04 | 0.19 | 1.43 | 0.05 | 0.02 | 0.01 | 703.99 | 0.00 | 0.02 | 711.15 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 23.23 | 0.00 | 0.00 | 23.47 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 23.70 | 0.00 | 0.00 | 23.94 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 5.00 | | 50.00 | 0.17 | 10.40 | 0.03 |
| Fugitive Dust - Grading/Excavatio | 2.50 | | 25.00 | 0.83 | 5.20 | 0.17 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.57 | 25.19 | 13.75 | 0.66 | 0.61 | 0.04 | 3,868.79 | 1.25 | 0.04 | 3,910.51 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.41 | 4.59 | 3.66 | 0.18 | 0.18 | 0.01 | 778.79 | 0.04 | 0.01 | 781.46 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.65 | 34.43 | 22.36 | 1.10 | 1.04 | 0.06 | 5,325.16 | 1.43 | 0.05 | 5,374.74 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.11 | 0.07 | 0.00 | 0.00 | 0.00 | 17.57 | 0.00 | 0.00 | 17.74 |

| **Grading/Excavation** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Cranes | 2.74 | 13.89 | 30.70 | 1.27 | 1.17 | 0.04 | 4,100.51 | 1.33 | 0.04 | 4,144.71 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.57 | 25.19 | 13.75 | 0.66 | 0.61 | 0.04 | 3,868.79 | 1.25 | 0.04 | 3,910.51 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tie | Generator Sets | 1.24 | 13.78 | 10.98 | 0.55 | 0.55 | 0.02 | 2,336.38 | 0.11 | 0.02 | 2,344.39 |
| 4.00 | | | Model Default Tie | Graders | 2.79 | 22.10 | 26.10 | 1.45 | 1.33 | 0.03 | 3,028.02 | 0.98 | 0.03 | 3,060.56 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Off-Highway Trucks | 3.94 | 25.07 | 29.95 | 1.09 | 1.00 | 0.10 | 9,544.67 | 3.09 | 0.09 | 9,647.44 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.47 | 5.03 | 4.77 | 0.25 | 0.23 | 0.01 | 747.91 | 0.24 | 0.01 | 755.99 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.45 | 4.84 | 4.22 | 0.26 | 0.24 | 0.01 | 620.05 | 0.20 | 0.01 | 626.74 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.33 | 4.68 | 2.79 | 0.15 | 0.14 | 0.01 | 695.43 | 0.22 | 0.01 | 702.93 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Rubber Tired Dozers | 6.41 | 52.55 | 64.87 | 2.97 | 2.73 | 0.07 | 6,467.00 | 2.09 | 0.06 | 6,536.47 |
| 4.00 | | | Model Default Tie | Rubber Tired Loaders | 1.44 | 7.54 | 14.90 | 0.50 | 0.46 | 0.03 | 2,983.57 | 0.97 | 0.03 | 3,015.78 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 3.00 | | | Model Default Tie | Skid Steer Loaders | 0.26 | 5.20 | 3.48 | 0.13 | 0.12 | 0.01 | 751.47 | 0.24 | 0.01 | 759.57 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 3.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.62 | 8.48 | 6.35 | 0.34 | 0.31 | 0.01 | 1,141.29 | 0.37 | 0.01 | 1,153.57 |
| 2.00 | | | Model Default Tie | Trenchers | 0.94 | 6.75 | 8.77 | 0.62 | 0.57 | 0.01 | 848.81 | 0.27 | 0.01 | 857.95 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 23.86 | 199.74 | 226.59 | 10.51 | 9.72 | 0.39 | 37,811.49 | 11.50 | 0.34 | 38,199.39 |
| | Grading/Excavation | | tons per phase | 0.79 | 6.59 | 7.48 | 0.35 | 0.32 | 0.01 | 1,247.78 | 0.38 | 0.01 | 1,260.58 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.80 | 6.71 | 7.55 | 0.35 | 0.32 | 0.01 | 1,265.35 | 0.38 | 0.01 | 1,278.32 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.95 | 38.42 | 25.59 | 51.37 | 1.37 | 50.00 | 11.55 | 1.15 | 10.40 | 0.08 | 7,989.79 | 1.46 | 0.11 | 8,058.84 |
| **Grading/Excavation** | 37.32 | 263.77 | 658.74 | 50.81 | 25.81 | 25.00 | 21.64 | 16.44 | 5.20 | 2.45 | 253,273.02 | 12.16 | 7.59 | 255,839.10 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 37.32 | 263.77 | 658.74 | 51.37 | 25.81 | 50.00 | 21.64 | 16.44 | 10.40 | 2.45 | 253,273.02 | 12.16 | 7.59 | 255,839.10 |
| **Total (tons/construction project)** | 1.24 | 8.83 | 21.82 | 1.85 | 0.86 | 0.99 | 0.75 | 0.55 | 0.21 | 0.08 | 8,384.38 | 0.41 | 0.25 | 8,469.28 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 74 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 182 | 0 | 364 | 0 | 1,600 | 40 |
| Grading/Excavation | 10,642 | 0 | 60,350 | 0 | 3,000 | 200 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.13 | 0.08 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.37 | 0.00 | 0.00 | 24.13 |
| **Grading/Excavation** | 1.23 | 8.70 | 21.74 | 1.68 | 0.85 | 0.83 | 0.71 | 0.54 | 0.17 | 0.08 | 8,358.01 | 0.40 | 0.25 | 7,659.16 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.23 | 8.70 | 21.74 | 1.68 | 0.85 | 0.83 | 0.71 | 0.54 | 0.17 | 0.08 | 8358.01 | 0.40 | 0.25 | 7,659.16 |
| **Total (tons/construction project)** | 1.24 | 8.83 | 21.82 | 1.85 | 0.86 | 0.99 | 0.75 | 0.55 | 0.21 | 0.08 | 8384.38 | 0.41 | 0.25 | 7,683.28 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.92 | 38.37 | 23.95 | 51.36 | 1.36 | 50.00 | 11.54 | 1.14 | 10.40 | 0.08 | 7,947.13 | 1.45 | 0.11 | 8,015.30 |
| **Grading/Excavation** | 33.18 | 256.11 | 412.83 | 49.52 | 24.52 | 25.00 | 20.40 | 15.20 | 5.20 | 2.39 | 246,878.91 | 11.97 | 7.17 | 249,313.26 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 33.18 | 256.11 | 412.83 | 51.36 | 24.52 | 50.00 | 20.40 | 15.20 | 10.40 | 2.39 | 246,878.91 | 11.97 | 7.17 | 249,313.26 |
| **Total (tons/construction project)** | 1.10 | 8.58 | 13.70 | 1.80 | 0.81 | 0.99 | 0.71 | 0.51 | 0.21 | 0.08 | 8,173.23 | 0.40 | 0.24 | 8,253.79 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 74 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 182 | 0 | 364 | 0 | 1,600 | 40 |
| Grading/Excavation | 10,642 | 0 | 60,350 | 0 | 3,000 | 200 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.13 | 0.08 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.23 | 0.00 | 0.00 | 24.00 |
| **Grading/Excavation** | 1.09 | 8.45 | 13.62 | 1.63 | 0.81 | 0.83 | 0.67 | 0.50 | 0.17 | 0.08 | 8,147.00 | 0.39 | 0.24 | 7,463.79 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.09 | 8.45 | 13.62 | 1.63 | 0.81 | 0.83 | 0.67 | 0.50 | 0.17 | 0.08 | 8147.00 | 0.39 | 0.24 | 7,463.79 |
| **Total (tons/construction project)** | 1.10 | 8.58 | 13.70 | 1.80 | 0.81 | 0.99 | 0.71 | 0.51 | 0.21 | 0.08 | 8173.23 | 0.40 | 0.24 | 7,487.79 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** American River Erosion Contract 2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.02 | 45.62 | 10.08 | 50.61 | 0.61 | 50.00 | 10.83 | 0.43 | 10.40 | 0.08 | 7,947.13 | 1.45 | 0.11 | 8,015.30 |
| **Grading/Excavation** | 21.29 | 288.65 | 219.89 | 40.39 | 15.39 | 25.00 | 11.95 | 6.75 | 5.20 | 2.39 | 246,878.91 | 11.97 | 7.17 | 249,313.26 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 21.29 | 288.65 | 219.89 | 50.61 | 15.39 | 50.00 | 11.95 | 6.75 | 10.40 | 2.39 | 246,878.91 | 11.97 | 7.17 | 249,313.26 |
| **Total (tons/construction project)** | 0.71 | 9.68 | 7.29 | 1.50 | 0.51 | 0.99 | 0.43 | 0.22 | 0.21 | 0.08 | 8,173.23 | 0.40 | 0.24 | 8,253.79 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 74 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 182 | 0 | 364 | 0 | 1,600 | 40 |
| Grading/Excavation | 10,642 | 0 | 60,350 | 0 | 3,000 | 200 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** American River Erosion Contract 2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.15 | 0.03 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 26.23 | 0.00 | 0.00 | 24.00 |
| **Grading/Excavation** | 0.70 | 9.53 | 7.26 | 1.33 | 0.51 | 0.83 | 0.39 | 0.22 | 0.17 | 0.08 | 8,147.00 | 0.39 | 0.24 | 7,463.79 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.70 | 9.53 | 7.26 | 1.33 | 0.51 | 0.83 | 0.39 | 0.22 | 0.17 | 0.08 | 8147.00 | 0.39 | 0.24 | 7,463.79 |
| **Total (tons/construction project)** | 0.71 | 9.68 | 7.29 | 1.50 | 0.51 | 0.99 | 0.43 | 0.22 | 0.21 | 0.08 | 8173.23 | 0.40 | 0.24 | 7,487.79 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | 2020_SRErosion_Contract1 | |
| Construction Start Year | 2020 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 4.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.22 | miles |
| Total Project Area | 2.00 | acres |
| Maximum Area Disturbed/Day | 2.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 14.00 |
| | Grading/Excavation | 15.00 | 13.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.43 | 8/1/2020 | 1/1/2020 |
| Grading/Excavatior | 4.00 | 1.72 | 8/11/2020 | 1/11/2020 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.51 | | 5/12/2020 |
| Paving | 0.00 | 0.65 | | 5/12/2020 |
| **Totals (Months)** | 4 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 40.00 | | | 1 | 40.00 |
| Miles/round trip: Grading/Excavatio | 10.00 | | | 1 | 10.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Grading/Excavation (grams/mile | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.36 | 0.01 | 0.00 | 0.00 | 143.89 | 0.00 | 0.00 | 145.36 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 0.48 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.01 | 0.09 | 0.00 | 0.00 | 0.00 | 35.97 | 0.00 | 0.00 | 36.34 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.58 | 0.00 | 0.00 | 1.60 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 2.06 | 0.00 | 0.00 | 2.08 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Grading/Excavation (grams/mile | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | Calculated Daily Trips | Calculated Daily VMT |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | | |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 25 | | 50 | 1,000.00 |
| No. of employees: Grading/Excavatio | 40 | | 80 | 1,600.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 1.08 | 0.11 | 0.05 | 0.02 | 0.00 | 371.46 | 0.01 | 0.00 | 373.08 |
| Grading/Excavation (grams/mile | 0.02 | 1.08 | 0.11 | 0.05 | 0.02 | 0.00 | 371.46 | 0.01 | 0.00 | 373.08 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 1.00 | 2.55 | 0.20 | 0.00 | 0.00 | 0.00 | 84.03 | 0.01 | 0.01 | 86.84 |
| Grading/Excavation (grams/trip | 1.00 | 2.55 | 0.20 | 0.00 | 0.00 | 0.00 | 84.03 | 0.01 | 0.01 | 86.84 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.16 | 2.65 | 0.27 | 0.10 | 0.04 | 0.01 | 828.20 | 0.02 | 0.01 | 832.07 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 2.73 | 0.00 | 0.00 | 2.75 |
| Pounds per day - Grading/Excavatio | 0.25 | 4.25 | 0.44 | 0.17 | 0.07 | 0.01 | 1,325.12 | 0.03 | 0.02 | 1,331.31 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.19 | 0.02 | 0.01 | 0.00 | 0.00 | 58.31 | 0.00 | 0.00 | 58.58 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.01 | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 61.04 | 0.00 | 0.00 | 61.32 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Grading/Excavation (grams/mile | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.36 | 0.01 | 0.00 | 0.00 | 143.89 | 0.00 | 0.00 | 145.36 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 0.48 |
| Pounds per day - Grading/Excavatio | 0.01 | 0.04 | 0.36 | 0.01 | 0.00 | 0.00 | 143.89 | 0.00 | 0.00 | 145.36 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 6.33 | 0.00 | 0.00 | 6.40 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 6.81 | 0.00 | 0.00 | 6.88 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 2.00 | | 20.00 | 0.07 | 4.16 | 0.01 |
| Fugitive Dust - Grading/Excavatio | 0.50 | | 5.00 | 0.22 | 1.04 | 0.05 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.52 | 20.23 | 14.93 | 0.72 | 0.67 | 0.03 | 3,095.67 | 1.00 | 0.03 | 3,129.04 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.40 | 3.71 | 3.48 | 0.20 | 0.20 | 0.01 | 623.04 | 0.04 | 0.00 | 625.31 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.27 | 1.99 | 2.33 | 0.19 | 0.17 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.53 | 27.73 | 22.90 | 1.19 | 1.12 | 0.05 | 4,260.77 | 1.15 | 0.04 | 4,300.57 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.09 | 0.08 | 0.00 | 0.00 | 0.00 | 14.06 | 0.00 | 0.00 | 14.19 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Cranes | 0.89 | 4.14 | 10.55 | 0.43 | 0.40 | 0.01 | 1,093.39 | 0.35 | 0.01 | 1,105.18 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Excavators | 0.51 | 6.74 | 4.98 | 0.24 | 0.22 | 0.01 | 1,031.89 | 0.33 | 0.01 | 1,043.01 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.40 | 3.71 | 3.48 | 0.20 | 0.20 | 0.01 | 623.04 | 0.04 | 0.00 | 625.31 |
| 2.00 | | | Model Default Tie | Graders | 1.43 | 9.16 | 14.00 | 0.78 | 0.72 | 0.01 | 1,209.88 | 0.39 | 0.01 | 1,222.88 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Off-Highway Trucks | 1.32 | 7.58 | 12.58 | 0.46 | 0.42 | 0.03 | 2,544.52 | 0.82 | 0.02 | 2,571.93 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.49 | 4.12 | 5.24 | 0.28 | 0.25 | 0.01 | 598.80 | 0.19 | 0.01 | 605.27 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.47 | 3.98 | 4.29 | 0.31 | 0.29 | 0.01 | 496.04 | 0.16 | 0.00 | 501.39 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.30 | 3.74 | 2.79 | 0.14 | 0.13 | 0.01 | 556.35 | 0.18 | 0.01 | 562.34 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Rubber Tired Dozers | 1.92 | 15.87 | 20.30 | 0.93 | 0.86 | 0.02 | 1,726.14 | 0.56 | 0.02 | 1,744.68 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 3.00 | | | Model Default Tie | Skid Steer Loaders | 0.24 | 4.17 | 3.19 | 0.14 | 0.13 | 0.01 | 600.51 | 0.19 | 0.01 | 606.98 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.27 | 1.99 | 2.33 | 0.19 | 0.17 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 2.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.42 | 4.61 | 4.25 | 0.27 | 0.25 | 0.01 | 607.74 | 0.20 | 0.01 | 614.28 |
| 2.00 | | | Model Default Tie | Trenchers | 0.87 | 5.48 | 7.89 | 0.59 | 0.54 | 0.01 | 678.76 | 0.22 | 0.01 | 686.07 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 9.88 | 77.09 | 98.00 | 5.04 | 4.66 | 0.13 | 12,309.11 | 3.75 | 0.11 | 12,435.55 |
| | Grading/Excavation | | tons per phase | 0.43 | 3.39 | 4.31 | 0.22 | 0.20 | 0.01 | 541.60 | 0.16 | 0.00 | 547.16 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.44 | 3.48 | 4.39 | 0.23 | 0.21 | 0.01 | 555.66 | 0.17 | 0.00 | 561.36 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2020_SRErosion_Contract1

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.70 | 30.46 | 23.90 | 21.31 | 1.31 | 20.00 | 5.33 | 1.17 | 4.16 | 0.06 | 5,376.75 | 1.17 | 0.06 | 5,423.35 |
| **Grading/Excavation** | 10.14 | 81.38 | 98.89 | 10.22 | 5.22 | 5.00 | 5.77 | 4.73 | 1.04 | 0.14 | 13,814.10 | 3.78 | 0.13 | 13,948.56 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 10.14 | 81.38 | 98.89 | 21.31 | 5.22 | 20.00 | 5.77 | 4.73 | 4.16 | 0.14 | 13,814.10 | 3.78 | 0.13 | 13,948.56 |
| **Total (tons/construction project)** | 0.46 | 3.68 | 4.43 | 0.52 | 0.23 | 0.29 | 0.27 | 0.21 | 0.06 | 0.01 | 625.56 | 0.17 | 0.01 | 631.63 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 2 |
| Maximum Area Disturbed/Day (acres) -> | 2 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 14 | 0 | 40 | 0 | 1,000 | 40 |
| Grading/Excavation | 13 | 0 | 10 | 0 | 1,600 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2020_SRErosion_Contract1

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.08 | 0.07 | 0.00 | 0.07 | 0.02 | 0.00 | 0.01 | 0.00 | 17.74 | 0.00 | 0.00 | 16.24 |
| **Grading/Excavation** | 0.45 | 3.58 | 4.35 | 0.45 | 0.23 | 0.22 | 0.25 | 0.21 | 0.05 | 0.01 | 607.82 | 0.17 | 0.01 | 556.78 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.45 | 3.58 | 4.35 | 0.45 | 0.23 | 0.22 | 0.25 | 0.21 | 0.05 | 0.01 | 607.82 | 0.17 | 0.01 | 556.78 |
| **Total (tons/construction project)** | 0.46 | 3.68 | 4.43 | 0.52 | 0.23 | 0.29 | 0.27 | 0.21 | 0.06 | 0.01 | 625.56 | 0.17 | 0.01 | 573.01 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2020_SRErosion_Contract1

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.70 | 30.44 | 23.43 | 21.31 | 1.31 | 20.00 | 5.33 | 1.17 | 4.16 | 0.06 | 5,366.10 | 1.17 | 0.06 | 5,412.50 |
| **Grading/Excavation** | 10.14 | 81.37 | 98.60 | 10.22 | 5.22 | 5.00 | 5.77 | 4.73 | 1.04 | 0.14 | 13,807.44 | 3.78 | 0.13 | 13,941.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 10.14 | 81.37 | 98.60 | 21.31 | 5.22 | 20.00 | 5.77 | 4.73 | 4.16 | 0.14 | 13,807.44 | 3.78 | 0.13 | 13,941.77 |
| **Total (tons/construction project)** | 0.45 | 3.68 | 4.42 | 0.52 | 0.23 | 0.29 | 0.27 | 0.21 | 0.06 | 0.01 | 625.24 | 0.17 | 0.01 | 631.30 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 2 |
| Maximum Area Disturbed/Day (acres) -> | 2 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 14 | 0 | 40 | 0 | 1,000 | 40 |
| Grading/Excavation | 13 | 0 | 10 | 0 | 1,600 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2020_SRErosion_Contract1

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.08 | 0.07 | 0.00 | 0.07 | 0.02 | 0.00 | 0.01 | 0.00 | 17.71 | 0.00 | 0.00 | 16.20 |
| **Grading/Excavation** | 0.45 | 3.58 | 4.34 | 0.45 | 0.23 | 0.22 | 0.25 | 0.21 | 0.05 | 0.01 | 607.53 | 0.17 | 0.01 | 556.51 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.45 | 3.58 | 4.34 | 0.45 | 0.23 | 0.22 | 0.25 | 0.21 | 0.05 | 0.01 | 607.53 | 0.17 | 0.01 | 556.51 |
| **Total (tons/construction project)** | 0.45 | 3.68 | 4.42 | 0.52 | 0.23 | 0.29 | 0.27 | 0.21 | 0.06 | 0.01 | 625.24 | 0.17 | 0.01 | 572.71 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2020_SRErosion_Contract1

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.57 | 36.07 | 7.32 | 20.40 | 0.40 | 20.00 | 4.47 | 0.31 | 4.16 | 0.06 | 5,366.10 | 1.17 | 0.06 | 5,412.50 |
| **Grading/Excavation** | 4.24 | 85.06 | 16.31 | 5.72 | 0.72 | 5.00 | 1.61 | 0.57 | 1.04 | 0.14 | 13,807.44 | 3.78 | 0.13 | 13,941.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 4.24 | 85.06 | 16.31 | 20.40 | 0.72 | 20.00 | 4.47 | 0.57 | 4.16 | 0.14 | 13,807.44 | 3.78 | 0.13 | 13,941.77 |
| **Total (tons/construction project)** | 0.19 | 3.86 | 0.74 | 0.32 | 0.03 | 0.29 | 0.09 | 0.03 | 0.06 | 0.01 | 625.24 | 0.17 | 0.01 | 631.30 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 2 |
| Maximum Area Disturbed/Day (acres) -> | 2 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 14 | 0 | 40 | 0 | 1,000 | 40 |
| Grading/Excavation | 13 | 0 | 10 | 0 | 1,600 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2020_SRErosion_Contract1

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.12 | 0.02 | 0.07 | 0.00 | 0.07 | 0.01 | 0.00 | 0.01 | 0.00 | 17.71 | 0.00 | 0.00 | 16.20 |
| **Grading/Excavation** | 0.19 | 3.74 | 0.72 | 0.25 | 0.03 | 0.22 | 0.07 | 0.03 | 0.05 | 0.01 | 607.53 | 0.17 | 0.01 | 556.51 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.19 | 3.74 | 0.72 | 0.25 | 0.03 | 0.22 | 0.07 | 0.03 | 0.05 | 0.01 | 607.53 | 0.17 | 0.01 | 556.51 |
| **Total (tons/construction project)** | 0.19 | 3.86 | 0.74 | 0.32 | 0.03 | 0.29 | 0.09 | 0.03 | 0.06 | 0.01 | 625.24 | 0.17 | 0.01 | 572.71 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | 2021_SRErosion_Contract2 | |
| Construction Start Year | 2021 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 4.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 1.30 | miles |
| Total Project Area | 13.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 83.00 |
| | Grading/Excavatior | 15.00 | 77.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavatior | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigatior | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.43 | 8/1/2021 | 1/1/2021 |
| Grading/Excavatior | 4.00 | 1.72 | 8/11/2021 | 1/11/2021 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.51 | | 5/13/2021 |
| Paving | 0.00 | 0.65 | | 5/13/2021 |
| **Totals (Months)** | 4 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 40.00 | | | 6 | 240.00 |
| Miles/round trip: Grading/Excavatio | 10.00 | | | 6 | 60.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.05 | 0.23 | 1.93 | 0.06 | 0.03 | 0.01 | 854.25 | 0.00 | 0.03 | 862.94 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 2.82 | 0.00 | 0.00 | 2.85 |
| Pounds per day - Grading/Excavatio | 0.01 | 0.06 | 0.48 | 0.02 | 0.01 | 0.00 | 213.56 | 0.00 | 0.01 | 215.73 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 9.40 | 0.00 | 0.00 | 9.49 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 12.22 | 0.00 | 0.00 | 12.34 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 25 | | 50 | 1,000.00 |
| No. of employees: Grading/Excavatio | 55 | | 110 | 2,200.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Grading/Excavation (grams/mile | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Grading/Excavation (grams/trip | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.14 | 2.43 | 0.24 | 0.10 | 0.04 | 0.01 | 802.76 | 0.02 | 0.01 | 806.23 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 2.65 | 0.00 | 0.00 | 2.66 |
| Pounds per day - Grading/Excavatio | 0.32 | 5.36 | 0.54 | 0.23 | 0.10 | 0.02 | 1,766.07 | 0.04 | 0.02 | 1,773.70 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.24 | 0.02 | 0.01 | 0.00 | 0.00 | 77.71 | 0.00 | 0.00 | 78.04 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.01 | 0.24 | 0.02 | 0.01 | 0.00 | 0.00 | 80.36 | 0.00 | 0.00 | 80.70 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 4 | | 40.00 | | 160.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.32 | 0.01 | 0.00 | 0.00 | 142.37 | 0.00 | 0.00 | 143.82 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 0.47 |
| Pounds per day - Grading/Excavatio | 0.04 | 0.15 | 1.29 | 0.04 | 0.02 | 0.01 | 569.50 | 0.00 | 0.02 | 575.29 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 25.06 | 0.00 | 0.00 | 25.31 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 25.53 | 0.00 | 0.00 | 25.79 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 5.00 | | 50.00 | 0.17 | 10.40 | 0.03 |
| Fugitive Dust - Grading/Excavatio | 2.00 | | 20.00 | 0.88 | 4.16 | 0.18 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.42 | 20.25 | 13.33 | 0.65 | 0.59 | 0.03 | 3,096.13 | 1.00 | 0.03 | 3,129.51 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.36 | 3.68 | 3.17 | 0.17 | 0.17 | 0.01 | 623.04 | 0.03 | 0.00 | 625.23 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.23 | 1.95 | 2.06 | 0.15 | 0.14 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.35 | 27.69 | 20.71 | 1.05 | 0.99 | 0.05 | 4,261.22 | 1.14 | 0.04 | 4,300.96 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.09 | 0.07 | 0.00 | 0.00 | 0.00 | 14.06 | 0.00 | 0.00 | 14.19 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Cranes | 1.62 | 7.76 | 18.98 | 0.77 | 0.71 | 0.02 | 2,186.58 | 0.71 | 0.02 | 2,210.14 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Excavators | 0.95 | 13.50 | 8.89 | 0.43 | 0.40 | 0.02 | 2,064.09 | 0.67 | 0.02 | 2,086.34 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.36 | 3.68 | 3.17 | 0.17 | 0.17 | 0.01 | 623.04 | 0.03 | 0.00 | 625.23 |
| 2.00 | | | Model Default Tie | Graders | 1.28 | 9.01 | 12.25 | 0.68 | 0.63 | 0.01 | 1,211.11 | 0.39 | 0.01 | 1,224.13 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Off-Highway Trucks | 2.41 | 14.35 | 20.95 | 0.77 | 0.71 | 0.05 | 5,088.65 | 1.65 | 0.05 | 5,143.46 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.42 | 4.06 | 4.38 | 0.23 | 0.21 | 0.01 | 598.52 | 0.19 | 0.01 | 604.99 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.43 | 3.95 | 3.92 | 0.27 | 0.25 | 0.01 | 496.04 | 0.16 | 0.00 | 501.39 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.29 | 3.77 | 2.65 | 0.13 | 0.12 | 0.01 | 556.35 | 0.18 | 0.01 | 562.34 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Rubber Tired Dozers | 3.54 | 29.08 | 36.56 | 1.67 | 1.54 | 0.04 | 3,446.74 | 1.11 | 0.03 | 3,483.77 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 4.00 | | | Model Default Tie | Skid Steer Loaders | 0.30 | 5.56 | 4.01 | 0.16 | 0.15 | 0.01 | 800.79 | 0.26 | 0.01 | 809.43 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.23 | 1.95 | 2.06 | 0.15 | 0.14 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 2.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.38 | 4.57 | 3.83 | 0.23 | 0.21 | 0.01 | 608.00 | 0.20 | 0.01 | 614.55 |
| 2.00 | | | Model Default Tie | Trenchers | 0.79 | 5.41 | 7.29 | 0.53 | 0.49 | 0.01 | 678.99 | 0.22 | 0.01 | 686.30 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 13.34 | 108.44 | 131.09 | 6.28 | 5.80 | 0.20 | 18,900.96 | 5.88 | 0.17 | 19,098.29 |
| | Grading/Excavation | | tons per phase | 0.59 | 4.77 | 5.77 | 0.28 | 0.26 | 0.01 | 831.64 | 0.26 | 0.01 | 840.32 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.59 | 4.86 | 5.84 | 0.28 | 0.26 | 0.01 | 845.70 | 0.26 | 0.01 | 854.52 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2021_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.56 | 30.40 | 23.20 | 51.22 | 1.22 | 50.00 | 11.46 | 1.06 | 10.40 | 0.06 | 6,060.60 | 1.16 | 0.08 | 6,113.94 |
| **Grading/Excavation** | 13.70 | 114.01 | 133.40 | 26.56 | 6.56 | 20.00 | 10.08 | 5.92 | 4.16 | 0.22 | 21,450.10 | 5.92 | 0.22 | 21,663.02 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 13.70 | 114.01 | 133.40 | 51.22 | 6.56 | 50.00 | 11.46 | 5.92 | 10.40 | 0.22 | 21,450.10 | 5.92 | 0.22 | 21,663.02 |
| **Total (tons/construction project)** | 0.61 | 5.12 | 5.95 | 1.34 | 0.29 | 1.05 | 0.48 | 0.26 | 0.22 | 0.01 | 963.80 | 0.26 | 0.01 | 973.35 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2021_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.08 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 20.00 | 0.00 | 0.00 | 18.30 |
| **Grading/Excavation** | 0.60 | 5.02 | 5.87 | 1.17 | 0.29 | 0.88 | 0.44 | 0.26 | 0.18 | 0.01 | 943.80 | 0.26 | 0.01 | 864.71 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.60 | 5.02 | 5.87 | 1.17 | 0.29 | 0.88 | 0.44 | 0.26 | 0.18 | 0.01 | 943.80 | 0.26 | 0.01 | 864.71 |
| **Total (tons/construction project)** | 0.61 | 5.12 | 5.95 | 1.34 | 0.29 | 1.05 | 0.48 | 0.26 | 0.22 | 0.01 | 963.80 | 0.26 | 0.01 | 883.02 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2021_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.53 | 30.36 | 21.83 | 51.22 | 1.22 | 50.00 | 11.45 | 1.05 | 10.40 | 0.06 | 6,026.69 | 1.16 | 0.08 | 6,079.38 |
| **Grading/Excavation** | 13.69 | 113.98 | 132.32 | 26.56 | 6.56 | 20.00 | 10.07 | 5.91 | 4.16 | 0.22 | 21,423.45 | 5.92 | 0.22 | 21,635.86 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 13.69 | 113.98 | 132.32 | 51.22 | 6.56 | 50.00 | 11.45 | 5.91 | 10.40 | 0.22 | 21,423.45 | 5.92 | 0.22 | 21,635.86 |
| **Total (tons/construction project)** | 0.61 | 5.12 | 5.89 | 1.34 | 0.29 | 1.05 | 0.48 | 0.26 | 0.22 | 0.01 | 962.52 | 0.26 | 0.01 | 972.04 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2021_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.07 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.89 | 0.00 | 0.00 | 18.20 |
| **Grading/Excavation** | 0.60 | 5.02 | 5.82 | 1.17 | 0.29 | 0.88 | 0.44 | 0.26 | 0.18 | 0.01 | 942.63 | 0.26 | 0.01 | 863.63 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.60 | 5.02 | 5.82 | 1.17 | 0.29 | 0.88 | 0.44 | 0.26 | 0.18 | 0.01 | 942.63 | 0.26 | 0.01 | 863.63 |
| **Total (tons/construction project)** | 0.61 | 5.12 | 5.89 | 1.34 | 0.29 | 1.05 | 0.48 | 0.26 | 0.22 | 0.01 | 962.52 | 0.26 | 0.01 | 881.83 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2021_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.58 | 36.02 | 7.92 | 50.45 | 0.45 | 50.00 | 10.73 | 0.33 | 10.40 | 0.06 | 6,026.69 | 1.16 | 0.08 | 6,079.38 |
| **Grading/Excavation** | 6.43 | 125.27 | 22.39 | 21.03 | 1.03 | 20.00 | 4.97 | 0.81 | 4.16 | 0.22 | 21,423.45 | 5.92 | 0.22 | 21,635.86 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 6.43 | 125.27 | 22.39 | 50.45 | 1.03 | 50.00 | 10.73 | 0.81 | 10.40 | 0.22 | 21,423.45 | 5.92 | 0.22 | 21,635.86 |
| **Total (tons/construction project)** | 0.29 | 5.63 | 1.01 | 1.09 | 0.05 | 1.05 | 0.25 | 0.04 | 0.22 | 0.01 | 962.52 | 0.26 | 0.01 | 972.04 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2021_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.12 | 0.03 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.89 | 0.00 | 0.00 | 18.20 |
| **Grading/Excavation** | 0.28 | 5.51 | 0.99 | 0.93 | 0.05 | 0.88 | 0.22 | 0.04 | 0.18 | 0.01 | 942.63 | 0.26 | 0.01 | 863.63 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.28 | 5.51 | 0.99 | 0.93 | 0.05 | 0.88 | 0.22 | 0.04 | 0.18 | 0.01 | 942.63 | 0.26 | 0.01 | 863.63 |
| **Total (tons/construction project)** | 0.29 | 5.63 | 1.01 | 1.09 | 0.05 | 1.05 | 0.25 | 0.04 | 0.22 | 0.01 | 962.52 | 0.26 | 0.01 | 881.83 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
**Version 8.1.0**

## Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | 2022_SRErosion_Contract2 | |
| Construction Start Year | 2022 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 4.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 1.30 | miles |
| Total Project Area | 13.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 83.00 |
| | Grading/Excavation | 15.00 | 77.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.43 | 8/1/2022 | 1/1/2022 |
| Grading/Excavatior | 4.00 | 1.72 | 8/11/2022 | 1/11/2022 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.51 | | 5/13/2022 |
| Paving | 0.00 | 0.65 | | 5/13/2022 |
| **Totals (Months)** | 4 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 40.00 | | | 6 | 240.00 |
| Miles/round trip: Grading/Excavatio | 10.00 | | | 6 | 60.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.05 | 0.23 | 1.71 | 0.06 | 0.03 | 0.01 | 844.78 | 0.00 | 0.03 | 853.38 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 2.79 | 0.00 | 0.00 | 2.82 |
| Pounds per day - Grading/Excavatio | 0.01 | 0.06 | 0.43 | 0.01 | 0.01 | 0.00 | 211.20 | 0.00 | 0.01 | 213.34 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 9.29 | 0.00 | 0.00 | 9.39 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 12.08 | 0.00 | 0.00 | 12.20 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 25 | | 50 | 1,000.00 |
| No. of employees: Grading/Excavatio | 55 | | 110 | 2,200.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Grading/Excavation (grams/mile | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Grading/Excavation (grams/trip | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.13 | 2.25 | 0.22 | 0.10 | 0.04 | 0.01 | 776.62 | 0.02 | 0.01 | 779.74 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 2.56 | 0.00 | 0.00 | 2.57 |
| Pounds per day - Grading/Excavatio | 0.29 | 4.95 | 0.48 | 0.23 | 0.10 | 0.02 | 1,708.55 | 0.04 | 0.02 | 1,715.42 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.22 | 0.02 | 0.01 | 0.00 | 0.00 | 75.18 | 0.00 | 0.00 | 75.48 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.01 | 0.23 | 0.02 | 0.01 | 0.00 | 0.00 | 77.74 | 0.00 | 0.00 | 78.05 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 4 | | 40.00 | | 160.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.29 | 0.01 | 0.00 | 0.00 | 140.80 | 0.00 | 0.00 | 142.23 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.47 |
| Pounds per day - Grading/Excavatio | 0.03 | 0.15 | 1.14 | 0.04 | 0.02 | 0.01 | 563.19 | 0.00 | 0.02 | 568.92 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 24.78 | 0.00 | 0.00 | 25.03 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 25.24 | 0.00 | 0.00 | 25.50 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 5.00 | | 50.00 | 0.17 | 10.40 | 0.03 |
| Fugitive Dust - Grading/Excavatio | 2.00 | | 20.00 | 0.88 | 4.16 | 0.18 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.25 | 20.15 | 11.00 | 0.53 | 0.49 | 0.03 | 3,095.03 | 1.00 | 0.03 | 3,128.40 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.33 | 3.68 | 2.93 | 0.15 | 0.15 | 0.01 | 623.04 | 0.03 | 0.00 | 625.17 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.19 | 1.92 | 1.80 | 0.12 | 0.11 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.12 | 27.55 | 17.89 | 0.88 | 0.83 | 0.05 | 4,260.13 | 1.14 | 0.04 | 4,299.79 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 14.06 | 0.00 | 0.00 | 14.19 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Cranes | 1.46 | 7.41 | 16.37 | 0.68 | 0.63 | 0.02 | 2,186.94 | 0.71 | 0.02 | 2,210.51 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Excavators | 0.84 | 13.43 | 7.33 | 0.35 | 0.33 | 0.02 | 2,063.36 | 0.67 | 0.02 | 2,085.60 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.33 | 3.68 | 2.93 | 0.15 | 0.15 | 0.01 | 623.04 | 0.03 | 0.00 | 625.17 |
| 2.00 | | | Model Default Tie | Graders | 1.11 | 8.84 | 10.44 | 0.58 | 0.53 | 0.01 | 1,211.21 | 0.39 | 0.01 | 1,224.23 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Off-Highway Trucks | 2.10 | 13.37 | 15.98 | 0.58 | 0.53 | 0.05 | 5,090.49 | 1.65 | 0.05 | 5,145.30 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.38 | 4.02 | 3.82 | 0.20 | 0.18 | 0.01 | 598.33 | 0.19 | 0.01 | 604.79 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.36 | 3.87 | 3.38 | 0.21 | 0.19 | 0.01 | 496.04 | 0.16 | 0.00 | 501.39 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.27 | 3.74 | 2.23 | 0.12 | 0.11 | 0.01 | 556.35 | 0.18 | 0.01 | 562.34 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Rubber Tired Dozers | 3.42 | 28.03 | 34.60 | 1.58 | 1.46 | 0.04 | 3,449.07 | 1.12 | 0.03 | 3,486.12 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 4.00 | | | Model Default Tie | Skid Steer Loaders | 0.28 | 5.55 | 3.71 | 0.14 | 0.13 | 0.01 | 801.57 | 0.26 | 0.01 | 810.21 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.19 | 1.92 | 1.80 | 0.12 | 0.11 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 2.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.33 | 4.52 | 3.39 | 0.18 | 0.17 | 0.01 | 608.69 | 0.20 | 0.01 | 615.24 |
| 2.00 | | | Model Default Tie | Trenchers | 0.76 | 5.40 | 7.02 | 0.50 | 0.46 | 0.01 | 679.05 | 0.22 | 0.01 | 686.36 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 12.16 | 105.57 | 115.15 | 5.48 | 5.06 | 0.20 | 18,906.18 | 5.88 | 0.17 | 19,103.48 |
| | Grading/Excavation | | tons per phase | 0.54 | 4.65 | 5.07 | 0.24 | 0.22 | 0.01 | 831.87 | 0.26 | 0.01 | 840.55 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.54 | 4.74 | 5.13 | 0.24 | 0.23 | 0.01 | 845.93 | 0.26 | 0.01 | 854.74 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2022_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.31 | 30.06 | 20.10 | 51.06 | 1.06 | 50.00 | 11.30 | 0.90 | 10.40 | 0.06 | 6,022.32 | 1.16 | 0.08 | 6,075.14 |
| **Grading/Excavation** | 12.50 | 110.73 | 117.20 | 25.76 | 5.76 | 20.00 | 9.34 | 5.18 | 4.16 | 0.22 | 21,389.12 | 5.92 | 0.22 | 21,601.17 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 12.50 | 110.73 | 117.20 | 51.06 | 5.76 | 50.00 | 11.30 | 5.18 | 10.40 | 0.22 | 21,389.12 | 5.92 | 0.22 | 21,601.17 |
| **Total (tons/construction project)** | 0.56 | 4.97 | 5.22 | 1.30 | 0.26 | 1.05 | 0.45 | 0.23 | 0.22 | 0.01 | 960.99 | 0.26 | 0.01 | 970.50 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2022_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.07 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.87 | 0.00 | 0.00 | 18.19 |
| **Grading/Excavation** | 0.55 | 4.87 | 5.16 | 1.13 | 0.25 | 0.88 | 0.41 | 0.23 | 0.18 | 0.01 | 941.12 | 0.26 | 0.01 | 862.24 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.55 | 4.87 | 5.16 | 1.13 | 0.25 | 0.88 | 0.41 | 0.23 | 0.18 | 0.01 | 941.12 | 0.26 | 0.01 | 862.24 |
| **Total (tons/construction project)** | 0.56 | 4.97 | 5.22 | 1.30 | 0.26 | 1.05 | 0.45 | 0.23 | 0.22 | 0.01 | 960.99 | 0.26 | 0.01 | 880.43 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2022_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.30 | 30.03 | 18.96 | 51.05 | 1.05 | 50.00 | 11.30 | 0.90 | 10.40 | 0.06 | 5,992.75 | 1.16 | 0.08 | 6,044.96 |
| **Grading/Excavation** | 12.49 | 110.71 | 116.30 | 25.75 | 5.75 | 20.00 | 9.33 | 5.17 | 4.16 | 0.22 | 21,365.88 | 5.91 | 0.21 | 21,577.46 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 12.49 | 110.71 | 116.30 | 51.05 | 5.75 | 50.00 | 11.30 | 5.17 | 10.40 | 0.22 | 21,365.88 | 5.91 | 0.21 | 21,577.46 |
| **Total (tons/construction project)** | 0.56 | 4.97 | 5.18 | 1.30 | 0.26 | 1.05 | 0.45 | 0.23 | 0.22 | 0.01 | 959.87 | 0.26 | 0.01 | 969.36 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2022_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.06 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.78 | 0.00 | 0.00 | 18.10 |
| **Grading/Excavation** | 0.55 | 4.87 | 5.12 | 1.13 | 0.25 | 0.88 | 0.41 | 0.23 | 0.18 | 0.01 | 940.10 | 0.26 | 0.01 | 861.30 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.55 | 4.87 | 5.12 | 1.13 | 0.25 | 0.88 | 0.41 | 0.23 | 0.18 | 0.01 | 940.10 | 0.26 | 0.01 | 861.30 |
| **Total (tons/construction project)** | 0.56 | 4.97 | 5.18 | 1.30 | 0.26 | 1.05 | 0.45 | 0.23 | 0.22 | 0.01 | 959.87 | 0.26 | 0.01 | 879.39 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** 2022_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.57 | 35.83 | 7.87 | 50.45 | 0.45 | 50.00 | 10.73 | 0.33 | 10.40 | 0.06 | 5,992.75 | 1.16 | 0.08 | 6,044.96 |
| **Grading/Excavation** | 6.40 | 124.87 | 22.32 | 21.03 | 1.03 | 20.00 | 4.97 | 0.81 | 4.16 | 0.22 | 21,365.88 | 5.91 | 0.21 | 21,577.46 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 6.40 | 124.87 | 22.32 | 50.45 | 1.03 | 50.00 | 10.73 | 0.81 | 10.40 | 0.22 | 21,365.88 | 5.91 | 0.21 | 21,577.46 |
| **Total (tons/construction project)** | 0.29 | 5.61 | 1.01 | 1.09 | 0.05 | 1.05 | 0.25 | 0.04 | 0.22 | 0.01 | 959.87 | 0.26 | 0.01 | 969.36 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** 2022_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.12 | 0.03 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.78 | 0.00 | 0.00 | 18.10 |
| **Grading/Excavation** | 0.28 | 5.49 | 0.98 | 0.93 | 0.05 | 0.88 | 0.22 | 0.04 | 0.18 | 0.01 | 940.10 | 0.26 | 0.01 | 861.30 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.28 | 5.49 | 0.98 | 0.93 | 0.05 | 0.88 | 0.22 | 0.04 | 0.18 | 0.01 | 940.10 | 0.26 | 0.01 | 861.30 |
| **Total (tons/construction project)** | 0.29 | 5.61 | 1.01 | 1.09 | 0.05 | 1.05 | 0.25 | 0.04 | 0.22 | 0.01 | 959.87 | 0.26 | 0.01 | 879.39 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
**Version 8.1.0**

## Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgrounc
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | 2023_SRErosion_Contract2 | |
| Construction Start Year | 2023 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 4.30 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 1.30 | miles |
| Total Project Area | 13.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 83.00 |
| | Grading/Excavatior | 15.00 | 77.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavatior | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigatior | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standa |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.30 | 0.43 | 8/1/2023 | 1/1/2023 |
| Grading/Excavatior | 4.00 | 1.72 | 8/11/2023 | 1/11/2023 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.51 | | 5/13/2023 |
| Paving | 0.00 | 0.65 | | 5/13/2023 |
| **Totals (Months)** | 4 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 40.00 | | | 6 | 240.00 |
| Miles/round trip: Grading/Excavatio | 10.00 | | | 6 | 60.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.03 | 0.20 | 0.69 | 0.05 | 0.02 | 0.01 | 815.84 | 0.00 | 0.03 | 824.13 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.69 | 0.00 | 0.00 | 2.72 |
| Pounds per day - Grading/Excavatio | 0.01 | 0.05 | 0.17 | 0.01 | 0.01 | 0.00 | 203.96 | 0.00 | 0.01 | 206.03 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 8.97 | 0.00 | 0.00 | 9.07 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 11.67 | 0.00 | 0.00 | 11.79 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavatio | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 25 | | 50 | 1,000.00 |
| No. of employees: Grading/Excavatio | 55 | | 110 | 2,200.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Grading/Excavation (grams/mile | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Grading/Excavation (grams/trip | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.12 | 2.09 | 0.20 | 0.10 | 0.04 | 0.01 | 749.87 | 0.01 | 0.01 | 752.68 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 2.47 | 0.00 | 0.00 | 2.48 |
| Pounds per day - Grading/Excavatio | 0.27 | 4.59 | 0.43 | 0.23 | 0.09 | 0.02 | 1,649.71 | 0.03 | 0.02 | 1,655.90 |
| Tons per const. Period - Grading/Excavatio | 0.01 | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 72.59 | 0.00 | 0.00 | 72.86 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.01 | 0.21 | 0.02 | 0.01 | 0.00 | 0.00 | 75.06 | 0.00 | 0.00 | 75.34 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 4 | | 40.00 | | 160.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 135.97 | 0.00 | 0.00 | 137.35 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.45 |
| Pounds per day - Grading/Excavatio | 0.02 | 0.13 | 0.46 | 0.04 | 0.01 | 0.01 | 543.89 | 0.00 | 0.02 | 549.42 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 23.93 | 0.00 | 0.00 | 24.17 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 24.38 | 0.00 | 0.00 | 24.63 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | 5.00 | | 50.00 | 0.17 | 10.40 | 0.03 |
| Fugitive Dust - Grading/Excavatio | 2.00 | | 20.00 | 0.88 | 4.16 | 0.18 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Excavators | 1.17 | 20.17 | 9.59 | 0.47 | 0.43 | 0.03 | 3,095.59 | 1.00 | 0.03 | 3,128.96 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.31 | 3.67 | 2.72 | 0.13 | 0.13 | 0.01 | 623.04 | 0.03 | 0.00 | 625.12 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.18 | 1.92 | 1.71 | 0.11 | 0.10 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment**

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | pounds per day | | 2.00 | 27.56 | 16.16 | 0.79 | 0.74 | 0.05 | 4,260.69 | 1.14 | 0.04 | 4,300.29 |
| | Grubbing/Land Clearing | tons per phase | | 0.01 | 0.09 | 0.05 | 0.00 | 0.00 | 0.00 | 14.06 | 0.00 | 0.00 | 14.19 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Cranes | 1.38 | 7.18 | 14.93 | 0.62 | 0.57 | 0.02 | 2,186.90 | 0.71 | 0.02 | 2,210.47 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Excavators | 0.78 | 13.44 | 6.39 | 0.31 | 0.29 | 0.02 | 2,063.73 | 0.67 | 0.02 | 2,085.98 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.31 | 3.67 | 2.72 | 0.13 | 0.13 | 0.01 | 623.04 | 0.03 | 0.00 | 625.12 |
| 2.00 | | | Model Default Tie | Graders | 0.99 | 8.73 | 8.98 | 0.49 | 0.45 | 0.01 | 1,210.95 | 0.39 | 0.01 | 1,223.96 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Off-Highway Trucks | 2.01 | 13.09 | 14.20 | 0.51 | 0.47 | 0.05 | 5,094.09 | 1.65 | 0.05 | 5,148.92 |
| 1.00 | | | Model Default Tie | Other Construction Equipment | 0.35 | 4.00 | 3.44 | 0.18 | 0.16 | 0.01 | 598.26 | 0.19 | 0.01 | 604.72 |
| 2.00 | | | Model Default Tie | Other General Industrial Equipment | 0.32 | 3.85 | 3.09 | 0.18 | 0.16 | 0.01 | 496.04 | 0.16 | 0.00 | 501.39 |
| 1.00 | | | Model Default Tie | Other Material Handling Equipment | 0.26 | 3.74 | 2.08 | 0.11 | 0.10 | 0.01 | 556.35 | 0.18 | 0.01 | 562.34 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tie | Rubber Tired Dozers | 3.21 | 26.53 | 31.72 | 1.45 | 1.33 | 0.04 | 3,450.20 | 1.12 | 0.03 | 3,487.27 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tie | Signal Boards | 0.34 | 1.81 | 2.16 | 0.08 | 0.08 | 0.00 | 295.88 | 0.03 | 0.00 | 297.39 |
| 4.00 | | | Model Default Tie | Skid Steer Loaders | 0.26 | 5.54 | 3.46 | 0.12 | 0.11 | 0.01 | 801.95 | 0.26 | 0.01 | 810.59 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.18 | 1.92 | 1.71 | 0.11 | 0.10 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 2.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.31 | 4.51 | 3.10 | 0.15 | 0.14 | 0.01 | 609.37 | 0.20 | 0.01 | 615.93 |
| 2.00 | | | Model Default Tie | Trenchers | 0.72 | 5.38 | 6.72 | 0.47 | 0.43 | 0.01 | 679.57 | 0.22 | 0.01 | 686.88 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Grading/Excavation | pounds per day | 11.41 | 103.38 | 104.69 | 4.92 | 4.55 | 0.20 | 18,912.48 | 5.88 | 0.17 | 19,109.78 |
| | Grading/Excavation | tons per phase | 0.50 | 4.55 | 4.61 | 0.22 | 0.20 | 0.01 | 832.15 | 0.26 | 0.01 | 840.83 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.51 | 4.64 | 4.66 | 0.22 | 0.20 | 0.01 | 846.21 | 0.26 | 0.01 | 855.02 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2023_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.16 | 29.87 | 17.17 | 50.96 | 0.96 | 50.00 | 11.21 | 0.81 | 10.40 | 0.06 | 5,962.36 | 1.16 | 0.08 | 6,014.46 |
| **Grading/Excavation** | 11.71 | 108.15 | 105.76 | 25.20 | 5.20 | 20.00 | 8.82 | 4.66 | 4.16 | 0.22 | 21,310.04 | 5.91 | 0.21 | 21,521.14 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 11.71 | 108.15 | 105.76 | 50.96 | 5.20 | 50.00 | 11.21 | 4.66 | 10.40 | 0.22 | 21,310.04 | 5.91 | 0.21 | 21,521.14 |
| **Total (tons/construction project)** | 0.52 | 4.86 | 4.71 | 1.28 | 0.23 | 1.05 | 0.43 | 0.21 | 0.22 | 0.01 | 957.32 | 0.26 | 0.01 | 966.78 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2023_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.06 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.68 | 0.00 | 0.00 | 18.01 |
| **Grading/Excavation** | 0.52 | 4.76 | 4.65 | 1.11 | 0.23 | 0.88 | 0.39 | 0.21 | 0.18 | 0.01 | 937.64 | 0.26 | 0.01 | 859.05 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.52 | 4.76 | 4.65 | 1.11 | 0.23 | 0.88 | 0.39 | 0.21 | 0.18 | 0.01 | 937.64 | 0.26 | 0.01 | 859.05 |
| **Total (tons/construction project)** | 0.52 | 4.86 | 4.71 | 1.28 | 0.23 | 1.05 | 0.43 | 0.21 | 0.22 | 0.01 | 957.32 | 0.26 | 0.01 | 877.06 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2023_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.16 | 29.87 | 17.10 | 50.96 | 0.96 | 50.00 | 11.21 | 0.81 | 10.40 | 0.06 | 5,961.27 | 1.16 | 0.08 | 6,013.06 |
| **Grading/Excavation** | 11.71 | 108.15 | 105.70 | 25.20 | 5.20 | 20.00 | 8.82 | 4.66 | 4.16 | 0.22 | 21,309.18 | 5.91 | 0.21 | 21,520.04 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 11.71 | 108.15 | 105.70 | 50.96 | 5.20 | 50.00 | 11.21 | 4.66 | 10.40 | 0.22 | 21,309.18 | 5.91 | 0.21 | 21,520.04 |
| **Total (tons/construction project)** | 0.52 | 4.86 | 4.71 | 1.28 | 0.23 | 1.05 | 0.43 | 0.21 | 0.22 | 0.01 | 957.28 | 0.26 | 0.01 | 966.72 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2023_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.06 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.67 | 0.00 | 0.00 | 18.00 |
| **Grading/Excavation** | 0.52 | 4.76 | 4.65 | 1.11 | 0.23 | 0.88 | 0.39 | 0.20 | 0.18 | 0.01 | 937.60 | 0.26 | 0.01 | 859.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.52 | 4.76 | 4.65 | 1.11 | 0.23 | 0.88 | 0.39 | 0.20 | 0.18 | 0.01 | 937.60 | 0.26 | 0.01 | 859.01 |
| **Total (tons/construction project)** | 0.52 | 4.86 | 4.71 | 1.28 | 0.23 | 1.05 | 0.43 | 0.21 | 0.22 | 0.01 | 957.28 | 0.26 | 0.01 | 877.01 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> 2023_SRErosion_Contract2

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.56 | 35.67 | 7.73 | 50.45 | 0.45 | 50.00 | 10.73 | 0.33 | 10.40 | 0.06 | 5,961.27 | 1.16 | 0.08 | 6,013.06 |
| **Grading/Excavation** | 6.38 | 124.50 | 22.18 | 21.03 | 1.03 | 20.00 | 4.97 | 0.81 | 4.16 | 0.22 | 21,309.18 | 5.91 | 0.21 | 21,520.04 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 6.38 | 124.50 | 22.18 | 50.45 | 1.03 | 50.00 | 10.73 | 0.81 | 10.40 | 0.22 | 21,309.18 | 5.91 | 0.21 | 21,520.04 |
| **Total (tons/construction project)** | 0.29 | 5.60 | 1.00 | 1.09 | 0.05 | 1.05 | 0.25 | 0.04 | 0.22 | 0.01 | 957.28 | 0.26 | 0.01 | 966.72 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 13 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 83 | 0 | 240 | 0 | 1,000 | 40 |
| Grading/Excavation | 77 | 0 | 60 | 0 | 2,200 | 160 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> 2023_SRErosion_Contract2

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.12 | 0.03 | 0.17 | 0.00 | 0.17 | 0.04 | 0.00 | 0.03 | 0.00 | 19.67 | 0.00 | 0.00 | 18.00 |
| **Grading/Excavation** | 0.28 | 5.48 | 0.98 | 0.93 | 0.05 | 0.88 | 0.22 | 0.04 | 0.18 | 0.01 | 937.60 | 0.26 | 0.01 | 859.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.28 | 5.48 | 0.98 | 0.93 | 0.05 | 0.88 | 0.22 | 0.04 | 0.18 | 0.01 | 937.60 | 0.26 | 0.01 | 859.01 |
| **Total (tons/construction project)** | 0.29 | 5.60 | 1.00 | 1.09 | 0.05 | 1.05 | 0.25 | 0.04 | 0.22 | 0.01 | 957.28 | 0.26 | 0.01 | 877.01 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

*Seepage and Stability*

Reach D

Magpie Creek

Sacramento River and NAS

## Road Construction Emissions Model
## Data Entry Worksheet

**Version 8.1.0**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | Reach D Berm | |
| Construction Start Year | 2019 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 2.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.09 | miles |
| Total Project Area | 3.50 | acres |
| Maximum Area Disturbed/Day | 0.25 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | | | |
| | Grading/Excavation | 13.00 | 542.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | 2010 and Newer On-road Vehicles Fleet | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | Tier 4 Equipment | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). |
| Will all off-road equipment be tier 4? | All Tier 4 Equipment | Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 0.20 | | 1/1/2019 |
| Grading/Excavation | 2.00 | 0.80 | | 1/1/2019 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.70 | | 3/3/2019 |
| Paving | 0.00 | 0.30 | | 3/3/2019 |
| **Totals (Months)** | 2 | | | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 40.00 | | 42 | 42 | 1680.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **2010+ Model Year Mitigation Option Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.07 | 0.36 | 1.48 | 0.10 | 0.04 | 0.02 | 1,576.79 | 0.00 | 0.05 | 1,592.32 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.25 | 1.34 | 5.47 | 0.38 | 0.15 | 0.06 | 5,840.06 | 0.01 | 0.19 | 5,897.60 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 128.48 | 0.00 | 0.00 | 129.75 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 128.48 | 0.00 | 0.00 | 129.75 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **2010+ Model Year Mitigation Option Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.07 | 0.36 | 1.48 | 0.10 | 0.04 | 0.02 | 1,576.79 | 0.00 | 0.05 | 1,592.32 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 10 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 15 | | 30 | 300.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 1.19 | 0.13 | 0.05 | 0.02 | 0.00 | 381.71 | 0.01 | 0.01 | 383.53 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 1.08 | 2.86 | 0.23 | 0.00 | 0.00 | 0.00 | 85.97 | 0.01 | 0.01 | 89.17 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.09 | 0.98 | 0.10 | 0.03 | 0.01 | 0.00 | 258.14 | 0.01 | 0.00 | 259.56 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 5.68 | 0.00 | 0.00 | 5.71 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 5.68 | 0.00 | 0.00 | 5.71 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | | | | | 0.00 |
| Grading/Excavation - Exhaust | | | 3.00 | | 0.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| 2010+ Model Year Mitigation Option Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.07 | 0.36 | 1.48 | 0.10 | 0.04 | 0.02 | 1,576.79 | 0.00 | 0.05 | 1,592.32 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 2.50 | 0.06 | 0.52 | 0.01 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Tier 4 | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Tier 4 | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Tier 4 | Excavators | 0.16 | 4.04 | 0.33 | 0.02 | 0.02 | 0.01 | 527.30 | 0.17 | 0.00 | 532.86 |
| | | | Tier 4 | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Tier 4 | Plate Compactors | 0.02 | 0.36 | 0.32 | 0.02 | 0.02 | 0.00 | 34.48 | 0.00 | 0.00 | 34.65 |
| | | | Tier 4 | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Tier 4 | Rubber Tired Dozers | 0.27 | 4.68 | 0.54 | 0.03 | 0.02 | 0.01 | 882.19 | 0.28 | 0.01 | 891.46 |
| | | | Tier 4 | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 0.45 | 9.08 | 1.19 | 0.06 | 0.06 | 0.01 | 1,443.97 | 0.45 | 0.01 | 1,458.97 |
| | Grading/Excavation | | tons per phase | 0.01 | 0.20 | 0.03 | 0.00 | 0.00 | 0.00 | 31.77 | 0.01 | 0.00 | 32.10 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Tier 4 | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Tier 4 | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Tier 4 | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.01 | 0.20 | 0.03 | 0.00 | 0.00 | 0.00 | 31.77 | 0.01 | 0.00 | 32.10 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Reach D Berm

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.79 | 11.40 | 6.76 | 2.97 | 0.47 | 2.50 | 0.74 | 0.22 | 0.52 | 0.07 | 7,542.17 | 0.47 | 0.21 | 7,616.13 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 0.79 | 11.40 | 6.76 | 2.97 | 0.47 | 2.50 | 0.74 | 0.22 | 0.52 | 0.07 | 7,542.17 | 0.47 | 0.21 | 7,616.13 |
| **Total (tons/construction project)** | 0.02 | 0.25 | 0.15 | 0.07 | 0.01 | 0.06 | 0.02 | 0.00 | 0.01 | 0.00 | 165.93 | 0.01 | 0.00 | 167.55 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2019 |
| Project Length (months) -> | 2 |
| Total Project Area (acres) -> | 4 |
| Maximum Area Disturbed/Day (acres) -> | 0 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 542 | 0 | 1,680 | 0 | 300 | 0 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Reach D Berm

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.02 | 0.25 | 0.15 | 0.07 | 0.01 | 0.06 | 0.02 | 0.00 | 0.01 | 0.00 | 165.93 | 0.01 | 0.00 | 152.00 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.02 | 0.25 | 0.15 | 0.07 | 0.01 | 0.06 | 0.02 | 0.00 | 0.01 | 0.00 | 165.93 | 0.01 | 0.00 | 152.00 |
| **Total (tons/construction project)** | 0.02 | 0.25 | 0.15 | 0.07 | 0.01 | 0.06 | 0.02 | 0.00 | 0.01 | 0.00 | 165.93 | 0.01 | 0.00 | 152.00 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | Beach Stone Lake Mitigation Site | |
| Construction Start Year | 2019 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 2.00 | months |
| Working Days per Month | 20.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 1 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.33 | miles |
| Total Project Area | 30.00 | acres |
| Maximum Area Disturbed/Day | 8.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 0.00 | | |
| | Grading/Excavation | 0.00 | | |
| | Drainage/Utilities/Sub-Grade | 0.00 | | |
| | Paving | 0.00 | | |
| Asphalt | Grubbing/Land Clearing | 0.00 | | |
| | Grading/Excavation | 0.00 | | |
| | Drainage/Utilities/Sub-Grade | 0.00 | | |
| | Paving | 0.00 | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 0.20 | | 1/1/2019 |
| Grading/Excavation | 4.00 | 0.80 | | 1/1/2019 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.70 | | 5/3/2019 |
| Paving | 0.00 | 0.30 | | 5/3/2019 |
| **Totals (Months)** | 4 | | | |

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Paving | 0.00 | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.07 | 0.36 | 1.48 | 0.10 | 0.04 | 0.02 | 1,576.79 | 0.00 | 0.05 | 1,592.32 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.07 | 0.36 | 1.48 | 0.10 | 0.04 | 0.02 | 1,576.79 | 0.00 | 0.05 | 1,592.32 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | | | | |
| No. of employees: Grubbing/Land Clearing | | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 9 | | 0 | 0.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 1.19 | 0.13 | 0.05 | 0.02 | 0.00 | 381.71 | 0.01 | 0.01 | 383.53 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 1.08 | 2.86 | 0.23 | 0.00 | 0.00 | 0.00 | 85.97 | 0.01 | 0.01 | 89.17 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | | | | | 0.00 |
| Grading/Excavation - Exhaust | 1 | | 10.00 | | 10.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.07 | 0.36 | 1.48 | 0.10 | 0.04 | 0.02 | 1,576.79 | 0.00 | 0.05 | 1,592.32 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 34.76 | 0.00 | 0.00 | 35.10 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.39 | 0.00 | 0.00 | 1.40 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.39 | 0.00 | 0.00 | 1.40 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | 8.00 | | 80.00 | 3.20 | 16.64 | 0.67 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Crawler Tractors | 0.60 | 2.53 | 7.84 | 0.30 | 0.27 | 0.01 | 762.62 | 0.24 | 0.01 | 770.66 |
| | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 0.60 | 2.53 | 7.84 | 0.30 | 0.27 | 0.01 | 762.62 | 0.24 | 0.01 | 770.66 |
| | Grading/Excavation | | tons per phase | 0.02 | 0.10 | 0.31 | 0.01 | 0.01 | 0.00 | 30.50 | 0.01 | 0.00 | 30.83 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option: Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment** If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

| Number of Vehicles | Equipment Tier | Type | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | pounds per day | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | tons per phase | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.02 | 0.10 | 0.31 | 0.01 | 0.01 | 0.00 | 30.50 | 0.01 | 0.00 | 30.83 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Beach Stone Lake Mitigation Site

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.60 | 2.54 | 7.88 | 80.30 | 0.30 | 80.00 | 16.91 | 0.27 | 16.64 | 0.01 | 797.38 | 0.24 | 0.01 | 805.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 0.60 | 2.54 | 7.88 | 80.30 | 0.30 | 80.00 | 16.91 | 0.27 | 16.64 | 0.01 | 797.38 | 0.24 | 0.01 | 805.77 |
| **Total (tons/construction project)** | 0.02 | 0.10 | 0.32 | 3.21 | 0.01 | 3.20 | 0.68 | 0.01 | 0.67 | 0.00 | 31.90 | 0.01 | 0.00 | 32.23 |

| Notes: | |
|---|---|
| Project Start Year -> | 2019 |
| Project Length (months) -> | 2 |
| Total Project Area (acres) -> | 30 |
| Maximum Area Disturbed/Day (acres) -> | 8 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 0 | 0 | 0 | 0 | 0 | 10 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Beach Stone Lake Mitigation Site

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.02 | 0.10 | 0.32 | 3.21 | 0.01 | 3.20 | 0.68 | 0.01 | 0.67 | 0.00 | 31.90 | 0.01 | 0.00 | 29.24 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.02 | 0.10 | 0.32 | 3.21 | 0.01 | 3.20 | 0.68 | 0.01 | 0.67 | 0.00 | 31.90 | 0.01 | 0.00 | 29.24 |
| **Total (tons/construction project)** | 0.02 | 0.10 | 0.32 | 3.21 | 0.01 | 3.20 | 0.68 | 0.01 | 0.67 | 0.00 | 31.90 | 0.01 | 0.00 | 29.24 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | Magpie Creek | |
| Construction Start Year | 2022 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 3.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.59 | miles |
| Total Project Area | 4.00 | acres |
| Maximum Area Disturbed/Day | 1.00 | acre |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 0.00 |
| | Grading/Excavation | 15.00 | 2705.00 | 150.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | 15.00 | 0.00 | 0.00 |
| | Grading/Excavation | 15.00 | 450.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 0.30 | | 1/1/2022 |
| Grading/Excavation | 3.00 | 1.35 | 4/15/2022 | 1/1/2022 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.90 | | 4/3/2022 |
| Paving | 0.00 | 0.45 | | 4/3/2022 |
| **Totals (Months)** | 3 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used. | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 97.00 | | | 191 | 18527.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 4.00 | 17.53 | 132.03 | 4.59 | 2.02 | 0.62 | 65,213.72 | 0.19 | 2.21 | 65,877.33 |
| Tons per const. Period - Grading/Excavation | 0.13 | 0.58 | 4.36 | 0.15 | 0.07 | 0.02 | 2,152.05 | 0.01 | 0.07 | 2,173.95 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.13 | 0.58 | 4.36 | 0.15 | 0.07 | 0.02 | 2,152.05 | 0.01 | 0.07 | 2,173.95 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 100.00 | | | 30 | 3000.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.65 | 2.84 | 21.38 | 0.74 | 0.33 | 0.10 | 10,559.79 | 0.03 | 0.36 | 10,667.24 |
| Tons per const. Period - Grading/Excavation | 0.02 | 0.09 | 0.71 | 0.02 | 0.01 | 0.00 | 348.47 | 0.00 | 0.01 | 352.02 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.02 | 0.09 | 0.71 | 0.02 | 0.01 | 0.00 | 348.47 | 0.00 | 0.01 | 352.02 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 0 | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.40 | 6.75 | 0.66 | 0.31 | 0.13 | 0.02 | 2,329.85 | 0.05 | 0.03 | 2,339.21 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.22 | 0.02 | 0.01 | 0.00 | 0.00 | 76.88 | 0.00 | 0.00 | 77.19 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.22 | 0.02 | 0.01 | 0.00 | 0.00 | 76.88 | 0.00 | 0.00 | 77.19 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 0 | | 0.00 | | 0.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.01 | 0.04 | 0.29 | 0.01 | 0.00 | 0.00 | 140.80 | 0.00 | 0.00 | 142.23 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 4.65 | 0.00 | 0.00 | 4.69 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 4.65 | 0.00 | 0.00 | 4.69 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 10.00 | 0.33 | 2.08 | 0.07 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.06 | 0.31 | 0.37 | 0.01 | 0.01 | 0.00 | 50.52 | 0.01 | 0.00 | 50.77 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Cranes | 0.36 | 1.85 | 4.09 | 0.17 | 0.16 | 0.01 | 546.73 | 0.18 | 0.00 | 552.63 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.42 | 6.72 | 3.67 | 0.18 | 0.16 | 0.01 | 1,031.68 | 0.33 | 0.01 | 1,042.80 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.33 | 3.68 | 2.93 | 0.15 | 0.15 | 0.01 | 623.04 | 0.03 | 0.00 | 625.17 |
| 1.00 | | | Model Default Tier | Graders | 0.56 | 4.42 | 5.22 | 0.29 | 0.27 | 0.01 | 605.60 | 0.20 | 0.01 | 612.11 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Off-Highway Trucks | 1.05 | 6.68 | 7.99 | 0.29 | 0.27 | 0.03 | 2,545.25 | 0.82 | 0.02 | 2,572.65 |
| 2.00 | | | Model Default Tier | Other Construction Equipment | 0.75 | 8.04 | 7.63 | 0.40 | 0.37 | 0.01 | 1,196.66 | 0.39 | 0.01 | 1,209.59 |
| 2.00 | | | Model Default Tier | Other General Industrial Equipment | 0.36 | 3.87 | 3.38 | 0.21 | 0.19 | 0.01 | 496.04 | 0.16 | 0.00 | 501.39 |
| 10.00 | | | Model Default Tier | Other Material Handling Equipment | 2.66 | 37.42 | 22.31 | 1.21 | 1.11 | 0.06 | 5,563.46 | 1.80 | 0.05 | 5,623.44 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Rollers | 0.34 | 3.77 | 3.49 | 0.20 | 0.19 | 0.01 | 514.56 | 0.17 | 0.00 | 520.10 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Rubber Tired Dozers | 1.71 | 14.01 | 17.30 | 0.79 | 0.73 | 0.02 | 1,724.53 | 0.56 | 0.02 | 1,743.06 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Scrapers | 0.81 | 6.29 | 8.82 | 0.34 | 0.32 | 0.02 | 1,450.26 | 0.47 | 0.01 | 1,465.90 |
| 3.00 | | | Model Default Tier | Signal Boards | 0.17 | 0.90 | 1.08 | 0.04 | 0.04 | 0.00 | 147.94 | 0.02 | 0.00 | 148.69 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Surfacing Equipment | 0.18 | 1.56 | 2.09 | 0.08 | 0.07 | 0.01 | 632.36 | 0.20 | 0.01 | 639.18 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.19 | 1.92 | 1.80 | 0.12 | 0.11 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.33 | 4.52 | 3.39 | 0.18 | 0.17 | 0.01 | 608.69 | 0.20 | 0.01 | 615.24 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Welders | 0.55 | 3.39 | 2.93 | 0.13 | 0.13 | 0.01 | 414.96 | 0.05 | 0.00 | 417.23 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 10.83 | 109.35 | 98.48 | 4.79 | 4.44 | 0.19 | 18,398.45 | 5.65 | 0.16 | 18,588.79 |
| | Grading/Excavation | | tons per phase | 0.36 | 3.61 | 3.25 | 0.16 | 0.15 | 0.01 | 607.15 | 0.19 | 0.01 | 613.43 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.36 | 3.61 | 3.25 | 0.16 | 0.15 | 0.01 | 607.15 | 0.19 | 0.01 | 613.43 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Magpie Creek

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 15.88 | 136.50 | 252.83 | 20.44 | 10.44 | 10.00 | 9.00 | 6.92 | 2.08 | 0.94 | 96,642.60 | 5.92 | 2.77 | 97,614.80 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 15.88 | 136.50 | 252.83 | 20.44 | 10.44 | 10.00 | 9.00 | 6.92 | 2.08 | 0.94 | 96,642.60 | 5.92 | 2.77 | 97,614.80 |
| **Total (tons/construction project)** | 0.52 | 4.50 | 8.34 | 0.67 | 0.34 | 0.33 | 0.30 | 0.23 | 0.07 | 0.03 | 3,189.21 | 0.20 | 0.09 | 3,221.29 |

| Notes: | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 4 |
| Maximum Area Disturbed/Day (acres) -> | 1 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 2,855 | 450 | 18,527 | 3,000 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Magpie Creek

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.52 | 4.50 | 8.34 | 0.67 | 0.34 | 0.33 | 0.30 | 0.23 | 0.07 | 0.03 | 3,189.21 | 0.20 | 0.09 | 2,922.33 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.52 | 4.50 | 8.34 | 0.67 | 0.34 | 0.33 | 0.30 | 0.23 | 0.07 | 0.03 | 3189.21 | 0.20 | 0.09 | 2,922.33 |
| **Total (tons/construction project)** | 0.52 | 4.50 | 8.34 | 0.67 | 0.34 | 0.33 | 0.30 | 0.23 | 0.07 | 0.03 | 3189.21 | 0.20 | 0.09 | 2,922.33 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Magpie Creek

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 14.41 | 133.77 | 165.24 | 19.98 | 9.98 | 10.00 | 8.55 | 6.47 | 2.08 | 0.92 | 94,365.11 | 5.85 | 2.61 | 95,290.40 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 14.41 | 133.77 | 165.24 | 19.98 | 9.98 | 10.00 | 8.55 | 6.47 | 2.08 | 0.92 | 94,365.11 | 5.85 | 2.61 | 95,290.40 |
| **Total (tons/construction project)** | 0.48 | 4.41 | 5.45 | 0.66 | 0.33 | 0.33 | 0.28 | 0.21 | 0.07 | 0.03 | 3,114.05 | 0.19 | 0.09 | 3,144.58 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 4 |
| Maximum Area Disturbed/Day (acres) -> | 1 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 2,855 | 450 | 18,527 | 3,000 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Magpie Creek

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.48 | 4.41 | 5.45 | 0.66 | 0.33 | 0.33 | 0.28 | 0.21 | 0.07 | 0.03 | 3,114.05 | 0.19 | 0.09 | 2,852.75 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.48 | 4.41 | 5.45 | 0.66 | 0.33 | 0.33 | 0.28 | 0.21 | 0.07 | 0.03 | 3114.05 | 0.19 | 0.09 | 2,852.75 |
| **Total (tons/construction project)** | 0.48 | 4.41 | 5.45 | 0.66 | 0.33 | 0.33 | 0.28 | 0.21 | 0.07 | 0.03 | 3114.05 | 0.19 | 0.09 | 2,852.75 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Magpie Creek

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 9.43 | 150.30 | 83.82 | 15.87 | 5.87 | 10.00 | 4.75 | 2.67 | 2.08 | 0.92 | 94,365.11 | 5.85 | 2.61 | 95,290.40 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 9.43 | 150.30 | 83.82 | 15.87 | 5.87 | 10.00 | 4.75 | 2.67 | 2.08 | 0.92 | 94,365.11 | 5.85 | 2.61 | 95,290.40 |
| **Total (tons/construction project)** | 0.31 | 4.96 | 2.77 | 0.52 | 0.19 | 0.33 | 0.16 | 0.09 | 0.07 | 0.03 | 3,114.05 | 0.19 | 0.09 | 3,144.58 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 3 |
| Total Project Area (acres) -> | 4 |
| Maximum Area Disturbed/Day (acres) -> | 1 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 2,855 | 450 | 18,527 | 3,000 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Magpie Creek

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.31 | 4.96 | 2.77 | 0.52 | 0.19 | 0.33 | 0.16 | 0.09 | 0.07 | 0.03 | 3,114.05 | 0.19 | 0.09 | 2,852.75 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.31 | 4.96 | 2.77 | 0.52 | 0.19 | 0.33 | 0.16 | 0.09 | 0.07 | 0.03 | 3114.05 | 0.19 | 0.09 | 2,852.75 |
| **Total (tons/construction project)** | 0.31 | 4.96 | 2.77 | 0.52 | 0.19 | 0.33 | 0.16 | 0.09 | 0.07 | 0.03 | 3114.05 | 0.19 | 0.09 | 2,852.75 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
**Version 8.1.0**

## Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 1: 2020 | Berms and Relief Wells |
| Construction Start Year | 2020 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 4.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.23 | miles |
| Total Project Area | 8.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | | | |
| | Grading/Excavation | 15.00 | 208.00 | 54.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 0.40 | | 1/1/2020 |
| Grading/Excavation | 4.00 | 1.80 | 5/30/2020 | 1/1/2020 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.20 | | 5/2/2020 |
| Paving | 0.00 | 0.60 | | 5/2/2020 |
| **Totals (Months)** | 4 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used. | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 34.00 | | | 18 | 612.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.14 | 0.59 | 5.57 | 0.16 | 0.07 | 0.02 | 2,201.55 | 0.01 | 0.07 | 2,223.95 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.03 | 0.25 | 0.01 | 0.00 | 0.00 | 96.87 | 0.00 | 0.00 | 97.85 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.03 | 0.25 | 0.01 | 0.00 | 0.00 | 96.87 | 0.00 | 0.00 | 97.85 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 0 | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 30 | | 60 | 1,200.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 1.08 | 0.11 | 0.05 | 0.02 | 0.00 | 371.46 | 0.01 | 0.00 | 373.08 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 1.00 | 2.55 | 0.20 | 0.00 | 0.00 | 0.00 | 84.03 | 0.01 | 0.01 | 86.84 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.19 | 3.18 | 0.33 | 0.12 | 0.05 | 0.01 | 993.84 | 0.02 | 0.01 | 998.48 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.14 | 0.01 | 0.01 | 0.00 | 0.00 | 43.73 | 0.00 | 0.00 | 43.93 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.14 | 0.01 | 0.01 | 0.00 | 0.00 | 43.73 | 0.00 | 0.00 | 43.93 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | | | | | 0.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.01 | 0.04 | 0.36 | 0.01 | 0.00 | 0.00 | 143.89 | 0.00 | 0.00 | 145.36 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 6.33 | 0.00 | 0.00 | 6.40 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 6.33 | 0.00 | 0.00 | 6.40 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 50.00 | 2.20 | 10.40 | 0.46 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Bore/Drill Rigs | 1.29 | 9.70 | 16.42 | 0.47 | 0.44 | 0.04 | 4,240.28 | 1.37 | 0.04 | 4,286.14 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.63 | 8.43 | 6.22 | 0.30 | 0.28 | 0.01 | 1,289.86 | 0.42 | 0.01 | 1,303.77 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.50 | 4.63 | 4.35 | 0.25 | 0.25 | 0.01 | 778.79 | 0.04 | 0.01 | 781.64 |
| 4.00 | | | Model Default Tier | Graders | 3.59 | 22.91 | 34.99 | 1.95 | 1.80 | 0.03 | 3,024.69 | 0.98 | 0.03 | 3,057.20 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.58 | 14.38 | 15.80 | 1.01 | 0.93 | 0.02 | 1,929.32 | 0.62 | 0.02 | 1,950.11 |
| 2.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.33 | 5.74 | 4.32 | 0.18 | 0.17 | 0.01 | 834.20 | 0.27 | 0.01 | 843.19 |
| 4.00 | | | Model Default Tier | Rubber Tired Dozers | 4.81 | 39.68 | 50.74 | 2.33 | 2.14 | 0.04 | 4,315.35 | 1.40 | 0.04 | 4,361.71 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.34 | 2.48 | 2.91 | 0.23 | 0.22 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.53 | 5.76 | 5.32 | 0.34 | 0.31 | 0.01 | 759.67 | 0.25 | 0.01 | 767.85 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 14.03 | 115.97 | 143.77 | 7.17 | 6.62 | 0.19 | 17,849.74 | 5.48 | 0.16 | 18,034.37 |
| | Grading/Excavation | | tons per phase | 0.62 | 5.10 | 6.33 | 0.32 | 0.29 | 0.01 | 785.39 | 0.24 | 0.01 | 793.51 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.62 | 5.10 | 6.33 | 0.32 | 0.29 | 0.01 | 785.39 | 0.24 | 0.01 | 793.51 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 1: 2020 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 14.37 | 119.78 | 150.03 | 57.46 | 7.46 | 50.00 | 17.15 | 6.75 | 10.40 | 0.22 | 21,189.03 | 5.52 | 0.25 | 21,402.16 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 14.37 | 119.78 | 150.03 | 57.46 | 7.46 | 50.00 | 17.15 | 6.75 | 10.40 | 0.22 | 21,189.03 | 5.52 | 0.25 | 21,402.16 |
| **Total (tons/construction project)** | 0.63 | 5.27 | 6.60 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 932.32 | 0.24 | 0.01 | 941.70 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 8 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 262 | 0 | 612 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 1: 2020 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.63 | 5.27 | 6.60 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 932.32 | 0.24 | 0.01 | 854.30 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.63 | 5.27 | 6.60 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 932.32 | 0.24 | 0.01 | 854.30 |
| **Total (tons/construction project)** | 0.63 | 5.27 | 6.60 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 932.32 | 0.24 | 0.01 | 854.30 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 1: 2020 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 14.32 | 119.68 | 146.20 | 57.44 | 7.44 | 50.00 | 17.13 | 6.73 | 10.40 | 0.22 | 21,102.20 | 5.51 | 0.25 | 21,313.73 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 14.32 | 119.68 | 146.20 | 57.44 | 7.44 | 50.00 | 17.13 | 6.73 | 10.40 | 0.22 | 21,102.20 | 5.51 | 0.25 | 21,313.73 |
| **Total (tons/construction project)** | 0.63 | 5.27 | 6.43 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 937.80 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 8 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 262 | 0 | 612 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 1: 2020 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.63 | 5.27 | 6.43 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 850.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.63 | 5.27 | 6.43 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 850.77 |
| **Total (tons/construction project)** | 0.63 | 5.27 | 6.43 | 2.53 | 0.33 | 2.20 | 0.75 | 0.30 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 850.77 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 1: 2020 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 5.98 | 116.15 | 18.83 | 51.02 | 1.02 | 50.00 | 11.20 | 0.80 | 10.40 | 0.22 | 21,102.20 | 5.51 | 0.25 | 21,313.73 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 5.98 | 116.15 | 18.83 | 51.02 | 1.02 | 50.00 | 11.20 | 0.80 | 10.40 | 0.22 | 21,102.20 | 5.51 | 0.25 | 21,313.73 |
| **Total (tons/construction project)** | 0.26 | 5.11 | 0.83 | 2.24 | 0.04 | 2.20 | 0.49 | 0.04 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 937.80 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 8 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 262 | 0 | 612 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 1: 2020 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.26 | 5.11 | 0.83 | 2.24 | 0.04 | 2.20 | 0.49 | 0.04 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 850.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.26 | 5.11 | 0.83 | 2.24 | 0.04 | 2.20 | 0.49 | 0.04 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 850.77 |
| **Total (tons/construction project)** | 0.26 | 5.11 | 0.83 | 2.24 | 0.04 | 2.20 | 0.49 | 0.04 | 0.46 | 0.01 | 928.50 | 0.24 | 0.01 | 850.77 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 1: 2020 | Vegetation and Cutoff Wall |
| Construction Start Year | 2020 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 7.80 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 2.65 | miles |
| Total Project Area | 64.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 40.00 |
| | Grading/Excavation | 15.00 | 1958.00 | 54.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.80 | 0.78 | 4/15/2020 | 1/1/2020 |
| Grading/Excavation | 7.00 | 3.51 | 5/10/2020 | 1/26/2020 |
| Drainage/Utilities/Sub-Grade | 0.00 | 2.34 | | 8/26/2020 |
| Paving | 0.00 | 1.17 | | 8/26/2020 |
| **Totals (Months)** | 8 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used. | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| Soil Hauling Emissions | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 26.00 | | | 3 | 78.00 |
| Miles/round trip: Grading/Excavation | 41.00 | | | 135 | 5535.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Grading/Excavation (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.02 | 0.07 | 0.71 | 0.02 | 0.01 | 0.00 | 280.59 | 0.00 | 0.01 | 283.44 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 2.47 | 0.00 | 0.00 | 2.49 |
| Pounds per day - Grading/Excavation | 1.29 | 5.32 | 50.38 | 1.43 | 0.65 | 0.19 | 19,911.10 | 0.06 | 0.67 | 20,113.64 |
| Tons per const. Period - Grading/Excavation | 0.10 | 0.41 | 3.88 | 0.11 | 0.05 | 0.01 | 1,533.15 | 0.00 | 0.05 | 1,548.75 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.10 | 0.41 | 3.89 | 0.11 | 0.05 | 0.01 | 1,535.62 | 0.00 | 0.05 | 1,551.24 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| Asphalt Hauling Emissions | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Grading/Excavation (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 14 | | 28 | 560.00 |
| No. of employees: Grading/Excavation | 100 | | 200 | 4,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.02 | 1.08 | 0.11 | 0.05 | 0.02 | 0.00 | 371.46 | 0.01 | 0.00 | 373.08 |
| Grading/Excavation (grams/mile) | 0.02 | 1.08 | 0.11 | 0.05 | 0.02 | 0.00 | 371.46 | 0.01 | 0.00 | 373.08 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 1.00 | 2.55 | 0.20 | 0.00 | 0.00 | 0.00 | 84.03 | 0.01 | 0.01 | 86.84 |
| Grading/Excavation (grams/trip) | 1.00 | 2.55 | 0.20 | 0.00 | 0.00 | 0.00 | 84.03 | 0.01 | 0.01 | 86.84 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.09 | 1.49 | 0.15 | 0.06 | 0.02 | 0.00 | 463.79 | 0.01 | 0.01 | 465.96 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 4.08 | 0.00 | 0.00 | 4.10 |
| Pounds per day - Grading/Excavation | 0.62 | 10.61 | 1.09 | 0.41 | 0.17 | 0.03 | 3,312.80 | 0.08 | 0.05 | 3,328.28 |
| Tons per const. Period - Grading/Excavation | 0.05 | 0.82 | 0.08 | 0.03 | 0.01 | 0.00 | 255.09 | 0.01 | 0.00 | 256.28 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.05 | 0.83 | 0.09 | 0.03 | 0.01 | 0.00 | 259.17 | 0.01 | 0.00 | 260.38 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 2 | | 40.00 | | 80.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Grading/Excavation (grams/mile) | 0.11 | 0.44 | 4.13 | 0.12 | 0.05 | 0.02 | 1,631.71 | 0.00 | 0.06 | 1,648.31 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.36 | 0.01 | 0.00 | 0.00 | 143.89 | 0.00 | 0.00 | 145.36 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.27 | 0.00 | 0.00 | 1.28 |
| Pounds per day - Grading/Excavation | 0.02 | 0.08 | 0.73 | 0.02 | 0.01 | 0.00 | 287.78 | 0.00 | 0.01 | 290.71 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 22.16 | 0.00 | 0.00 | 22.38 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 23.43 | 0.00 | 0.00 | 23.66 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 50.00 | 0.44 | 10.40 | 0.09 |
| Fugitive Dust - Grading/Excavation | | | 50.00 | 3.85 | 10.40 | 0.80 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Cranes | 1.11 | 5.17 | 13.19 | 0.54 | 0.50 | 0.01 | 1,366.74 | 0.44 | 0.01 | 1,381.47 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.63 | 8.43 | 6.22 | 0.30 | 0.28 | 0.01 | 1,289.86 | 0.42 | 0.01 | 1,303.77 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Signal Boards | 0.07 | 0.38 | 0.45 | 0.02 | 0.02 | 0.00 | 61.64 | 0.01 | 0.00 | 61.96 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.34 | 2.48 | 2.91 | 0.23 | 0.22 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.53 | 5.76 | 5.32 | 0.34 | 0.31 | 0.01 | 759.67 | 0.25 | 0.01 | 767.85 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 2.68 | 22.22 | 28.09 | 1.43 | 1.32 | 0.04 | 3,785.64 | 1.21 | 0.03 | 3,826.08 |
| | Grubbing/Land Clearing | | tons per phase | 0.02 | 0.20 | 0.25 | 0.01 | 0.01 | 0.00 | 33.31 | 0.01 | 0.00 | 33.67 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Bore/Drill Rigs | 1.29 | 9.70 | 16.42 | 0.47 | 0.44 | 0.04 | 4,240.28 | 1.37 | 0.04 | 4,286.14 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cranes | 2.22 | 10.35 | 26.37 | 1.09 | 1.00 | 0.03 | 2,733.48 | 0.88 | 0.02 | 2,762.94 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | | | Model Default Tier | Excavators | 3.16 | 42.14 | 31.11 | 1.51 | 1.39 | 0.07 | 6,449.32 | 2.09 | 0.06 | 6,518.84 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.50 | 4.63 | 4.35 | 0.25 | 0.25 | 0.01 | 778.79 | 0.04 | 0.01 | 781.64 |
| 4.00 | | | Model Default Tier | Graders | 3.59 | 22.91 | 34.99 | 1.95 | 1.80 | 0.03 | 3,024.69 | 0.98 | 0.03 | 3,057.20 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | | | Model Default Tier | Other Material Handling Equipment | 5.94 | 74.72 | 55.76 | 2.78 | 2.56 | 0.12 | 11,126.92 | 3.60 | 0.10 | 11,246.88 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.58 | 14.38 | 15.80 | 1.01 | 0.93 | 0.02 | 1,929.32 | 0.62 | 0.02 | 1,950.11 |
| 10.00 | | | Model Default Tier | Rough Terrain Forklifts | 1.67 | 28.71 | 21.62 | 0.90 | 0.83 | 0.04 | 4,171.01 | 1.35 | 0.04 | 4,215.97 |
| 10.00 | | | Model Default Tier | Rubber Tired Dozers | 12.03 | 99.20 | 126.85 | 5.83 | 5.36 | 0.11 | 10,788.37 | 3.49 | 0.10 | 10,904.27 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.34 | 2.48 | 2.91 | 0.23 | 0.22 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 6.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 1.59 | 17.27 | 15.95 | 1.01 | 0.93 | 0.02 | 2,279.02 | 0.74 | 0.02 | 2,303.56 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 34.33 | 328.75 | 354.84 | 17.13 | 15.79 | 0.50 | 48,198.77 | 15.30 | 0.43 | 48,710.31 |
| | Grading/Excavation | | tons per phase | 2.64 | 25.31 | 27.32 | 1.32 | 1.22 | 0.04 | 3,711.31 | 1.18 | 0.03 | 3,750.69 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 2.67 | 25.51 | 27.57 | 1.33 | 1.23 | 0.04 | 3,744.62 | 1.19 | 0.03 | 3,784.36 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 1: 2020 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.79 | 23.82 | 29.31 | 51.52 | 1.52 | 50.00 | 11.76 | 1.36 | 10.40 | 0.05 | 4,673.91 | 1.22 | 0.05 | 4,720.84 |
| **Grading/Excavation** | 36.25 | 344.76 | 407.03 | 68.99 | 18.99 | 50.00 | 27.03 | 16.63 | 10.40 | 0.72 | 71,710.46 | 15.44 | 1.16 | 72,442.94 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 36.25 | 344.76 | 407.03 | 68.99 | 18.99 | 50.00 | 27.03 | 16.63 | 10.40 | 0.72 | 71,710.46 | 15.44 | 1.16 | 72,442.94 |
| **Total (tons/construction project)** | 2.82 | 26.76 | 31.60 | 5.77 | 1.48 | 4.29 | 2.18 | 1.29 | 0.89 | 0.06 | 5,562.84 | 1.20 | 0.09 | 5,619.65 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 8 |
| Total Project Area (acres) -> | 64 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 40 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 2,012 | 0 | 5,535 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 1: 2020 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.21 | 0.26 | 0.45 | 0.01 | 0.44 | 0.10 | 0.01 | 0.09 | 0.00 | 41.13 | 0.01 | 0.00 | 37.69 |
| **Grading/Excavation** | 2.79 | 26.55 | 31.34 | 5.31 | 1.46 | 3.85 | 2.08 | 1.28 | 0.80 | 0.06 | 5,521.71 | 1.19 | 0.09 | 5,060.43 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 2.79 | 26.55 | 31.34 | 5.31 | 1.46 | 3.85 | 2.08 | 1.28 | 0.80 | 0.06 | 5521.71 | 1.19 | 0.09 | 5,060.43 |
| **Total (tons/construction project)** | 2.82 | 26.76 | 31.60 | 5.77 | 1.48 | 4.29 | 2.18 | 1.29 | 0.89 | 0.06 | 5562.84 | 1.20 | 0.09 | 5,098.11 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 1: 2020 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.78 | 23.80 | 28.62 | 51.52 | 1.52 | 50.00 | 11.75 | 1.35 | 10.40 | 0.05 | 4,658.20 | 1.22 | 0.05 | 4,704.84 |
| **Grading/Excavation** | 35.78 | 343.91 | 374.04 | 68.82 | 18.82 | 50.00 | 26.86 | 16.46 | 10.40 | 0.72 | 70,962.71 | 15.42 | 1.12 | 71,681.37 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 35.78 | 343.91 | 374.04 | 68.82 | 18.82 | 50.00 | 26.86 | 16.46 | 10.40 | 0.72 | 70,962.71 | 15.42 | 1.12 | 71,681.37 |
| **Total (tons/construction project)** | 2.78 | 26.69 | 29.05 | 5.75 | 1.46 | 4.29 | 2.17 | 1.28 | 0.89 | 0.06 | 5,505.12 | 1.20 | 0.09 | 5,560.87 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 8 |
| Total Project Area (acres) -> | 64 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 40 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 2,012 | 0 | 5,535 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 1: 2020 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.21 | 0.25 | 0.45 | 0.01 | 0.44 | 0.10 | 0.01 | 0.09 | 0.00 | 40.99 | 0.01 | 0.00 | 37.56 |
| **Grading/Excavation** | 2.76 | 26.48 | 28.80 | 5.30 | 1.45 | 3.85 | 2.07 | 1.27 | 0.80 | 0.06 | 5,464.13 | 1.19 | 0.09 | 5,007.23 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 2.76 | 26.48 | 28.80 | 5.30 | 1.45 | 3.85 | 2.07 | 1.27 | 0.80 | 0.06 | 5464.13 | 1.19 | 0.09 | 5,007.23 |
| **Total (tons/construction project)** | 2.78 | 26.69 | 29.05 | 5.75 | 1.46 | 4.29 | 2.17 | 1.28 | 0.89 | 0.06 | 5505.12 | 1.20 | 0.09 | 5,044.79 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 1: 2020 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.34 | 28.17 | 5.43 | 50.24 | 0.24 | 50.00 | 10.58 | 0.18 | 10.40 | 0.05 | 4,658.20 | 1.22 | 0.05 | 4,704.84 |
| **Grading/Excavation** | 16.74 | 343.24 | 54.81 | 53.39 | 3.39 | 50.00 | 12.64 | 2.24 | 10.40 | 0.72 | 70,962.71 | 15.42 | 1.12 | 71,681.37 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 16.74 | 343.24 | 54.81 | 53.39 | 3.39 | 50.00 | 12.64 | 2.24 | 10.40 | 0.72 | 70,962.71 | 15.42 | 1.12 | 71,681.37 |
| **Total (tons/construction project)** | 1.30 | 26.68 | 4.27 | 4.55 | 0.26 | 4.29 | 1.07 | 0.17 | 0.89 | 0.06 | 5,505.12 | 1.20 | 0.09 | 5,560.87 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2020 |
| Project Length (months) -> | 8 |
| Total Project Area (acres) -> | 64 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 40 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 2,012 | 0 | 5,535 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 1: 2020 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.25 | 0.05 | 0.44 | 0.00 | 0.44 | 0.09 | 0.00 | 0.09 | 0.00 | 40.99 | 0.01 | 0.00 | 37.56 |
| **Grading/Excavation** | 1.29 | 26.43 | 4.22 | 4.11 | 0.26 | 3.85 | 0.97 | 0.17 | 0.80 | 0.06 | 5,464.13 | 1.19 | 0.09 | 5,007.23 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.29 | 26.43 | 4.22 | 4.11 | 0.26 | 3.85 | 0.97 | 0.17 | 0.80 | 0.06 | 5464.13 | 1.19 | 0.09 | 5,007.23 |
| **Total (tons/construction project)** | 1.30 | 26.68 | 4.27 | 4.55 | 0.26 | 4.29 | 1.07 | 0.17 | 0.89 | 0.06 | 5505.12 | 1.20 | 0.09 | 5,044.79 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
## Data Entry Worksheet

**Version 8.1.0**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 2: 2021 Berms and Relief Wells | |
| Construction Start Year | 2021 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 4.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.25 | miles |
| Total Project Area | 3.00 | acres |
| Maximum Area Disturbed/Day | 3.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | | | |
| | Grading/Excavation | 15.00 | 272.00 | 71.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 0.40 | 8/1/2020 | 1/1/2021 |
| Grading/Excavation | 4.00 | 1.80 | 5/30/2021 | 1/1/2021 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.20 | 9/22/2020 | 5/3/2021 |
| Paving | 0.00 | 0.60 | 10/30/2020 | 5/3/2021 |
| **Totals (Months)** | 4 | | | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 0.00 | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 34.00 | | | 23 | 782.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.18 | 0.75 | 6.28 | 0.20 | 0.09 | 0.03 | 2,783.42 | 0.01 | 0.09 | 2,811.74 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.03 | 0.28 | 0.01 | 0.00 | 0.00 | 122.47 | 0.00 | 0.00 | 123.72 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.03 | 0.28 | 0.01 | 0.00 | 0.00 | 122.47 | 0.00 | 0.00 | 123.72 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 0 | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 30 | | 60 | 1,200.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.17 | 2.92 | 0.29 | 0.12 | 0.05 | 0.01 | 963.31 | 0.02 | 0.01 | 967.47 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.13 | 0.01 | 0.01 | 0.00 | 0.00 | 42.39 | 0.00 | 0.00 | 42.57 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.13 | 0.01 | 0.01 | 0.00 | 0.00 | 42.39 | 0.00 | 0.00 | 42.57 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | | | | | 0.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.01 | 0.04 | 0.32 | 0.01 | 0.00 | 0.00 | 142.37 | 0.00 | 0.00 | 143.82 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 6.26 | 0.00 | 0.00 | 6.33 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 6.26 | 0.00 | 0.00 | 6.33 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 30.00 | 1.32 | 6.24 | 0.27 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.59 | 8.44 | 5.55 | 0.27 | 0.25 | 0.01 | 1,290.05 | 0.42 | 0.01 | 1,303.96 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.45 | 4.61 | 3.96 | 0.21 | 0.21 | 0.01 | 778.79 | 0.04 | 0.01 | 781.53 |
| 4.00 | | | Model Default Tier | Graders | 3.20 | 22.52 | 30.62 | 1.71 | 1.57 | 0.03 | 3,027.78 | 0.98 | 0.03 | 3,060.33 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.44 | 14.28 | 14.61 | 0.89 | 0.82 | 0.02 | 1,929.49 | 0.62 | 0.02 | 1,950.28 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Rubber Tired Dozers | 4.43 | 36.35 | 45.70 | 2.09 | 1.92 | 0.04 | 4,308.42 | 1.39 | 0.04 | 4,354.71 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.29 | 2.44 | 2.57 | 0.19 | 0.17 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.47 | 5.71 | 4.79 | 0.28 | 0.26 | 0.01 | 760.01 | 0.25 | 0.01 | 768.19 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 11.29 | 96.60 | 110.50 | 5.74 | 5.31 | 0.13 | 12,772.12 | 3.84 | 0.11 | 12,901.77 |
| | Grading/Excavation | | tons per phase | 0.50 | 4.25 | 4.86 | 0.25 | 0.23 | 0.01 | 561.97 | 0.17 | 0.00 | 567.68 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.50 | 4.25 | 4.86 | 0.25 | 0.23 | 0.01 | 561.97 | 0.17 | 0.00 | 567.68 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 2: 2021 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 11.65 | 100.30 | 117.40 | 36.08 | 6.08 | 30.00 | 11.70 | 5.46 | 6.24 | 0.17 | 16,661.23 | 3.87 | 0.22 | 16,824.81 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 11.65 | 100.30 | 117.40 | 36.08 | 6.08 | 30.00 | 11.70 | 5.46 | 6.24 | 0.17 | 16,661.23 | 3.87 | 0.22 | 16,824.81 |
| **Total (tons/construction project)** | 0.51 | 4.41 | 5.17 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 733.09 | 0.17 | 0.01 | 740.29 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 3 |
| Maximum Area Disturbed/Day (acres) -> | 3 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 343 | 0 | 782 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 2: 2021 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.51 | 4.41 | 5.17 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 733.09 | 0.17 | 0.01 | 671.59 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.51 | 4.41 | 5.17 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 733.09 | 0.17 | 0.01 | 671.59 |
| **Total (tons/construction project)** | 0.51 | 4.41 | 5.17 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 733.09 | 0.17 | 0.01 | 671.59 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 2: 2021 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 11.58 | 100.19 | 113.38 | 36.05 | 6.05 | 30.00 | 11.67 | 5.43 | 6.24 | 0.17 | 16,561.68 | 3.86 | 0.22 | 16,723.34 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 11.58 | 100.19 | 113.38 | 36.05 | 6.05 | 30.00 | 11.67 | 5.43 | 6.24 | 0.17 | 16,561.68 | 3.86 | 0.22 | 16,723.34 |
| **Total (tons/construction project)** | 0.51 | 4.41 | 4.99 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 735.83 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 3 |
| Maximum Area Disturbed/Day (acres) -> | 3 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 343 | 0 | 782 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 2: 2021 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.51 | 4.41 | 4.99 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 667.54 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.51 | 4.41 | 4.99 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 667.54 |
| **Total (tons/construction project)** | 0.51 | 4.41 | 4.99 | 1.59 | 0.27 | 1.32 | 0.51 | 0.24 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 667.54 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 2: 2021 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 4.37 | 85.89 | 16.03 | 30.89 | 0.89 | 30.00 | 6.90 | 0.66 | 6.24 | 0.17 | 16,561.68 | 3.86 | 0.22 | 16,723.34 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 4.37 | 85.89 | 16.03 | 30.89 | 0.89 | 30.00 | 6.90 | 0.66 | 6.24 | 0.17 | 16,561.68 | 3.86 | 0.22 | 16,723.34 |
| **Total (tons/construction project)** | 0.19 | 3.78 | 0.71 | 1.36 | 0.04 | 1.32 | 0.30 | 0.03 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 735.83 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 3 |
| Maximum Area Disturbed/Day (acres) -> | 3 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 343 | 0 | 782 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 2: 2021 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.19 | 3.78 | 0.71 | 1.36 | 0.04 | 1.32 | 0.30 | 0.03 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 667.54 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.19 | 3.78 | 0.71 | 1.36 | 0.04 | 1.32 | 0.30 | 0.03 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 667.54 |
| **Total (tons/construction project)** | 0.19 | 3.78 | 0.71 | 1.36 | 0.04 | 1.32 | 0.30 | 0.03 | 0.27 | 0.01 | 728.71 | 0.17 | 0.01 | 667.54 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
## Data Entry Worksheet

**Version 8.1.0**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 2: 2021 | Vegetation and Cutoff Wall |
| Construction Start Year | 2021 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 7.20 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 2.20 | miles |
| Total Project Area | 69.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 35.00 |
| | Grading/Excavation | 15.00 | 1978.00 | 37.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.80 | 0.72 | 4/1/2021 | 1/1/2021 |
| Grading/Excavation | 6.40 | 3.24 | 4/15/2021 | 1/26/2021 |
| Drainage/Utilities/Sub-Grade | 0.00 | 2.16 | 9/22/2021 | 8/9/2021 |
| Paving | 0.00 | 1.08 | 10/30/2021 | 8/9/2021 |
| **Totals (Months)** | 7 | | | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 26.00 | | | 3 | 78.00 |
| Miles/round trip: Grading/Excavation | 41.00 | | | 135 | 5535.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.02 | 0.07 | 0.63 | 0.02 | 0.01 | 0.00 | 277.63 | 0.00 | 0.01 | 280.45 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 2.44 | 0.00 | 0.00 | 2.47 |
| Pounds per day - Grading/Excavation | 1.24 | 5.28 | 44.48 | 1.40 | 0.63 | 0.19 | 19,701.07 | 0.06 | 0.67 | 19,901.52 |
| Tons per const. Period - Grading/Excavation | 0.09 | 0.37 | 3.13 | 0.10 | 0.04 | 0.01 | 1,386.96 | 0.00 | 0.05 | 1,401.07 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.09 | 0.37 | 3.14 | 0.10 | 0.04 | 0.01 | 1,389.40 | 0.00 | 0.05 | 1,403.53 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 14 | | 28 | 560.00 |
| No. of employees: Grading/Excavation | 100 | | 200 | 4,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Grading/Excavation (grams/mile) | 0.02 | 0.99 | 0.10 | 0.05 | 0.02 | 0.00 | 360.03 | 0.01 | 0.00 | 361.48 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Grading/Excavation (grams/trip) | 0.93 | 2.28 | 0.18 | 0.00 | 0.00 | 0.00 | 81.88 | 0.01 | 0.01 | 84.35 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.08 | 1.36 | 0.14 | 0.06 | 0.02 | 0.00 | 449.55 | 0.01 | 0.01 | 451.49 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 3.96 | 0.00 | 0.00 | 3.97 |
| Pounds per day - Grading/Excavation | 0.58 | 9.74 | 0.97 | 0.41 | 0.17 | 0.03 | 3,211.04 | 0.07 | 0.04 | 3,224.91 |
| Tons per const. Period - Grading/Excavation | 0.04 | 0.69 | 0.07 | 0.03 | 0.01 | 0.00 | 226.06 | 0.01 | 0.00 | 227.03 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.04 | 0.70 | 0.07 | 0.03 | 0.01 | 0.00 | 230.01 | 0.01 | 0.00 | 231.01 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 2 | | 40.00 | | 80.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.65 | 0.11 | 0.05 | 0.02 | 1,614.50 | 0.00 | 0.05 | 1,630.92 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.32 | 0.01 | 0.00 | 0.00 | 142.37 | 0.00 | 0.00 | 143.82 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.25 | 0.00 | 0.00 | 1.27 |
| Pounds per day - Grading/Excavation | 0.02 | 0.08 | 0.64 | 0.02 | 0.01 | 0.00 | 284.75 | 0.00 | 0.01 | 287.65 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 20.05 | 0.00 | 0.00 | 20.25 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 21.30 | 0.00 | 0.00 | 21.52 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 50.00 | 0.44 | 10.40 | 0.09 |
| Fugitive Dust - Grading/Excavation | | | 50.00 | 3.52 | 10.40 | 0.73 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Cranes | 1.01 | 4.85 | 11.86 | 0.48 | 0.44 | 0.01 | 1,366.61 | 0.44 | 0.01 | 1,381.34 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.59 | 8.44 | 5.55 | 0.27 | 0.25 | 0.01 | 1,290.05 | 0.42 | 0.01 | 1,303.96 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Signal Boards | 0.07 | 0.38 | 0.45 | 0.02 | 0.02 | 0.00 | 61.64 | 0.01 | 0.00 | 61.96 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.29 | 2.44 | 2.57 | 0.19 | 0.17 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.47 | 5.71 | 4.79 | 0.28 | 0.26 | 0.01 | 760.01 | 0.25 | 0.01 | 768.19 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 2.43 | 21.81 | 25.22 | 1.24 | 1.14 | 0.04 | 3,786.04 | 1.21 | 0.03 | 3,826.48 |
| | Grubbing/Land Clearing | | tons per phase | 0.02 | 0.19 | 0.22 | 0.01 | 0.01 | 0.00 | 33.32 | 0.01 | 0.00 | 33.67 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Bore/Drill Rigs | 1.20 | 9.67 | 14.09 | 0.43 | 0.39 | 0.04 | 4,250.79 | 1.38 | 0.04 | 4,296.74 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cranes | 2.02 | 9.70 | 23.72 | 0.96 | 0.89 | 0.03 | 2,733.23 | 0.88 | 0.02 | 2,762.68 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | | | Model Default Tier | Excavators | 2.96 | 42.19 | 27.77 | 1.35 | 1.24 | 0.07 | 6,450.27 | 2.09 | 0.06 | 6,519.82 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.45 | 4.61 | 3.96 | 0.21 | 0.21 | 0.01 | 778.79 | 0.04 | 0.01 | 781.53 |
| 4.00 | | | Model Default Tier | Graders | 3.20 | 22.52 | 30.62 | 1.71 | 1.57 | 0.03 | 3,027.78 | 0.98 | 0.03 | 3,060.33 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | | | Model Default Tier | Other Material Handling Equipment | 5.86 | 75.32 | 52.93 | 2.68 | 2.47 | 0.12 | 11,126.92 | 3.60 | 0.10 | 11,246.88 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.44 | 14.28 | 14.61 | 0.89 | 0.82 | 0.02 | 1,929.49 | 0.62 | 0.02 | 1,950.28 |
| 10.00 | | | Model Default Tier | Rough Terrain Forklifts | 1.54 | 28.68 | 20.15 | 0.78 | 0.72 | 0.04 | 4,172.12 | 1.35 | 0.04 | 4,217.08 |
| 10.00 | | | Model Default Tier | Rubber Tired Dozers | 11.07 | 90.87 | 114.26 | 5.22 | 4.80 | 0.11 | 10,771.06 | 3.48 | 0.10 | 10,886.78 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.29 | 2.44 | 2.57 | 0.19 | 0.17 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 6.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 1.42 | 17.13 | 14.37 | 0.85 | 0.78 | 0.02 | 2,280.02 | 0.74 | 0.02 | 2,304.56 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 31.87 | 319.65 | 321.74 | 15.37 | 14.17 | 0.50 | 48,198.03 | 15.29 | 0.43 | 48,709.44 |
| | Grading/Excavation | | tons per phase | 2.24 | 22.50 | 22.65 | 1.08 | 1.00 | 0.04 | 3,393.14 | 1.08 | 0.03 | 3,429.14 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 2.26 | 22.70 | 22.87 | 1.09 | 1.01 | 0.04 | 3,426.46 | 1.09 | 0.03 | 3,462.82 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 2: 2021 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.54 | 23.29 | 26.31 | 51.33 | 1.33 | 50.00 | 11.58 | 1.18 | 10.40 | 0.05 | 4,655.59 | 1.22 | 0.05 | 4,702.25 |
| **Grading/Excavation** | 33.70 | 334.75 | 367.84 | 67.20 | 17.20 | 50.00 | 25.38 | 14.98 | 10.40 | 0.72 | 71,394.89 | 15.42 | 1.15 | 72,123.52 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 36.24 | 358.03 | 394.15 | 118.53 | 18.53 | 100.00 | 36.96 | 16.16 | 20.80 | 0.77 | 76,050.48 | 16.65 | 1.21 | 76,825.77 |
| **Total (tons/construction project)** | 2.39 | 23.77 | 26.13 | 5.18 | 1.22 | 3.96 | 1.89 | 1.06 | 0.82 | 0.05 | 5,067.17 | 1.10 | 0.08 | 5,118.88 |

| Notes: | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 7 |
| Total Project Area (acres) -> | 69 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 35 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 2,015 | 0 | 5,535 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 2: 2021 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.20 | 0.23 | 0.45 | 0.01 | 0.44 | 0.10 | 0.01 | 0.09 | 0.00 | 40.97 | 0.01 | 0.00 | 37.54 |
| **Grading/Excavation** | 2.37 | 23.57 | 25.90 | 4.73 | 1.21 | 3.52 | 1.79 | 1.05 | 0.73 | 0.05 | 5,026.20 | 1.09 | 0.08 | 4,606.27 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 2.37 | 23.57 | 25.90 | 4.73 | 1.21 | 3.52 | 1.79 | 1.05 | 0.73 | 0.05 | 5026.20 | 1.09 | 0.08 | 4,606.27 |
| **Total (tons/construction project)** | 2.39 | 23.77 | 26.13 | 5.18 | 1.22 | 3.96 | 1.89 | 1.06 | 0.82 | 0.05 | 5067.17 | 1.10 | 0.08 | 4,643.81 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 2: 2021 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.53 | 23.27 | 25.73 | 51.32 | 1.32 | 50.00 | 11.58 | 1.18 | 10.40 | 0.05 | 4,641.30 | 1.22 | 0.05 | 4,687.68 |
| **Grading/Excavation** | 33.27 | 333.97 | 340.40 | 67.05 | 17.05 | 50.00 | 25.24 | 14.84 | 10.40 | 0.72 | 70,714.91 | 15.40 | 1.11 | 71,430.41 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 35.80 | 357.24 | 366.13 | 118.38 | 18.38 | 100.00 | 36.81 | 16.01 | 20.80 | 0.76 | 75,356.20 | 16.63 | 1.16 | 76,118.09 |
| **Total (tons/construction project)** | 2.36 | 23.72 | 24.19 | 5.17 | 1.21 | 3.96 | 1.88 | 1.05 | 0.82 | 0.05 | 5,019.17 | 1.10 | 0.08 | 5,069.95 |

| Notes: | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 7 |
| Total Project Area (acres) -> | 69 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 35 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 2,015 | 0 | 5,535 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 2: 2021 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.20 | 0.23 | 0.45 | 0.01 | 0.44 | 0.10 | 0.01 | 0.09 | 0.00 | 40.84 | 0.01 | 0.00 | 37.42 |
| **Grading/Excavation** | 2.34 | 23.51 | 23.96 | 4.72 | 1.20 | 3.52 | 1.78 | 1.04 | 0.73 | 0.05 | 4,978.33 | 1.08 | 0.08 | 4,562.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 2.34 | 23.51 | 23.96 | 4.72 | 1.20 | 3.52 | 1.78 | 1.04 | 0.73 | 0.05 | 4978.33 | 1.08 | 0.08 | 4,562.01 |
| **Total (tons/construction project)** | 2.36 | 23.72 | 24.19 | 5.17 | 1.21 | 3.96 | 1.88 | 1.05 | 0.82 | 0.05 | 5019.17 | 1.10 | 0.08 | 4,599.43 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 2: 2021 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.33 | 28.05 | 5.41 | 50.24 | 0.24 | 50.00 | 10.58 | 0.18 | 10.40 | 0.05 | 4,641.30 | 1.22 | 0.05 | 4,687.68 |
| **Grading/Excavation** | 16.69 | 342.40 | 54.26 | 53.39 | 3.39 | 50.00 | 12.64 | 2.24 | 10.40 | 0.72 | 70,714.91 | 15.40 | 1.11 | 71,430.41 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 18.03 | 370.45 | 59.67 | 103.63 | 3.63 | 100.00 | 23.22 | 2.42 | 20.80 | 0.76 | 75,356.20 | 16.63 | 1.16 | 76,118.09 |
| **Total (tons/construction project)** | 1.19 | 24.35 | 3.87 | 4.20 | 0.24 | 3.96 | 0.98 | 0.16 | 0.82 | 0.05 | 5,019.17 | 1.10 | 0.08 | 5,069.95 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2021 |
| Project Length (months) -> | 7 |
| Total Project Area (acres) -> | 69 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 35 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 2,015 | 0 | 5,535 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 2: 2021 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.25 | 0.05 | 0.44 | 0.00 | 0.44 | 0.09 | 0.00 | 0.09 | 0.00 | 40.84 | 0.01 | 0.00 | 37.42 |
| **Grading/Excavation** | 1.18 | 24.11 | 3.82 | 3.76 | 0.24 | 3.52 | 0.89 | 0.16 | 0.73 | 0.05 | 4,978.33 | 1.08 | 0.08 | 4,562.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.18 | 24.11 | 3.82 | 3.76 | 0.24 | 3.52 | 0.89 | 0.16 | 0.73 | 0.05 | 4978.33 | 1.08 | 0.08 | 4,562.01 |
| **Total (tons/construction project)** | 1.19 | 24.35 | 3.87 | 4.20 | 0.24 | 3.96 | 0.98 | 0.16 | 0.82 | 0.05 | 5019.17 | 1.10 | 0.08 | 4,599.43 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 3: 2022 | Vegetation and Cutoff Wall |
| Construction Start Year | 2022 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 7.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 2.30 | miles |
| Total Project Area | 28.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 35.00 |
| | Grading/Excavation | 15.00 | 1922.00 | 36.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 1.20 | 0.70 | 4/1/2022 | 1/1/2022 |
| Grading/Excavation | 5.60 | 3.15 | 5/8/2022 | 2/7/2022 |
| Drainage/Utilities/Sub-Grade | 0.00 | 2.10 | | 7/28/2022 |
| Paving | 0.00 | 1.05 | | 7/28/2022 |
| **Totals (Months)** | 7 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used. | |

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| Soil Hauling Emissions<br>**User Input** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 26.00 | | | 3 | 78.00 |
| Miles/round trip: Grading/Excavation | 41.00 | | | 131 | 5371.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.02 | 0.07 | 0.56 | 0.02 | 0.01 | 0.00 | 274.55 | 0.00 | 0.01 | 277.35 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 3.62 | 0.00 | 0.00 | 3.66 |
| Pounds per day - Grading/Excavation | 1.16 | 5.08 | 38.27 | 1.33 | 0.59 | 0.18 | 18,905.54 | 0.05 | 0.64 | 19,097.92 |
| Tons per const. Period - Grading/Excavation | 0.07 | 0.31 | 2.36 | 0.08 | 0.04 | 0.01 | 1,164.58 | 0.00 | 0.04 | 1,176.43 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.07 | 0.31 | 2.37 | 0.08 | 0.04 | 0.01 | 1,168.21 | 0.00 | 0.04 | 1,180.09 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| Asphalt Hauling Emissions<br>**User Input** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 14 | | 28 | 560.00 |
| No. of employees: Grading/Excavation | 100 | | 200 | 4,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Grading/Excavation (grams/mile) | 0.02 | 0.92 | 0.09 | 0.05 | 0.02 | 0.00 | 348.29 | 0.01 | 0.00 | 349.59 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Grading/Excavation (grams/trip) | 0.87 | 2.06 | 0.16 | 0.00 | 0.00 | 0.00 | 79.59 | 0.01 | 0.01 | 81.77 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.07 | 1.26 | 0.12 | 0.06 | 0.02 | 0.00 | 434.90 | 0.01 | 0.01 | 436.65 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 5.74 | 0.00 | 0.00 | 5.76 |
| Pounds per day - Grading/Excavation | 0.53 | 9.00 | 0.88 | 0.41 | 0.17 | 0.03 | 3,106.46 | 0.07 | 0.04 | 3,118.95 |
| Tons per const. Period - Grading/Excavation | 0.03 | 0.55 | 0.05 | 0.03 | 0.01 | 0.00 | 191.36 | 0.00 | 0.00 | 192.13 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.03 | 0.57 | 0.06 | 0.03 | 0.01 | 0.00 | 197.10 | 0.00 | 0.00 | 197.89 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 2 | | 40.00 | | 80.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Grading/Excavation (grams/mile) | 0.10 | 0.43 | 3.23 | 0.11 | 0.05 | 0.02 | 1,596.61 | 0.00 | 0.05 | 1,612.86 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.04 | 0.29 | 0.01 | 0.00 | 0.00 | 140.80 | 0.00 | 0.00 | 142.23 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.86 | 0.00 | 0.00 | 1.88 |
| Pounds per day - Grading/Excavation | 0.02 | 0.08 | 0.57 | 0.02 | 0.01 | 0.00 | 281.59 | 0.00 | 0.01 | 284.46 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 17.35 | 0.00 | 0.00 | 17.52 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 19.20 | 0.00 | 0.00 | 19.40 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 50.00 | 0.66 | 10.40 | 0.14 |
| Fugitive Dust - Grading/Excavation | | | 50.00 | 3.08 | 10.40 | 0.64 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.52 | 8.40 | 4.58 | 0.22 | 0.20 | 0.01 | 1,289.60 | 0.42 | 0.01 | 1,303.50 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Signal Boards | 0.07 | 0.38 | 0.45 | 0.02 | 0.02 | 0.00 | 61.64 | 0.01 | 0.00 | 61.96 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.42 | 5.65 | 4.23 | 0.23 | 0.21 | 0.01 | 760.86 | 0.25 | 0.01 | 769.05 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 1.25 | 16.82 | 11.52 | 0.62 | 0.57 | 0.03 | 2,419.82 | 0.77 | 0.02 | 2,445.54 |
| | Grubbing/Land Clearing | | tons per phase | 0.02 | 0.22 | 0.15 | 0.01 | 0.01 | 0.00 | 31.94 | 0.01 | 0.00 | 32.28 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Bore/Drill Rigs | 1.04 | 9.51 | 10.56 | 0.34 | 0.31 | 0.04 | 4,257.78 | 1.38 | 0.04 | 4,303.77 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cranes | 1.82 | 9.26 | 20.47 | 0.85 | 0.78 | 0.03 | 2,733.67 | 0.88 | 0.02 | 2,763.14 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | | | Model Default Tier | Excavators | 2.61 | 41.98 | 22.92 | 1.11 | 1.02 | 0.07 | 6,447.99 | 2.09 | 0.06 | 6,517.51 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.41 | 4.59 | 3.66 | 0.18 | 0.18 | 0.01 | 778.79 | 0.04 | 0.01 | 781.46 |
| 4.00 | | | Model Default Tier | Graders | 2.79 | 22.10 | 26.10 | 1.45 | 1.33 | 0.03 | 3,028.02 | 0.98 | 0.03 | 3,060.56 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | | | Model Default Tier | Other Material Handling Equipment | 5.32 | 74.84 | 44.62 | 2.42 | 2.23 | 0.12 | 11,126.92 | 3.60 | 0.10 | 11,246.88 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.26 | 14.13 | 13.11 | 0.76 | 0.70 | 0.02 | 1,929.60 | 0.62 | 0.02 | 1,950.39 |
| 10.00 | | | Model Default Tier | Rough Terrain Forklifts | 1.40 | 28.60 | 18.50 | 0.65 | 0.59 | 0.04 | 4,171.93 | 1.35 | 0.04 | 4,216.90 |
| 10.00 | | | Model Default Tier | Rubber Tired Dozers | 10.68 | 87.59 | 108.11 | 4.94 | 4.55 | 0.11 | 10,778.34 | 3.49 | 0.10 | 10,894.12 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.24 | 2.40 | 2.25 | 0.15 | 0.14 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 6.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 1.25 | 16.96 | 12.70 | 0.68 | 0.63 | 0.02 | 2,282.59 | 0.74 | 0.02 | 2,307.15 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 29.25 | 314.21 | 285.70 | 13.64 | 12.57 | 0.50 | 48,213.20 | 15.30 | 0.43 | 48,724.65 |
| | Grading/Excavation | | tons per phase | 1.80 | 19.36 | 17.60 | 0.84 | 0.77 | 0.03 | 2,969.93 | 0.94 | 0.03 | 3,001.44 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 1.82 | 19.58 | 17.75 | 0.85 | 0.78 | 0.03 | 3,001.87 | 0.95 | 0.03 | 3,033.72 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 3: 2022 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.35 | 18.19 | 12.48 | 50.70 | 0.70 | 50.00 | 11.01 | 0.61 | 10.40 | 0.03 | 3,270.08 | 0.78 | 0.04 | 3,301.77 |
| **Grading/Excavation** | 30.96 | 328.37 | 325.42 | 65.40 | 15.40 | 50.00 | 23.73 | 13.33 | 10.40 | 0.71 | 70,506.79 | 15.42 | 1.12 | 71,225.98 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 30.96 | 328.37 | 325.42 | 65.40 | 15.40 | 50.00 | 23.73 | 13.33 | 10.40 | 0.71 | 70,506.79 | 15.42 | 1.12 | 71,225.98 |
| **Total (tons/construction project)** | 1.93 | 20.47 | 20.21 | 4.70 | 0.96 | 3.74 | 1.61 | 0.83 | 0.78 | 0.04 | 4,386.38 | 0.96 | 0.07 | 4,431.10 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 7 |
| Total Project Area (acres) -> | 28 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 35 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 1,958 | 0 | 5,371 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 3: 2022 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.24 | 0.16 | 0.67 | 0.01 | 0.66 | 0.15 | 0.01 | 0.14 | 0.00 | 43.17 | 0.01 | 0.00 | 39.54 |
| **Grading/Excavation** | 1.91 | 20.23 | 20.05 | 4.03 | 0.95 | 3.08 | 1.46 | 0.82 | 0.64 | 0.04 | 4,343.22 | 0.95 | 0.07 | 3,980.33 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.91 | 20.23 | 20.05 | 4.03 | 0.95 | 3.08 | 1.46 | 0.82 | 0.64 | 0.04 | 4343.22 | 0.95 | 0.07 | 3,980.33 |
| **Total (tons/construction project)** | 1.93 | 20.47 | 20.21 | 4.70 | 0.96 | 3.74 | 1.61 | 0.83 | 0.78 | 0.04 | 4386.38 | 0.96 | 0.07 | 4,019.87 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 3: 2022 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.34 | 18.18 | 12.00 | 50.70 | 0.70 | 50.00 | 11.00 | 0.60 | 10.40 | 0.03 | 3,257.62 | 0.78 | 0.04 | 3,289.06 |
| **Grading/Excavation** | 30.59 | 327.68 | 303.28 | 65.28 | 15.28 | 50.00 | 23.62 | 13.22 | 10.40 | 0.71 | 69,931.17 | 15.40 | 1.08 | 70,638.50 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 30.59 | 327.68 | 303.28 | 65.28 | 15.28 | 50.00 | 23.62 | 13.22 | 10.40 | 0.71 | 69,931.17 | 15.40 | 1.08 | 70,638.50 |
| **Total (tons/construction project)** | 1.90 | 20.42 | 18.84 | 4.69 | 0.95 | 3.74 | 1.60 | 0.82 | 0.78 | 0.04 | 4,350.76 | 0.96 | 0.07 | 4,394.75 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 7 |
| Total Project Area (acres) -> | 28 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 35 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 1,958 | 0 | 5,371 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 3: 2022 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.24 | 0.16 | 0.67 | 0.01 | 0.66 | 0.15 | 0.01 | 0.14 | 0.00 | 43.00 | 0.01 | 0.00 | 39.39 |
| **Grading/Excavation** | 1.88 | 20.18 | 18.68 | 4.02 | 0.94 | 3.08 | 1.46 | 0.81 | 0.64 | 0.04 | 4,307.76 | 0.95 | 0.07 | 3,947.50 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.88 | 20.18 | 18.68 | 4.02 | 0.94 | 3.08 | 1.46 | 0.81 | 0.64 | 0.04 | 4307.76 | 0.95 | 0.07 | 3,947.50 |
| **Total (tons/construction project)** | 1.90 | 20.42 | 18.84 | 4.69 | 0.95 | 3.74 | 1.60 | 0.82 | 0.78 | 0.04 | 4350.76 | 0.96 | 0.07 | 3,986.89 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 3: 2022 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.89 | 20.43 | 4.52 | 50.19 | 0.19 | 50.00 | 10.54 | 0.14 | 10.40 | 0.03 | 3,257.62 | 0.78 | 0.04 | 3,289.06 |
| **Grading/Excavation** | 16.63 | 341.55 | 53.19 | 53.35 | 3.35 | 50.00 | 12.63 | 2.23 | 10.40 | 0.71 | 69,931.17 | 15.40 | 1.08 | 70,638.50 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 16.63 | 341.55 | 53.19 | 53.35 | 3.35 | 50.00 | 12.63 | 2.23 | 10.40 | 0.71 | 69,931.17 | 15.40 | 1.08 | 70,638.50 |
| **Total (tons/construction project)** | 1.04 | 21.31 | 3.34 | 3.95 | 0.21 | 3.74 | 0.92 | 0.14 | 0.78 | 0.04 | 4,350.76 | 0.96 | 0.07 | 4,394.75 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2022 |
| Project Length (months) -> | 7 |
| Total Project Area (acres) -> | 28 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 35 | 0 | 78 | 0 | 560 | 40 |
| Grading/Excavation | 1,958 | 0 | 5,371 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 3: 2022 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.27 | 0.06 | 0.66 | 0.00 | 0.66 | 0.14 | 0.00 | 0.14 | 0.00 | 43.00 | 0.01 | 0.00 | 39.39 |
| **Grading/Excavation** | 1.02 | 21.04 | 3.28 | 3.29 | 0.21 | 3.08 | 0.78 | 0.14 | 0.64 | 0.04 | 4,307.76 | 0.95 | 0.07 | 3,947.50 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 1.02 | 21.04 | 3.28 | 3.29 | 0.21 | 3.08 | 0.78 | 0.14 | 0.64 | 0.04 | 4307.76 | 0.95 | 0.07 | 3,947.50 |
| **Total (tons/construction project)** | 1.04 | 21.31 | 3.34 | 3.95 | 0.21 | 3.74 | 0.92 | 0.14 | 0.78 | 0.04 | 4350.76 | 0.96 | 0.07 | 3,986.89 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model
## Data Entry Worksheet

**Version 8.1.0**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

### Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 4: 2023 Berms and Relief Wells | |
| Construction Start Year | 2023 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 4.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.25 | miles |
| Total Project Area | 9.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

### Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | | | |
| | Grading/Excavation | 15.00 | 272.00 | 71.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

### Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.00 | 0.40 | 8/1/2020 | 1/1/2023 |
| Grading/Excavation | 4.00 | 1.80 | 5/30/2023 | 1/1/2023 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.20 | 9/22/2020 | 5/3/2023 |
| Paving | 0.00 | 0.60 | 10/30/2020 | 5/3/2023 |
| **Totals (Months)** | 4 | | | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | 34.00 | | | 23 | 782.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.11 | 0.64 | 2.26 | 0.18 | 0.07 | 0.03 | 2,658.27 | 0.01 | 0.09 | 2,685.29 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.03 | 0.10 | 0.01 | 0.00 | 0.00 | 116.96 | 0.00 | 0.00 | 118.15 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.03 | 0.10 | 0.01 | 0.00 | 0.00 | 116.96 | 0.00 | 0.00 | 118.15 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | | | 0 | 0.00 |
| No. of employees: Grading/Excavation | 30 | | 60 | 1,200.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/trip) | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.15 | 2.50 | 0.24 | 0.12 | 0.05 | 0.01 | 899.84 | 0.02 | 0.01 | 903.22 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.11 | 0.01 | 0.01 | 0.00 | 0.00 | 39.59 | 0.00 | 0.00 | 39.74 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.11 | 0.01 | 0.01 | 0.00 | 0.00 | 39.59 | 0.00 | 0.00 | 39.74 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | | | | | 0.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 135.97 | 0.00 | 0.00 | 137.35 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 5.98 | 0.00 | 0.00 | 6.04 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 5.98 | 0.00 | 0.00 | 6.04 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Fugitive Dust - Grading/Excavation | | | 50.00 | 2.20 | 10.40 | 0.46 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Mitigation Option | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.49 | 8.40 | 3.99 | 0.20 | 0.18 | 0.01 | 1,289.83 | 0.42 | 0.01 | 1,303.73 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.38 | 4.59 | 3.39 | 0.16 | 0.16 | 0.01 | 778.79 | 0.03 | 0.01 | 781.40 |
| 4.00 | | | Model Default Tier | Graders | 2.47 | 21.83 | 22.45 | 1.24 | 1.14 | 0.03 | 3,027.36 | 0.98 | 0.03 | 3,059.89 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.17 | 14.07 | 12.23 | 0.67 | 0.62 | 0.02 | 1,929.63 | 0.62 | 0.02 | 1,950.42 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Rubber Tired Dozers | 4.02 | 33.16 | 39.65 | 1.81 | 1.67 | 0.04 | 4,312.75 | 1.40 | 0.04 | 4,359.08 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.23 | 2.40 | 2.13 | 0.14 | 0.13 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.38 | 5.64 | 3.88 | 0.19 | 0.18 | 0.01 | 761.71 | 0.25 | 0.01 | 769.91 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 9.56 | 92.33 | 90.42 | 4.51 | 4.17 | 0.13 | 12,777.66 | 3.83 | 0.11 | 12,907.21 |
| | Grading/Excavation | | tons per phase | 0.42 | 4.06 | 3.98 | 0.20 | 0.18 | 0.01 | 562.22 | 0.17 | 0.00 | 567.92 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.42 | 4.06 | 3.98 | 0.20 | 0.18 | 0.01 | 562.22 | 0.17 | 0.00 | 567.92 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 4: 2023 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 9.82 | 95.51 | 93.03 | 54.82 | 4.82 | 50.00 | 14.69 | 4.29 | 10.40 | 0.17 | 16,471.74 | 3.86 | 0.22 | 16,633.07 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 9.82 | 95.51 | 93.03 | 54.82 | 4.82 | 50.00 | 14.69 | 4.29 | 10.40 | 0.17 | 16,471.74 | 3.86 | 0.22 | 16,633.07 |
| **Total (tons/construction project)** | 0.43 | 4.20 | 4.09 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.76 | 0.17 | 0.01 | 731.86 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 9 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 343 | 0 | 782 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 4: 2023 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.43 | 4.20 | 4.09 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.76 | 0.17 | 0.01 | 663.93 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.43 | 4.20 | 4.09 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.76 | 0.17 | 0.01 | 663.93 |
| **Total (tons/construction project)** | 0.43 | 4.20 | 4.09 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.76 | 0.17 | 0.01 | 663.93 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 4: 2023 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 9.82 | 95.50 | 92.83 | 54.82 | 4.82 | 50.00 | 14.69 | 4.29 | 10.40 | 0.17 | 16,468.53 | 3.86 | 0.21 | 16,628.96 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 9.82 | 95.50 | 92.83 | 54.82 | 4.82 | 50.00 | 14.69 | 4.29 | 10.40 | 0.17 | 16,468.53 | 3.86 | 0.21 | 16,628.96 |
| **Total (tons/construction project)** | 0.43 | 4.20 | 4.08 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 731.67 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 9 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 343 | 0 | 782 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 4: 2023 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.43 | 4.20 | 4.08 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 663.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.43 | 4.20 | 4.08 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 663.77 |
| **Total (tons/construction project)** | 0.43 | 4.20 | 4.08 | 2.41 | 0.21 | 2.20 | 0.65 | 0.19 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 663.77 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Sac River S/S Contract 4: 2023 Berms and Relief Wells

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 4.34 | 85.47 | 15.56 | 50.89 | 0.89 | 50.00 | 11.06 | 0.66 | 10.40 | 0.17 | 16,468.53 | 3.86 | 0.21 | 16,628.96 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 4.34 | 85.47 | 15.56 | 50.89 | 0.89 | 50.00 | 11.06 | 0.66 | 10.40 | 0.17 | 16,468.53 | 3.86 | 0.21 | 16,628.96 |
| **Total (tons/construction project)** | 0.19 | 3.76 | 0.68 | 2.24 | 0.04 | 2.20 | 0.49 | 0.03 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 731.67 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 4 |
| Total Project Area (acres) -> | 9 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 0 | 0 | 0 | 0 | 0 | 0 |
| Grading/Excavation | 343 | 0 | 782 | 0 | 1,200 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Sac River S/S Contract 4: 2023 Berms and Relief Wells

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Grading/Excavation** | 0.19 | 3.76 | 0.68 | 2.24 | 0.04 | 2.20 | 0.49 | 0.03 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 663.77 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.19 | 3.76 | 0.68 | 2.24 | 0.04 | 2.20 | 0.49 | 0.03 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 663.77 |
| **Total (tons/construction project)** | 0.19 | 3.76 | 0.68 | 2.24 | 0.04 | 2.20 | 0.49 | 0.03 | 0.46 | 0.01 | 724.62 | 0.17 | 0.01 | 663.77 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | Sac River S/S Contract 4: 2023 | Vegetation and Cutoff Wall |
| Construction Start Year | 2023 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction |
| Project Construction Time | 2.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.50 | miles |
| Total Project Area | 19.00 | acres |
| Maximum Area Disturbed/Day | 5.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 9.00 |
| | Grading/Excavation | 15.00 | 2034.00 | 38.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.80 | 0.20 | 5/1/2023 | 1/1/2023 |
| Grading/Excavation | 1.20 | 0.90 | 5/26/2023 | 1/26/2023 |
| Drainage/Utilities/Sub-Grade | 0.00 | 0.60 | | 3/4/2023 |
| Paving | 0.00 | 0.30 | | 3/4/2023 |
| **Totals (Months)** | 2 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used. | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

| **Soil Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | 26.00 | | | 1 | 26.00 |
| Miles/round trip: Grading/Excavation | 41.00 | | | 139 | 5699.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.02 | 0.08 | 0.01 | 0.00 | 0.00 | 88.38 | 0.00 | 0.00 | 89.28 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.78 | 0.00 | 0.00 | 0.79 |
| Pounds per day - Grading/Excavation | 0.80 | 4.67 | 16.45 | 1.29 | 0.50 | 0.18 | 19,372.72 | 0.04 | 0.66 | 19,569.62 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.06 | 0.22 | 0.02 | 0.01 | 0.00 | 255.72 | 0.00 | 0.01 | 258.32 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.06 | 0.22 | 0.02 | 0.01 | 0.00 | 256.50 | 0.00 | 0.01 | 259.10 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

| **Asphalt Hauling Emissions** | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grade | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| **Emission Rates** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D118.

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearing | 14 | | 28 | 560.00 |
| No. of employees: Grading/Excavation | 100 | | 200 | 4,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grade | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Grading/Excavation (grams/mile) | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip) | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Grading/Excavation (grams/trip) | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Draining/Utilities/Sub-Grade (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.07 | 1.17 | 0.11 | 0.06 | 0.02 | 0.00 | 419.93 | 0.01 | 0.00 | 421.50 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 3.70 | 0.00 | 0.00 | 3.71 |
| Pounds per day - Grading/Excavation | 0.50 | 8.34 | 0.79 | 0.41 | 0.17 | 0.03 | 2,999.47 | 0.06 | 0.03 | 3,010.73 |
| Tons per const. Period - Grading/Excavation | 0.01 | 0.11 | 0.01 | 0.01 | 0.00 | 0.00 | 39.59 | 0.00 | 0.00 | 39.74 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.01 | 0.12 | 0.01 | 0.01 | 0.00 | 0.00 | 43.29 | 0.00 | 0.00 | 43.45 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 2 | | 40.00 | | 80.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile) | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 135.97 | 0.00 | 0.00 | 137.35 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.20 | 0.00 | 0.00 | 1.21 |
| Pounds per day - Grading/Excavation | 0.01 | 0.07 | 0.23 | 0.02 | 0.01 | 0.00 | 271.95 | 0.00 | 0.01 | 274.71 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.59 | 0.00 | 0.00 | 3.63 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.79 | 0.00 | 0.00 | 4.83 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 50.00 | 0.44 | 10.40 | 0.09 |
| Fugitive Dust - Grading/Excavation | | | 50.00 | 0.66 | 10.40 | 0.14 |
| Fugitive Dust - Drainage/Utilities/Subgrade | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** Override of Default Number of Vehicles | Default Number of Vehicles *Program-estimate* | Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG pounds/day | CO pounds/day | NOx pounds/day | PM10 pounds/day | PM2.5 pounds/day | SOx pounds/day | CO2 pounds/day | CH4 pounds/day | N2O pounds/day | CO2e pounds/day |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Cranes | 0.86 | 4.49 | 9.33 | 0.39 | 0.36 | 0.01 | 1,366.81 | 0.44 | 0.01 | 1,381.54 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tier | Excavators | 0.49 | 8.40 | 3.99 | 0.20 | 0.18 | 0.01 | 1,289.83 | 0.42 | 0.01 | 1,303.73 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Signal Boards | 0.07 | 0.38 | 0.45 | 0.02 | 0.02 | 0.00 | 61.64 | 0.01 | 0.00 | 61.96 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.23 | 2.40 | 2.13 | 0.14 | 0.13 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 2.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.38 | 5.64 | 3.88 | 0.19 | 0.18 | 0.01 | 761.71 | 0.25 | 0.01 | 769.91 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**User-Defined Off-road Equipment** If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

| Number of Vehicles | Equipment Tier | Type | | ROG pounds/day | CO pounds/day | NOx pounds/day | PM10 pounds/day | PM2.5 pounds/day | SOx pounds/day | CO2 pounds/day | CH4 pounds/day | N2O pounds/day | CO2e pounds/day |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | N/A | | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing | pounds per day | 2.03 | 21.30 | 19.79 | 0.93 | 0.86 | 0.04 | 3,787.72 | 1.21 | 0.03 | 3,828.18 |
| Grubbing/Land Clearing | tons per phase | 0.02 | 0.19 | 0.17 | 0.01 | 0.01 | 0.00 | 33.33 | 0.01 | 0.00 | 33.69 |

| Grading/Excavation | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Bore/Drill Rigs | 1.00 | 9.47 | 9.51 | 0.31 | 0.28 | 0.04 | 4,266.36 | 1.38 | 0.04 | 4,312.42 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | | | Model Default Tier | Cranes | 1.72 | 8.97 | 18.66 | 0.78 | 0.72 | 0.03 | 2,733.62 | 0.88 | 0.02 | 2,763.09 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | | | Model Default Tier | Excavators | 2.43 | 42.01 | 19.97 | 0.98 | 0.90 | 0.07 | 6,449.15 | 2.09 | 0.06 | 6,518.67 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Generator Sets | 0.38 | 4.59 | 3.39 | 0.16 | 0.16 | 0.01 | 778.79 | 0.03 | 0.01 | 781.40 |
| 4.00 | | | Model Default Tier | Graders | 2.47 | 21.83 | 22.45 | 1.24 | 1.14 | 0.03 | 3,027.36 | 0.98 | 0.03 | 3,059.89 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | | | Model Default Tier | Other Material Handling Equipment | 5.11 | 74.71 | 41.68 | 2.26 | 2.08 | 0.12 | 11,126.92 | 3.60 | 0.10 | 11,246.88 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Rollers | 1.17 | 14.07 | 12.23 | 0.67 | 0.62 | 0.02 | 1,929.63 | 0.62 | 0.02 | 1,950.42 |
| 10.00 | | | Model Default Tier | Rough Terrain Forklifts | 1.32 | 28.59 | 17.49 | 0.56 | 0.52 | 0.04 | 4,172.55 | 1.35 | 0.04 | 4,217.51 |
| 10.00 | | | Model Default Tier | Rubber Tired Dozers | 10.04 | 82.89 | 99.13 | 4.53 | 4.17 | 0.11 | 10,781.87 | 3.49 | 0.10 | 10,897.71 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | | | Model Default Tier | Signal Boards | 0.43 | 2.26 | 2.70 | 0.10 | 0.10 | 0.01 | 369.85 | 0.04 | 0.00 | 371.73 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.23 | 2.40 | 2.13 | 0.14 | 0.13 | 0.00 | 307.72 | 0.10 | 0.00 | 311.03 |
| 6.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 1.15 | 16.91 | 11.64 | 0.57 | 0.53 | 0.02 | 2,285.14 | 0.74 | 0.02 | 2,309.73 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 27.45 | 308.70 | 260.98 | 12.30 | 11.34 | 0.50 | 48,228.98 | 15.30 | 0.43 | 48,740.49 |
| | Grading/Excavation | | tons per phase | 0.36 | 4.07 | 3.44 | 0.16 | 0.15 | 0.01 | 636.62 | 0.20 | 0.01 | 643.37 |

| **Drainage/Utilities/Subgrade** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tier | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tier | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =>** | | | | 0.38 | 4.26 | 3.62 | 0.17 | 0.16 | 0.01 | 669.95 | 0.21 | 0.01 | 677.06 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | 10.00 | 8 |
| Air Compressors | | 78 | 10.00 | 8 |
| Bore/Drill Rigs | | 206 | 10.00 | 8 |
| Cement and Mortar Mixers | | 9 | 10.00 | 8 |
| Concrete/Industrial Saws | | 81 | 10.00 | 8 |
| Cranes | | 226 | 10.00 | 8 |
| Crawler Tractors | | 208 | 10.00 | 8 |
| Crushing/Proc. Equipment | | 85 | 10.00 | 8 |
| Excavators | | 163 | 10.00 | 8 |
| Forklifts | | 89 | 10.00 | 8 |
| Generator Sets | | 84 | 10.00 | 8 |
| Graders | | 175 | 10.00 | 8 |
| Off-Highway Tractors | | 123 | 10.00 | 8 |
| Off-Highway Trucks | 210.00 | 400 | 10.00 | 8 |
| Other Construction Equipment | | 172 | 10.00 | 8 |
| Other General Industrial Equipment | | 88 | 10.00 | 8 |
| Other Material Handling Equipment | | 167 | 10.00 | 8 |
| Pavers | | 126 | 10.00 | 8 |
| Paving Equipment | | 131 | 10.00 | 8 |
| Plate Compactors | | 8 | 10.00 | 8 |
| Pressure Washers | | 13 | 10.00 | 8 |
| Pumps | | 84 | 10.00 | 8 |
| Rollers | | 81 | 10.00 | 8 |
| Rough Terrain Forklifts | | 100 | 10.00 | 8 |
| Rubber Tired Dozers | | 255 | 10.00 | 8 |
| Rubber Tired Loaders | | 200 | 10.00 | 8 |
| Scrapers | | 362 | 10.00 | 8 |
| Signal Boards | | 6 | 10.00 | 8 |
| Skid Steer Loaders | | 65 | 10.00 | 8 |
| Surfacing Equipment | | 254 | 10.00 | 8 |
| Sweepers/Scrubbers | | 64 | 10.00 | 8 |
| Tractors/Loaders/Backhoes | | 98 | 10.00 | 8 |
| Trenchers | | 81 | 10.00 | 8 |
| Welders | | 46 | 10.00 | 8 |

**END OF DATA ENTRY SHEET**

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 4: 2023 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.11 | 22.52 | 20.09 | 51.00 | 1.00 | 50.00 | 11.29 | 0.89 | 10.40 | 0.05 | 4,432.00 | 1.22 | 0.05 | 4,476.32 |
| **Grading/Excavation** | 28.76 | 321.77 | 278.45 | 64.02 | 14.02 | 50.00 | 22.42 | 12.02 | 10.40 | 0.72 | 70,873.11 | 15.40 | 1.13 | 71,595.56 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 28.76 | 321.77 | 278.45 | 64.02 | 14.02 | 50.00 | 22.42 | 12.02 | 10.40 | 0.72 | 70,873.11 | 15.40 | 1.13 | 71,595.56 |
| **Total (tons/construction project)** | 0.40 | 4.45 | 3.85 | 1.29 | 0.19 | 1.10 | 0.40 | 0.17 | 0.23 | 0.01 | 974.53 | 0.21 | 0.02 | 984.45 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 2 |
| Total Project Area (acres) -> | 19 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 9 | 0 | 26 | 0 | 560 | 40 |
| Grading/Excavation | 2,072 | 0 | 5,699 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 4: 2023 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.20 | 0.18 | 0.45 | 0.01 | 0.44 | 0.10 | 0.01 | 0.09 | 0.00 | 39.00 | 0.01 | 0.00 | 35.74 |
| **Grading/Excavation** | 0.38 | 4.25 | 3.68 | 0.85 | 0.19 | 0.66 | 0.30 | 0.16 | 0.14 | 0.01 | 935.53 | 0.20 | 0.01 | 857.35 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.38 | 4.25 | 3.68 | 0.85 | 0.19 | 0.66 | 0.30 | 0.16 | 0.14 | 0.01 | 935.53 | 0.20 | 0.01 | 857.35 |
| **Total (tons/construction project)** | 0.40 | 4.45 | 3.85 | 1.29 | 0.19 | 1.10 | 0.40 | 0.17 | 0.23 | 0.01 | 974.53 | 0.21 | 0.02 | 893.09 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 4: 2023 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 2.11 | 22.52 | 20.07 | 51.00 | 1.00 | 50.00 | 11.29 | 0.89 | 10.40 | 0.05 | 4,431.74 | 1.22 | 0.05 | 4,475.99 |
| **Grading/Excavation** | 28.75 | 321.75 | 277.06 | 64.01 | 14.01 | 50.00 | 22.41 | 12.01 | 10.40 | 0.72 | 70,850.57 | 15.39 | 1.11 | 71,566.64 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 28.75 | 321.75 | 277.06 | 64.01 | 14.01 | 50.00 | 22.41 | 12.01 | 10.40 | 0.72 | 70,850.57 | 15.39 | 1.11 | 71,566.64 |
| **Total (tons/construction project)** | 0.40 | 4.45 | 3.83 | 1.29 | 0.19 | 1.10 | 0.40 | 0.17 | 0.23 | 0.01 | 974.23 | 0.21 | 0.02 | 984.07 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 2 |
| Total Project Area (acres) -> | 19 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 9 | 0 | 26 | 0 | 560 | 40 |
| Grading/Excavation | 2,072 | 0 | 5,699 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 4: 2023 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.02 | 0.20 | 0.18 | 0.45 | 0.01 | 0.44 | 0.10 | 0.01 | 0.09 | 0.00 | 39.00 | 0.01 | 0.00 | 35.73 |
| **Grading/Excavation** | 0.38 | 4.25 | 3.66 | 0.84 | 0.18 | 0.66 | 0.30 | 0.16 | 0.14 | 0.01 | 935.23 | 0.20 | 0.01 | 857.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.38 | 4.25 | 3.66 | 0.84 | 0.18 | 0.66 | 0.30 | 0.16 | 0.14 | 0.01 | 935.23 | 0.20 | 0.01 | 857.01 |
| **Total (tons/construction project)** | 0.40 | 4.45 | 3.83 | 1.29 | 0.19 | 1.10 | 0.40 | 0.17 | 0.23 | 0.01 | 974.23 | 0.21 | 0.02 | 892.74 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Sac River S/S Contract 4: 2023 Vegetation and Cutoff Wall

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 1.31 | 27.81 | 5.19 | 50.23 | 0.23 | 50.00 | 10.57 | 0.17 | 10.40 | 0.05 | 4,431.74 | 1.22 | 0.05 | 4,475.99 |
| **Grading/Excavation** | 16.58 | 341.14 | 51.69 | 53.42 | 3.42 | 50.00 | 12.65 | 2.25 | 10.40 | 0.72 | 70,850.57 | 15.39 | 1.11 | 71,566.64 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 16.58 | 341.14 | 51.69 | 53.42 | 3.42 | 50.00 | 12.65 | 2.25 | 10.40 | 0.72 | 70,850.57 | 15.39 | 1.11 | 71,566.64 |
| **Total (tons/construction project)** | 0.23 | 4.75 | 0.73 | 1.15 | 0.05 | 1.10 | 0.26 | 0.03 | 0.23 | 0.01 | 974.23 | 0.21 | 0.02 | 984.07 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 2 |
| Total Project Area (acres) -> | 19 |
| Maximum Area Disturbed/Day (acres) -> | 5 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 9 | 0 | 26 | 0 | 560 | 40 |
| Grading/Excavation | 2,072 | 0 | 5,699 | 0 | 4,000 | 80 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Sac River S/S Contract 4: 2023 Vegetation and Cutoff Wall

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.24 | 0.05 | 0.44 | 0.00 | 0.44 | 0.09 | 0.00 | 0.09 | 0.00 | 39.00 | 0.01 | 0.00 | 35.73 |
| **Grading/Excavation** | 0.22 | 4.50 | 0.68 | 0.71 | 0.05 | 0.66 | 0.17 | 0.03 | 0.14 | 0.01 | 935.23 | 0.20 | 0.01 | 857.01 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.22 | 4.50 | 0.68 | 0.71 | 0.05 | 0.66 | 0.17 | 0.03 | 0.14 | 0.01 | 935.23 | 0.20 | 0.01 | 857.01 |
| **Total (tons/construction project)** | 0.23 | 4.75 | 0.73 | 1.15 | 0.05 | 1.10 | 0.26 | 0.03 | 0.23 | 0.01 | 974.23 | 0.21 | 0.02 | 892.74 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

*Mitigation Sites*

**Road Construction Emissions Model** **Version 8.1.0**

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with
yellow or blue background can be modified. Program defaults have a white backgroun
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project typ
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new proje

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

## Input Type

| | | |
|---|---|---|
| Project Name | Mitigation | |
| Construction Start Year | 2023 | Enter a Year between 2014 and 2025 (inclusive) |
| Project Type<br>For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data | 4 | 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway<br>2) Road Widening : Project to add a new lane to an existing roadway<br>3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane<br>4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee constructi |
| Project Construction Time | 6.00 | months |
| Working Days per Month | 22.00 | days (assume 22 if unknown) |
| Predominant Soil/Site Type: Enter 1, 2, or 3<br>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) | 2 | 1) Sand Gravel : Use for quaternary deposits (Delta/West County)<br>2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)<br>3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta) |
| Project Length | 0.47 | miles |
| Total Project Area | 50.00 | acres |
| Maximum Area Disturbed/Day | 50.00 | acres |
| Water Trucks Used? | 1 | 1. Yes<br>2. No |

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

## Material Hauling Quantity Input

| Material Type | Phase | Haul Truck Capacity ($yd^3$) (assume 20 if unknown) | Import Volume ($yd^3$/day) | Export Volume ($yd^3$/day) |
|---|---|---|---|---|
| Soil | Grubbing/Land Clearing | 15.00 | 0.00 | 6.00 |
| | Grading/Excavation | 15.00 | 0.00 | 91.00 |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |
| Asphalt | Grubbing/Land Clearing | | | |
| | Grading/Excavation | | | |
| | Drainage/Utilities/Sub-Grade | | | |
| | Paving | | | |

## Mitigation Options

| | | |
|---|---|---|
| On-road Fleet Emissions Mitigation | No Mitigation | Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer |
| Off-road Equipment Emissions Mitigation | No Mitigation | Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml).<br>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Stand |

**The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selecte**

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F

| Construction Periods | User Override of Construction Months | Program Calculated Months | User Override of Phase Starting Date | Program Default Phase Starting Date |
|---|---|---|---|---|
| Grubbing/Land Clearing | 0.60 | 0.60 | 4/15/2023 | 1/1/2023 |
| Grading/Excavation | 5.40 | 2.70 | 5/4/2023 | 1/20/2023 |
| Drainage/Utilities/Sub-Grade | 0.00 | 1.80 | | 7/4/2023 |
| Paving | 0.00 | 0.90 | | 7/4/2023 |
| **Totals (Months)** | 6 | | Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be u | |

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F

| Soil Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | 20.00 | | | 1 | 20.00 |
| Miles/round trip: Grading/Excavation | 20.00 | | | 7 | 140.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Hauling Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.02 | 0.06 | 0.00 | 0.00 | 0.00 | 67.99 | 0.00 | 0.00 | 68.68 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.45 |
| Pounds per day - Grading/Excavation | 0.02 | 0.11 | 0.40 | 0.03 | 0.01 | 0.00 | 475.90 | 0.00 | 0.02 | 480.74 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 28.27 | 0.00 | 0.00 | 28.56 |
| Pounds per day - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grade | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction project | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 28.72 | 0.00 | 0.00 | 29.01 |

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F

| Asphalt Hauling Emissions<br>User Input | User Override of Miles/Round Trip | Program Estimate of Miles/Round Trip | User Override of Truck Round Trips/Day | Default Values Round Trips/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| Miles/round trip: Grubbing/Land Clearing | | | | 0 | 0.00 |
| Miles/round trip: Grading/Excavation | | | | 0 | 0.00 |
| Miles/round trip: Drainage/Utilities/Sub-Grad | | | | 0 | 0.00 |
| Miles/round trip: Paving | | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Grading/Excavation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: Worker commute default values can be overridden in cells D113 through D11

| Worker Commute Emissions | User Override of Worker Commute Default Values | Default Values | | |
|---|---|---|---|---|
| **User Input** | | | | |
| Miles/ one-way trip | 20 | | Calculated Daily Trips | Calculated Daily VMT |
| One-way trips/day | 2 | | | |
| No. of employees: Grubbing/Land Clearin | 40 | | 80 | 1,600.00 |
| No. of employees: Grading/Excavatio | 75 | | 150 | 3,000.00 |
| No. of employees: Drainage/Utilities/Sub-Grad | | | 0 | 0.00 |
| No. of employees: Paving | | | 0 | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Grading/Excavation (grams/mile | 0.02 | 0.85 | 0.08 | 0.05 | 0.02 | 0.00 | 336.27 | 0.01 | 0.00 | 337.46 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Grubbing/Land Clearing (grams/trip | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Grading/Excavation (grams/trip | 0.81 | 1.86 | 0.14 | 0.00 | 0.00 | 0.00 | 77.20 | 0.01 | 0.01 | 79.12 |
| Draining/Utilities/Sub-Grade (grams/trip | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/trip) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.20 | 3.34 | 0.32 | 0.16 | 0.07 | 0.01 | 1,199.79 | 0.02 | 0.01 | 1,204.29 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 7.92 | 0.00 | 0.00 | 7.95 |
| Pounds per day - Grading/Excavatio | 0.37 | 6.26 | 0.59 | 0.31 | 0.13 | 0.02 | 2,249.60 | 0.04 | 0.02 | 2,258.05 |
| Tons per const. Period - Grading/Excavatio | 0.02 | 0.37 | 0.04 | 0.02 | 0.01 | 0.00 | 133.63 | 0.00 | 0.00 | 134.13 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.02 | 0.39 | 0.04 | 0.02 | 0.01 | 0.00 | 141.55 | 0.00 | 0.00 | 142.08 |

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

| Water Truck Emissions | User Override of Default # Water Trucks | Program Estimate of Number of Water Trucks | User Override of Truck Miles Traveled/Vehicle/Day | Default Values Miles Traveled/Vehicle/Day | Calculated Daily VMT |
|---|---|---|---|---|---|
| **User Input** | | | | | |
| Grubbing/Land Clearing - Exhaust | 1 | | 40.00 | | 40.00 |
| Grading/Excavation - Exhaust | 1 | | 40.00 | | 40.00 |
| Drainage/Utilities/Subgrade | | | | | 0.00 |
| Paving | | | | | 0.00 |

| Emission Rates | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Grubbing/Land Clearing (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Grading/Excavation (grams/mile | 0.06 | 0.37 | 1.31 | 0.10 | 0.04 | 0.01 | 1,541.90 | 0.00 | 0.05 | 1,557.58 |
| Draining/Utilities/Sub-Grade (grams/mile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving (grams/mile) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Emissions** | **ROG** | **CO** | **NOx** | **PM10** | **PM2.5** | **SOx** | **CO2** | **CH4** | **N2O** | **CO2e** |
| Pounds per day - Grubbing/Land Clearing | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 135.97 | 0.00 | 0.00 | 137.35 |
| Tons per const. Period - Grubbing/Land Clearing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 | 0.91 |
| Pounds per day - Grading/Excavatio | 0.01 | 0.03 | 0.12 | 0.01 | 0.00 | 0.00 | 135.97 | 0.00 | 0.00 | 137.35 |
| Tons per const. Period - Grading/Excavatio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 8.08 | 0.00 | 0.00 | 8.16 |
| Pounds per day - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Drainage/Utilities/Sub-Grad | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pounds per day - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tons per const. Period - Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total tons per construction projec | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 8.97 | 0.00 | 0.00 | 9.07 |

Note: Fugitive dust default values can be overridden in cells D171 through D173.

| Fugitive Dust | User Override of Max Acreage Disturbed/Day | Default Maximum Acreage/Day | PM10 pounds/day | PM10 tons/per period | PM2.5 pounds/day | PM2.5 tons/per period |
|---|---|---|---|---|---|---|
| Fugitive Dust - Grubbing/Land Clearing | | | 500.00 | 3.30 | 104.00 | 0.69 |
| Fugitive Dust - Grading/Excavatio | | | 500.00 | 29.70 | 104.00 | 6.18 |
| Fugitive Dust - Drainage/Utilities/Subgrad | | | 0.00 | 0.00 | 0.00 | 0.00 |

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is select

**Off-Road Equipment Emissions**

| **Grubbing/Land Clearing** | Default Number of Vehicles | Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Mitigation Option Default Equipment Tier | Type | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | | | Model Default Tie | Excavators | 0.58 | 10.08 | 4.79 | 0.23 | 0.22 | 0.02 | 1,547.80 | 0.50 | 0.01 | 1,564.48 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.18 | 1.92 | 1.71 | 0.11 | 0.10 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grubbing/Land Clearing | | pounds per day | 0.77 | 12.00 | 6.50 | 0.34 | 0.32 | 0.02 | 1,793.97 | 0.58 | 0.02 | 1,813.31 |
| | Grubbing/Land Clearing | | tons per phase | 0.01 | 0.08 | 0.04 | 0.00 | 0.00 | 0.00 | 11.84 | 0.00 | 0.00 | 11.97 |

| **Grading/Excavation** | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Excavators | 0.39 | 6.72 | 3.20 | 0.16 | 0.14 | 0.01 | 1,031.86 | 0.33 | 0.01 | 1,042.99 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Generator Sets | 0.31 | 3.67 | 2.72 | 0.13 | 0.13 | 0.01 | 623.04 | 0.03 | 0.00 | 625.12 |
| 1.00 | | | Model Default Tie | Graders | 0.49 | 4.37 | 4.49 | 0.25 | 0.23 | 0.01 | 605.47 | 0.20 | 0.01 | 611.98 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | | | Model Default Tie | Other Construction Equipment | 0.70 | 8.01 | 6.88 | 0.36 | 0.33 | 0.01 | 1,196.52 | 0.39 | 0.01 | 1,209.45 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Rubber Tired Dozers | 0.80 | 6.63 | 7.93 | 0.36 | 0.33 | 0.01 | 862.55 | 0.28 | 0.01 | 871.82 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.18 | 1.92 | 1.71 | 0.11 | 0.10 | 0.00 | 246.18 | 0.08 | 0.00 | 248.83 |
| 2.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.31 | 4.51 | 3.10 | 0.15 | 0.14 | 0.01 | 609.37 | 0.20 | 0.01 | 615.93 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| **User-Defined Off-road Equipment** | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Grading/Excavation | | pounds per day | 3.18 | 35.82 | 30.02 | 1.51 | 1.40 | 0.05 | 5,174.99 | 1.50 | 0.05 | 5,226.10 |
| | Grading/Excavation | | tons per phase | 0.19 | 2.13 | 1.78 | 0.09 | 0.08 | 0.00 | 307.39 | 0.09 | 0.00 | 310.43 |

| Drainage/Utilities/Subgrade | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default Equipment Tier | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | | | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Drainage/Utilities/Sub-Grade | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Paving | Default Number of Vehicles | Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected) | Default | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Override of Default Number of Vehicles | *Program-estimate* | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | | Model Default Tie | Aerial Lifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Air Compressors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Bore/Drill Rigs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cement and Mortar Mixers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Concrete/Industrial Saws | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Cranes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crawler Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Crushing/Proc. Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Excavators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Generator Sets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Graders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Tractors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Off-Highway Trucks | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Construction Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other General Industrial Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Other Material Handling Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pavers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Paving Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Plate Compactors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pressure Washers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Pumps | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rollers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rough Terrain Forklifts | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Dozers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Rubber Tired Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Scrapers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Signal Boards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Skid Steer Loaders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Surfacing Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Sweepers/Scrubbers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Tractors/Loaders/Backhoes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Trenchers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | | Model Default Tie | Welders | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| User-Defined Off-road Equipment | If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' t | | | ROG | CO | NOx | PM10 | PM2.5 | SOx | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Vehicles | | Equipment Tier | Type | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day | pounds/day |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | | N/A | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | pounds per day | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Paving | | tons per phase | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Emissions all Phases (tons per construction period) =** | | | | 0.19 | 2.21 | 1.83 | 0.09 | 0.09 | 0.00 | 319.23 | 0.09 | 0.00 | 322.40 |

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F4

| Equipment | User Override of Horsepower | Default Values Horsepower | User Override of Hours/day | Default Values Hours/day |
|---|---|---|---|---|
| Aerial Lifts | | 63 | | 8 |
| Air Compressors | | 78 | | 8 |
| Bore/Drill Rigs | | 206 | | 8 |
| Cement and Mortar Mixers | | 9 | | 8 |
| Concrete/Industrial Saws | | 81 | | 8 |
| Cranes | | 226 | | 8 |
| Crawler Tractors | | 208 | | 8 |
| Crushing/Proc. Equipment | | 85 | | 8 |
| Excavators | | 163 | | 8 |
| Forklifts | | 89 | | 8 |
| Generator Sets | | 84 | | 8 |
| Graders | | 175 | | 8 |
| Off-Highway Tractors | | 123 | | 8 |
| Off-Highway Trucks | | 400 | | 8 |
| Other Construction Equipment | | 172 | | 8 |
| Other General Industrial Equipment | | 88 | | 8 |
| Other Material Handling Equipment | | 167 | | 8 |
| Pavers | | 126 | | 8 |
| Paving Equipment | | 131 | | 8 |
| Plate Compactors | | 8 | | 8 |
| Pressure Washers | | 13 | | 8 |
| Pumps | | 84 | | 8 |
| Rollers | | 81 | | 8 |
| Rough Terrain Forklifts | | 100 | | 8 |
| Rubber Tired Dozers | | 255 | | 8 |
| Rubber Tired Loaders | | 200 | | 8 |
| Scrapers | | 362 | | 8 |
| Signal Boards | | 6 | | 8 |
| Skid Steer Loaders | | 65 | | 8 |
| Surfacing Equipment | | 254 | | 8 |
| Sweepers/Scrubbers | | 64 | | 8 |
| Tractors/Loaders/Backhoes | | 98 | | 8 |
| Trenchers | | 81 | | 8 |
| Welders | | 46 | | 8 |

**END OF DATA ENTRY SHEET**

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

### Daily Emission Estimates for -> Mitigation

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.97 | 15.39 | 6.99 | 500.52 | 0.52 | 500.00 | 104.39 | 0.39 | 104.00 | 0.03 | 3,197.72 | 0.60 | 0.04 | 3,223.64 |
| **Grading/Excavation** | 3.57 | 42.22 | 31.13 | 501.86 | 1.86 | 500.00 | 105.55 | 1.55 | 104.00 | 0.08 | 8,036.48 | 1.55 | 0.09 | 8,102.25 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 3.57 | 42.22 | 31.13 | 501.86 | 1.86 | 500.00 | 105.55 | 1.55 | 104.00 | 0.08 | 8,036.48 | 1.55 | 0.09 | 8,102.25 |
| **Total (tons/construction project)** | 0.22 | 2.61 | 1.90 | 33.11 | 0.11 | 33.00 | 6.96 | 0.09 | 6.86 | 0.01 | 498.47 | 0.10 | 0.01 | 502.55 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 6 |
| Total Project Area (acres) -> | 50 |
| Maximum Area Disturbed/Day (acres) -> | 50 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 6 | 0 | 20 | 0 | 1,600 | 40 |
| Grading/Excavation | 91 | 0 | 140 | 0 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

### Total Emission Estimates by Phase for -> Mitigation

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.05 | 3.30 | 0.00 | 3.30 | 0.69 | 0.00 | 0.69 | 0.00 | 21.10 | 0.00 | 0.00 | 19.30 |
| **Grading/Excavation** | 0.21 | 2.51 | 1.85 | 29.81 | 0.11 | 29.70 | 6.27 | 0.09 | 6.18 | 0.00 | 477.37 | 0.09 | 0.01 | 436.61 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.21 | 2.51 | 1.85 | 29.81 | 0.11 | 29.70 | 6.27 | 0.09 | 6.18 | 0.00 | 477.37 | 0.09 | 0.01 | 436.61 |
| **Total (tons/construction project)** | 0.22 | 2.61 | 1.90 | 33.11 | 0.11 | 33.00 | 6.96 | 0.09 | 6.86 | 0.01 | 498.47 | 0.10 | 0.01 | 455.91 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Mitigation

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.97 | 15.39 | 6.97 | 500.52 | 0.52 | 500.00 | 104.39 | 0.39 | 104.00 | 0.03 | 3,197.49 | 0.60 | 0.04 | 3,223.34 |
| **Grading/Excavation** | 3.57 | 42.22 | 31.08 | 501.86 | 1.86 | 500.00 | 105.55 | 1.55 | 104.00 | 0.08 | 8,035.77 | 1.55 | 0.09 | 8,101.35 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 3.57 | 42.22 | 31.08 | 501.86 | 1.86 | 500.00 | 105.55 | 1.55 | 104.00 | 0.08 | 8,035.77 | 1.55 | 0.09 | 8,101.35 |
| **Total (tons/construction project)** | 0.22 | 2.61 | 1.89 | 33.11 | 0.11 | 33.00 | 6.96 | 0.09 | 6.86 | 0.01 | 498.43 | 0.10 | 0.01 | 502.49 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 6 |
| Total Project Area (acres) -> | 50 |
| Maximum Area Disturbed/Day (acres) -> | 50 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 6 | 0 | 20 | 0 | 1,600 | 40 |
| Grading/Excavation | 91 | 0 | 140 | 0 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Mitigation

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.10 | 0.05 | 3.30 | 0.00 | 3.30 | 0.69 | 0.00 | 0.69 | 0.00 | 21.10 | 0.00 | 0.00 | 19.30 |
| **Grading/Excavation** | 0.21 | 2.51 | 1.85 | 29.81 | 0.11 | 29.70 | 6.27 | 0.09 | 6.18 | 0.00 | 477.32 | 0.09 | 0.01 | 436.56 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.21 | 2.51 | 1.85 | 29.81 | 0.11 | 29.70 | 6.27 | 0.09 | 6.18 | 0.00 | 477.32 | 0.09 | 0.01 | 436.56 |
| **Total (tons/construction project)** | 0.22 | 2.61 | 1.89 | 33.11 | 0.11 | 33.00 | 6.96 | 0.09 | 6.86 | 0.01 | 498.43 | 0.10 | 0.01 | 455.86 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

## Road Construction Emissions Model, Version 8.1.0

**Daily Emission Estimates for ->** Mitigation

| Project Phases (Pounds) | ROG (lbs/day) | CO (lbs/day) | NOx (lbs/day) | Total PM10 (lbs/day) | Exhaust PM10 (lbs/day) | Fugitive Dust PM10 (lbs/day) | Total PM2.5 (lbs/day) | Exhaust PM2.5 (lbs/day) | Fugitive Dust PM2.5 (lbs/day) | SOx (lbs/day) | CO2 (lbs/day) | CH4 (lbs/day) | N2O (lbs/day) | CO2e (lbs/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.79 | 17.43 | 3.18 | 500.24 | 0.24 | 500.00 | 104.13 | 0.13 | 104.00 | 0.03 | 3,197.49 | 0.60 | 0.04 | 3,223.34 |
| **Grading/Excavation** | 2.02 | 42.59 | 5.85 | 500.51 | 0.51 | 500.00 | 104.30 | 0.30 | 104.00 | 0.08 | 8,035.77 | 1.55 | 0.09 | 8,101.35 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (pounds/day)** | 2.02 | 42.59 | 5.85 | 500.51 | 0.51 | 500.00 | 104.30 | 0.30 | 104.00 | 0.08 | 8,035.77 | 1.55 | 0.09 | 8,101.35 |
| **Total (tons/construction project)** | 0.13 | 2.65 | 0.37 | 33.03 | 0.03 | 33.00 | 6.88 | 0.02 | 6.86 | 0.01 | 498.43 | 0.10 | 0.01 | 502.49 |

Notes:

| | |
|---|---|
| Project Start Year -> | 2023 |
| Project Length (months) -> | 6 |
| Total Project Area (acres) -> | 50 |
| Maximum Area Disturbed/Day (acres) -> | 50 |
| Water Truck Used? -> | Yes |

| | Total Material Imported/Exported Volume ($yd^3$/day) | | Daily VMT (miles/day) | | | |
|---|---|---|---|---|---|---|
| Phase | Soil | Asphalt | Soil Hauling | Asphalt Hauling | Worker Commute | Water Truck |
| Grubbing/Land Clearing | 6 | 0 | 20 | 0 | 1,600 | 40 |
| Grading/Excavation | 91 | 0 | 140 | 0 | 3,000 | 40 |
| Drainage/Utilities/Sub-Grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Paving | 0 | 0 | 0 | 0 | 0 | 0 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

**Total Emission Estimates by Phase for ->** Mitigation

| Project Phases (Tons for all except CO2e. Metric tonnes for CO2e) | ROG (tons/phase) | CO (tons/phase) | NOx (tons/phase) | Total PM10 (tons/phase) | Exhaust PM10 (tons/phase) | Fugitive Dust PM10 (tons/phase) | Total PM2.5 (tons/phase) | Exhaust PM2.5 (tons/phase) | Fugitive Dust PM2.5 (tons/phase) | SOx (tons/phase) | CO2 (tons/phase) | CH4 (tons/phase) | N2O (tons/phase) | CO2e (MT/phase) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grubbing/Land Clearing** | 0.01 | 0.12 | 0.02 | 3.30 | 0.00 | 3.30 | 0.69 | 0.00 | 0.69 | 0.00 | 21.10 | 0.00 | 0.00 | 19.30 |
| **Grading/Excavation** | 0.12 | 2.53 | 0.35 | 29.73 | 0.03 | 29.70 | 6.20 | 0.02 | 6.18 | 0.00 | 477.32 | 0.09 | 0.01 | 436.56 |
| **Drainage/Utilities/Sub-Grade** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Paving** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum (tons/phase)** | 0.12 | 2.53 | 0.35 | 29.73 | 0.03 | 29.70 | 6.20 | 0.02 | 6.18 | 0.00 | 477.32 | 0.09 | 0.01 | 436.56 |
| **Total (tons/construction project)** | 0.13 | 2.65 | 0.37 | 33.03 | 0.03 | 33.00 | 6.88 | 0.02 | 6.86 | 0.01 | 498.43 | 0.10 | 0.01 | 455.86 |

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

# Appendix D. Public Comment Letters

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION IX**
**75 Hawthorne Street**
**San Francisco, CA 94105-3901**

September 14, 2020

Robert Chase
Environmental Manager
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Draft Supplemental Environmental Impact Statement for the Sacramento Weir Widening Component of the American River Watershed Common Features Levee Improvement Project, Yolo County, California (EIS No. 20200154)

Dear Robert Chase:

The U.S. Environmental Protection Agency has reviewed the above-referenced document pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA notes that several elements of the Proposed Action were identified in the 2016 American River Watershed Common Features Environmental Impact Statement as actions that could not be fully analyzed at that time because the temporal scope of that analysis was necessarily vague and this specific project element required further design refinement. The Draft Supplemental EIS analyzes the impacts of associated construction and operations of widening the Sacramento Weir as a means to reduce the regional flood risk to the cities of West Sacramento and Sacramento. Additionally, the proposed action includes the installation of structures to facilitate improved fish passage and relocating several railroad crossings and roadways adjacent to the current Sacramento Weir. Please consider the following recommendations to assist in completing the Final Supplemental EIS.

**Impacts to Riparian Habitat**

The Proposed Action would remove up to 18.5 acres of riparian forestland during project construction (p. 74). While the Draft Supplemental EIS determined that the temporal loss of shaded riverine aquatic habitat upon fisheries would impact 6.2 acres of critical aquatic habitat, it is not determined whether the removal of the additional 12.3 acres of other woodland vegetation would be significant (p. 81).

Mitigation to compensate for removal of these trees is proposed by planting replacement habitat at a 2:1 ratio in accordance with the American River Watershed Common Features General Reevaluation Report Habitat Mitigation, Monitoring, and Adaptive Management plan (p. 76). The Corps has guidance for setting mitigation ratios in areas where constructed habitats would take time to mature and replace lost functions.[1] Where there is a lag between when the impacts occur and the time when constructed mitigation is

[1] *Instructions for Preparing Mitigation Ratio Setting Checklist*, No. 8 Temporal Loss, https://www.spa.usace.army.mil/Portals/16/docs/civilworks/regulatory/Mitigation/12501-SPD.02%20Instructions_for_Preparing_Mitigation_Ratio_Setting_Checklist_20160726_CORRECTIONS.pdf?ver=2017-01-20-121857-760

expect to replace lost functions, the instructions increase the mitigation ratio for the loss of trees or woodlands to 3:1.

> ***Recommendations:*** For the Final Supplemental EIS and subsequent projects, account for the time required for full replacement of functions and consider replacing lost tree/woodland functions earlier, before impacts occur, or consider increasing the amount of compensatory mitigation to the recommended 3:1 ratio. 1-1

**Water Quality**

The Draft Supplemental EIS notes that potential dewatering to facilitate construction activities (e.g., removing groundwater that may fill trenches dug for cutoff wall, road, weir, or setback levee construction) could result in erosion and/or release of sediment into surface or groundwater (p. 68). Excavation could extend to a depth that would expose the water table, creating an immediate and direct path to groundwater that could allow contaminants to enter the groundwater system and indirectly affect water quality. While the Draft Supplemental EIS acknowledges that construction activities could result in the release of sediment into surface or groundwater (p. 69), there is also the possibility that dissolved nitrates, ortho-phosphate, or dissolved organic carbon could be part of the infiltrate into groundwater.

> ***Recommendation:*** Consider the need for low-threat general waste discharge permit[2] coverage for construction dewatering offered by the Central Valley Regional Water Quality Control Board. 1-2

**Fish Passage Operations**

The Draft Supplemental EIS identifies three mitigation measures for fisheries in order to minimize the impacts to Sacramento River salmon and sturgeon that may traverse the Sacramento Bypass or Yolo Bypass areas. Additionally, the Draft Supplemental EIS states that widening of the Sacramento Weir may present an additional risk of stranding to these species that is not sufficiently minimized through the mitigation measures (p. 78). One mitigation measure calls for a Fish Rescue Plan where "at a minimum, the plan will identify monitoring scenarios, action triggers, capture/handling methodologies, relocation procedures, and reporting" (p. 83). While these mitigation measures in combination with construction and operation of the fish passage structure have the potential to create effective passage to the Sacramento River for salmon and sturgeon, it is possible that operating the fish passage structure using criteria based solely on certain Sacramento River stage may be less effective than operating the structure whenever monitoring shows fish are present in the by-pass area.

> ***Recommendation:*** For the Final Supplemental EIS, continue coordination with National Marine Fisheries Service and U.S. Fish and Wildlife Service on the Fish Rescue Plan. Identify and discuss the various action triggers using an adaptive management approach for monitoring schedules, capture/handling methodologies and relocation procedures. Discuss alternatives to fish passage operations when monitoring indicates that fish are present in the bypass area but river stage criteria has not been met to ensure safe passage of salmon and sturgeon to the Sacramento River. 1-3

**Air Quality**

The Draft Supplemental EIS states: "Air emissions were modeled using Road Construction Emissions Model 8.1.0, and model data are presented in Appendix C," and "The construction emissions estimates

[2] https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

shown in Table 3.11-5 indicate the… annual emissions that would occur." However, modeled values in Appendix C do not appear to correspond with the values in Table 3.11-5. For example, in Appendix C, 2023 emissions for the Sacramento Weir Widening lists emission values of 10.75, 10.74 and 1.99, and 44.52, 44.52 and 44.00 for NOx and $PM_{10}$, respectively. We understand these values to be unmitigated output, on-road mitigated output and on-road and off-road mitigated output (p. 2). In Table 3.11-5, the unmitigated and mitigated values for NOx and $PM_{10}$ are 15.21 and 7.99, and 24.96 and 24.63, respectively. These values, we assume, do not include partial on-road (only) mitigation.

> ***Recommendation:*** Clarify how the emission calculations of Appendix C are used to derive the values of Table 3.11-5 or correct the values of Table 3.5-11, if necessary. 1-4

We appreciate the opportunity to review this Draft Supplemental EIS. When the Final Supplemental EIS is released for public review, please email one copy to dailey.hannah@epa.gov. If you have any questions, please contact me at (415) 947-4167, or contact Hannah Dailey, the lead reviewer for this project, at 415-972-3832.

Sincerely,

JEAN PRIJATEL

Digitally signed by JEAN PRIJATEL
Date: 2020.09.14 15:15:37 -07'00'

Jean Prijatel
Manager, Environmental Review Branch

cc: Allison Lane, National Marine Fisheries Service
Stephanie Millsap, U.S. Fish and Wildlife Service
Scott Hatton, WDR Program, Central Valley Regional Water Quality Control Board

From: Nelson, Benjamin C [mailto:bcnelson@usbr.gov]
Sent: Friday, September 11, 2020 10:32 AM
To: Chase, Robert D CIV USARMY CESPK (USA) <Robert.D.Chase@usace.army.mil>
Cc: Sacramento_Weir <sacweir@usace.army.mil>
Subject: [Non-DoD Source] Sacramento Weir Widening Draft Supplemental EIS/EIR

Hi Robert,
I had one clarifying comment on the Sacramento Weir Widening Draft SEIS/EIR

* On page 7 and 11 of Appendix A the project "Fremont Weir Fish Passage Project" should be "Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project." The current language may cause confusion with the previously constructed Fremont Weir Adult Fish Passage Project that began in 2018. 2-1

Thanks,
Ben

Ben Nelson
Natural Resources Specialist
Bureau of Reclamation, Bay-Delta Office

801 I St, Suite 140, Sacramento, CA 95814

office - 916-414-2424

cell - 916-539-9510

**CALIFORNIA STATE LANDS COMMISSION**
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

**JENNIFER LUCCHESI,** *Executive Officer*
**(916) 574-1800** *Fax* **(916) 574-1810**
*California Relay Service TDD Phone* **1-800-735-2929**
*from Voice Phone* **1-800-735-2922**

***Contact Phone:*** **(916) 574-1890**

*Established in 1938*

September 14, 2020

File Ref: SCH #2005072046

Mr. Miles Claret
Central Valley Flood Protection Board
3310 El Camino Avenue, Suite 170
Sacramento, CA 95821

*VIA ELECTRONIC MAIL ONLY: PublicCommentARCF16@water.ca.gov*

**Subject: Draft Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) for the American River Common Features, Water Resources Development Act of 2016, Sacramento Weir Modification, Sacramento County**

Dear Mr. Claret:

The California State Lands Commission (Commission) staff has reviewed the subject Draft SEIS/EIR for the American River Common Features Development Act of 2016, Sacramento Weir Modification Project (Proposed Action), which is being prepared by the Central Valley Flood Protection Board (CVFPB), as the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), and the U.S. Army Corps of Engineers (USACE) as the lead agency under the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.). The Commission is a trustee agency for projects that could directly or indirectly affect sovereign lands and their accompanying Public Trust resources or uses. Additionally, because the Proposed Action involves work on sovereign lands, the Commission will act as a responsible agency.

## Commission Jurisdiction and Public Trust Lands

The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space.

Based on the information submitted in the SEIS/EIR, State sovereign land within the Proposed Action area is located below the ordinary high-water mark of the Sacramento River, which at this location is natural, navigable, and tidally influenced. To the extent that any portion of the Proposed Action involves State-owned sovereign lands in the Sacramento River, a lease will be required. If you have any questions, please contact Joanne Holt, Public Land Management Specialist (see contact information below) to discuss the Commission's leasing requirements.

Please also be advised that the waterways involved in the Proposed Action are subject to a public navigational easement. This easement provides that the public has the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses. The activities completed under the Proposed Action must not restrict or impede the easement right of the public.

## Proposed Action Description

The Proposed Action includes constructing a 1,500-foot-long passive weir, with associated levee, roadway, rail, and fish passage improvements. The overall purpose is to construct a new weir upstream of the existing weir along the Sacramento River to reduce flood risk by lowering high water surface elevations against urban levees and reducing flow farther downstream in urbanized areas. Proposed Action objectives include the following:

- Reduce the chance of flooding and damages, once flooding occurs, and improve public safety preparedness, and emergency response.
- Reduce maintenance and repair requirements by modifying the flood management system in ways that are compatible with natural processes.
- Integrate the recovery and restoration of key physical processes, self-sustaining ecological functions, native habitat, and species.
- Ensure that technically feasible and cost-effective solutions are implemented to maximize the flood risk reduction benefits given the practical limitations of applicable funding sources.

Commission staff understands that the Proposed Action would include the following components that have potential to affect State sovereign land:

- Erosion protection (riprap, articulated concrete mats, or a similar material) would be placed on the Sacramento River side of the weir to prevent erosion.
- Two fish passage channel exits: One channel would accommodate fish passage when Sacramento River stages are relatively higher, and one fish passage channel would accommodate fish passage when Sacramento River stages are relatively lower.
- Debris management features on the Sacramento River side of the structure that would include a floating boom, debris control berm, retaining walls, and deflection walls,
- Temporary cofferdams, or sheet pile installation during construction.

The Draft SEIS/EIR identifies Alternative 1 (Proposed Action) as the Environmentally Superior Alternative.

**Environmental Review**

Commission staff requests that the lead agencies consider the following comments on the Proposed Action's Draft SEIS/EIR.

Mercury/Methylmercury:

1. On April 22, 2010, the Central Valley Regional Water Quality Control Board (CVRWQCB) identified the Commission as both a State agency that manages open water areas in the Sacramento-San Joaquin Delta Estuary and a nonpoint source discharger of methylmercury (Resolution No. R5-2010-0043), because subsurface lands under the Commission's jurisdiction are impacted by mercury from legacy mining activities dating back to California's Gold Rush. Pursuant to a CVRWQCB Total Maximum Daily Load (TMDL), the CVRWQCB required the Commission to participate in studies to identify potential methylmercury control methods in the Delta and to participate in an Exposure Reduction Program. The goal of the studies is to evaluate existing control methods and evaluate options to reduce methylmercury in open waters under jurisdiction of the Commission. 3-1

   The Commission appreciates the inclusion of Mitigation Measure GEO-1 to address the potential release of mercury or methylmercury, as any action taken that may result in mercury or methylmercury suspension within the Sacramento-San Joaquin Delta may affect the Commission's efforts to comply with the CVRWQCB TMDL.

Cultural Resources

2. Tribal Consultation: Mitigation Measure CR-5 (page 103) states that "CVFPB will consult with culturally affiliated Tribes concerning Tribal Cultural Resources that may be impacted, if these types of resources are discovered prior to or during construction." Per Public Resources Code section 21074, subdivision (a), "A Tribal cultural resource is defined to include 'sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe.'" 3-2

The wording of CR-5 suggests that CVFPB would be making the decision as to whether there is a resource that requires Tribal consultation. Commission staff requests that this sentence be revised as follows: "CVFPB will consult with culturally affiliated Tribes concerning Tribal Cultural Resources that may be impacted, if the Tribal Monitor ~~these types of~~ identifies such resources ~~are discovered~~ prior to or during construction."

3. Title to Resources: Commission staff requests the Archaeological Discovery Plan (Mitigation Measure CR-2, found on page 3-96) include a statement that the title to all archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the Commission (Pub. Resources Code, § 6313), as follows: "The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of the California State Lands Commission must be approved by the Commission." Finally, Commission staff requests that the lead agencies consult with staff attorney Jamie Garrett (see contact information below) should any cultural resources on State lands be discovered during construction of the Proposed Action. 3-3

Thank you for the opportunity to comment on the Draft SEIS/EIR for the Proposed Action. As a responsible and trustee agency, the Commission will need to rely on the Final SEIR for the issuance of any lease as specified above and, therefore, we request that you consider our comments prior to certification of the SEIR.

Please send copies of future project-related documents, including electronic copies of the final SEIS/EIR, Mitigation Monitoring and Reporting Program, Notice of Determination, Findings, Statement of Overriding Considerations (if applicable), and approving resolution when they become available. Please refer questions concerning environmental review to Cynthia Herzog, Senior Environmental Scientist, at (916) 574-1310 or cynthia.herzog@slc.ca.gov. For questions concerning archaeological or historic resources under Commission jurisdiction, please contact Staff Attorney Jamie Garrett, at (916) 574-0398 or jamie.garrett@slc.ca.gov. For questions concerning Commission leasing jurisdiction, please contact Joanne Holt Public Land Management Specialist, at (916) 574-1832 or Joanne.Holt@slc.ca.gov .

Sincerely,

Eric Gillies, Acting Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
C. Herzog, Commission
J. Garrett, Commission
J. Holt, Commission

14 September 2020

Miles Claret
Central Valley Flood Protection Board
3464 El Camino Ave, Suite 150
Sacramento, CA 95821

**COMMENTS TO REQUEST FOR REVIEW FOR THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT, AMERICAN RIVER WATERSHED COMMON FEATURES, WATER RESOURCES DEVELOPMENT ACT OF 2016 PROJECT, SACRAMENTO WEIR WIDENING, SCH#2020070575, SACRAMENTO COUNTY**

Pursuant to the State Clearinghouse's 14 September 2020 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Draft Supplemental Environmental Impact Report* for the American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento Weir Widening Project, located in Sacramento County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

## I. Regulatory Setting

**<u>Basin Plan</u>**

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38. 4-1

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board

has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

**Antidegradation Considerations**

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

> *Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*
>
> *This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

## II. Permitting Requirements

**Construction Storm Water General Permit**

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

**Clean Water Act Section 404 Permit**

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

**Clean Water Act Section 401 Permit – Water Quality Certification**

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

**Waste Discharge Requirements – Discharges to Waters of the State**

If USACE determines that only non-jurisdictional waters of the State (i.e., “non-federal” waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

**Dewatering Permit**

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

**Limited Threat General NPDES Permit**

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

**NPDES Permit**

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-0335 or Angela.Nguyen-Tan@waterboards.ca.gov.

Angela Nguyen-Tan
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT
1947 Galileo Ct., Suite 103 · Davis, CA 95618 · (530) 757-3650 · www.ysaqmd.org

August 27, 2020

Mr. Miles Claret
California Dept. of Water Resources
3463 El Camino Ave., Suite 150
Sacramento, CA 95821

**Re: Draft Supplemental EIS/EIR for American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento Weir Widening (Yolo County, CA)**

Dear Mr. Claret:

The Yolo Solano Air Quality Management District (District) has reviewed the document referenced above (Project), and is submitting comments. The Project as proposed would construct a 1,500 foot long passive weir adjacent to the existing Sacramento Weir at the junction of the Sacramento River and Sacramento Bypass.

The District would like to make the following comments:

1. The District's Rule 2.5 – *Nuisance* prohibits the discharge of materials that cause injury or annoyance to the public. All construction activities related to the Project within the District's jurisdiction should be in conformance with the provisions of Rule 2.5. 5-1

2. Mitigation Measure AIR-5 proposes to pay offsite mitigation fees to reduce PM10 emissions generated during construction activity. The District does not have an offset program that allows for the purchase of PM10 offsets. The District expects that PM10 generated during construction will be reduced to the extent feasible onsite through the implementation of fugitive dust control measures. 5-2

3. For construction activity occurring with the District's jurisdiction, the District does not require an inventory of off-road construction equipment to be submitted monthly. However, the lead agency should track construction activity so that total emissions of nitrogen oxides (NOx) during a calendar year can be calculated at the conclusion of the year. 5-3

4. In Section 3.12.2, the construction greenhouse gas emissions threshold adopted by the Sacramento Metropolitan Air Quality Management District is listed as 1,000 metric tons per year. The threshold is 1,100 tons per year. 5-4

The District appreciates the opportunity to comment on the EIS/EIR for this project. If you have any questions about the comments included in this letter, please feel free to contact me at 530-757-3668 or email me at mjones@ysaqmd.org.

Sincerely,

Matthew R Jones

Matthew R Jones
Planning Manager,
Yolo-Solano Air Quality Management District

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

August 18, 2020

SENT VIA EMAIL

Mr. Miles Claret
California Department of Water Resources
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821

Mr. Robert Chase
U.S. Army Corps of Engineers,
Sacramento District (USACE)
1325 J Street
Sacramento, CA 95814-2922

**Draft Supplemental Environmental Impact Statement / Environmental Impact Report, American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento Weir Widening (SAC201301442)**

Dear Mr. Claret and Mr. Chase:

Thank you for providing the Draft Supplemental Environmental Impact Statement / Environmental Impact Report (DSEIS/EIR) for the American River Watershed Common Features, Water Resources Development Act of 2016 Project (ARCF GRR), Sacramento Weir Widening to the Sacramento Metropolitan Air Quality Management District (SMAQMD) for review. SMAQMD staff comments follow.

1. Since the project is located within the Yolo-Solano Air Quality Management District (YSAQMD), mitigation measure AIR-2 should not include signage with SMAQMD's phone number for complaints (page 120). 6-1

2. Mitigation measure AIR-3 requires 90% of the off-road construction equipment to have Tier 4 engines. Further description of the measure states 75% of the off-road construction equipment must include Tier 4 engines. This should be corrected to 90%. Additionally, the YSAQMD will be the air agency reviewing equipment submittals and monthly reports rather than the SMAQMD unless construction activity occurs in Sacramento County (pages 120-121). 6-2

3. Mitigation measure AIR-6 describes marine engine standards for the project, encouraging the use of Tier 3 and Tier 4 engines consistent with the ARCF GRR EIS/EIR. The measure further states the USACE will use Tier 2 and 3 marine engines standards for the project (page 122). SMAQMD staff encourages the USACE to include the use of Tier 3 or Tier 4 marine engines in the construction bid documents to ensure emission reductions from marine equipment, and only allow the use of Tier 2 engines to be used if the contractor(s) can demonstrate Tier 3 and Tier 4 engines are not available. 6-3

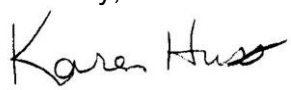
4. Please correct the reference to SMAQMD's construction greenhouse gas emissions threshold (page 123). The SMAQMD's threshold is 1,100 metric tons/year. 6-4

5. Mitigation measure GHG-1 includes the option to purchase greenhouse gas emission offsets for project construction emissions. Any offset purchase should be in coordination with YSAQMD rather than SMAQMD (page 125). 6-5

777 12th Street, 3rd Floor ▪ Sacramento, CA 95814-1908
916/874-4800 ▪ 916/874-4899 fax
www.airquality.org

Please contact me at 916-874-4881 or khuss@airquality.org if you have any questions regarding these comments.

Sincerely,



Karen Huss
Associate Air Quality Planner/Analyst

Cc: Paul Philley, Sac Metro Air District
Matt Jones, Yolo-Solano Air Quality Management District

**From:** Brian Balukoff
**To:** Sacramento_Weir; SPK-PAO SPK
**Subject:** [Non-DoD Source] Rail Service Relating to Weir Expansion
**Date:** Monday, August 17, 2020 9:37:37 AM
**Attachments:** image001.png

---

Hello Robert,

I hope you are doing well and staying safe.

We are one of the negatively effected rail customers currently served by the Sierra Northern Railway in Woodland. It is our understanding that the rail service will be discontinued as a result of the Weir Expansion project. We are trying to seek a better understanding as to when the service provided by the Sierra Northern will be discontinued. 7-1

Any information you can provide will be greatly appreciated.

Thanks!

Brian S. Balukoff

Adams Grain Co., Inc.

P.O. Box 799|Arbuckle, CA 95912

Phone: 530-668-2078|Cell: 916-425-3572|Fax: 530-476-2315

committed to quality

Please note that our standard lead time is 10 calendar days.

Please note that all dry van or container pickups and deliveries appointments are required to be scheduled at Blockedhttps://booknow.appointment-plus.com/yqkmj70q/ <Blockedhttps://booknow.appointment-plus.com/yqkmj70q/>

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# Appendix E. Responses to Comments

# RESPONSES TO COMMENTS

## Introduction

This appendix provides responses to public and agency comments on the Sacramento Weir Widening Project draft Supplemental Environmental Impact Statement/Environmental Impact Report (Supplemental EIS/EIR) received during the public comment period.

## Public Comment Summary

The draft Supplemental EIS/EIR was posted with the State Clearinghouse (SCH #2020070575) on July 31, 2020. The draft Supplemental EIS/EIR was circulated at least 45-days for review by Federal, State, and local agencies; organizations; and members of the public from July 31, 2020 through September 14, 2020. The draft Supplemental EIS/EIR was made available on the Sacramento District, Corps of Engineers (USACE) and Central Valley Flood Protection Board (CVFPB) websites. Hard copies of the draft Supplemental EIS/EIR were made available for review at the Woodland Public Library via curbside pickup.

A virtual public meeting was held on August 19, 2020 to provide the public with additional opportunities for comments on the draft Supplemental EIS/EIR. All comments received during the public review period were considered and incorporated into the final Supplemental EIS/EIR as appropriate.

The virtual meeting was held, instead of the typical in-person meeting, due to the restrictions on meeting size during the Covid-19 pandemic. During the virtual meeting, the chat function was available for the public to send comments to the meeting moderator. Attendees were also given an opportunity to voice comments at the end of the presentation. No comments were received during the public meeting. Additionally, comments could be submitted through mail or electronic mail.

During the draft Supplemental EIS/EIR public review period, seven comment letters were received with a total of 19 comments as follows: :

- (4) U.S. Environmental Protection Agency
- (1) U.S. Department of the Interior, Bureau of Reclamation
- (3) California State Lands Commission
- (1) Central Valley Regional Water Quality Control Board (RWQCB)
- (4) Yolo-Solano Air Quality Management District (YSAQMD)
- (5) Sacramento Metropolitan Air Quality Management District (SMAQMD)
- (1) private citizen/company

## Comments and Responses

The following pages include all public comments received and the responses to those comments. The responses are annotated to refer back to the corresponding letters and comments that precede them.

**Comment Letter 1: U.S. Environmental Protection Agency**

1-1 The 2015 Biological Opinion from the U.S. Fish and Wildlife Service (USFWS) states: "Compensation for impacts to native riparian habitat will occur on a 2:1 basis on-site or in close proximity to the impact area." USACE's guidance for setting mitigation ratios at 3:1 applies specifically to impacted wetlands or other waters of the U.S., rather than the riparian habitat specified by the commenter. No change to the EIS/EIR is necessary.

1-2 All appropriate regulatory permits (e.g., a Low Threat Discharge Permit, Dewatering Permit, or Individual Permit from the Central Valley RWQCB) will be obtained before discharging any effluent to surface water, as referenced in Mitigation Measures GEO-1 and HWQ-1. Acquiring the appropriate regulatory permits will support mitigation measures by minimizing potential surface water or groundwater contamination. No change to the EIS/EIR is necessary.

1-3 USACE and CVFPB have consulted with the National Marine Fisheries Service (NMFS) concerning fish passage operations, and consultation continues as the project design advances. Fish passage operations are described in the draft Supplemental EIS/EIR and were planned to provide required benefits to fish species while also accommodating other objectives, including objectives related to stage and flow rate in the Tule Canal, Yolo Bypass, and Sacramento River. No change to the EIS/EIR is necessary.

1-4 Emissions calculations in Appendix C include both estimated barge emissions (separately calculated using SMAQMD's Harborcraft, Dredge, and Barge Emission Factor Calculator) and Roadway Construction Emission Model (RCEM) model outputs for on-road and off-road equipment. Barge emissions were assumed for the 2021 and 2023 construction year and account for the different values identified by the comment.

Unmitigated emissions shown in Table 3.11-5 were calculated by combining the unmitigated RCEM output values with the estimated barge emissions. Mitigated emissions in Table 3.11-5 were calculated using a formula to combine the on-road mitigated and the fully mitigated RCEM model outputs to provide emissions estimates for the project's required use of 90 percent Tier 4 equipment. As with the unmitigated emissions, the mitigated totals also incorporate the estimated barge emissions. No change to the EIS/EIR is necessary.

**Comment Letter 2: U.S. Department of the Interior, Bureau of Reclamation**

2-1 In response to this comment, USACE and CVFPB propose a text change to Table 3.4-1 (page 45 of the draft Supplemental EIS/EIR). As proposed by the commenter, the same project name change also made on pages 7 and 11 of Appendix A:

**Table 3.4-1. Summary Comparison of Hydraulic Analysis Scenario Features**

| Feature | CEQA Baseline (2008)* [1] | NEPA Existing (2019)[1] | Future with Project (2024)[1] | Future Cumulative (2024)[1] |
|---|---|---|---|---|
| Folsom Joint Federal Project and forecast-based releases | Yes | Yes | Yes | Yes |
| Natomas Levee Improvement Program | No | Yes | Yes | Yes |
| Southport Levee Improvement Project | No | Yes | Yes | Yes |
| Sacramento Weir widening | No | No | Yes | Yes |
| Sacramento Bypass expansion | No | No | Yes | Yes |
| Arcade Creek, Dry Creek, and Magpie Creek improvements | No | No | Yes | Yes |
| Folsom Dam Raise Project | No | No | No | Yes |
| Lower Elkhorn Basin Levee Setback Project | No | No | No | Yes |
| Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project ~~Fremont Weir Fish Passage Project~~ | No | No | No | Yes |

Yes = Included
No = Not included
* At the time of the analysis, a Central Valley Hydrology Study event selection had not been performed for the pre-Joint Federal Project (JFP) condition; therefore, the Baseline Condition simulations used the Existing Condition Folsom Dam releases, which include the effects of the JFP.
Source: MBK 2019a
[1]Note: the CEQA and NEPA scenarios are referred to as Baseline 1 (CEQA) and Baseline 2 (NEPA), in Appendix A.

## Comment Letter 3: California State Lands Commission

3-1 Comment acknowledged. As the commenter states, the project includes Mitigation Measure GEO-1 to address potential surface water contamination. No change to the EIS/EIR is necessary.

3-2 The comment suggests changes to the wording of Mitigation Measure CR-5 to clarify the roles of culturally affiliated Tribes and CVFPB in addressing potential impacts to Tribal Cultural Resources. In response to this comment, USACE and CVFPB have modified the first paragraph of text in Mitigation Measure CR-5 (page 103 in the draft Supplemental EIS/EIR) as follows:

> California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the project is located may have expertise concerning their Tribal Cultural Resources (California PRC Section 21080.3.1). Consistent with the California Natural Resources Agency Tribal Consultation Policy, CVFPB will consult with culturally affiliated Tribes

concerning the identification and evaluation of Tribal Cultural Resources and the treatment of any Tribal Cultural Resources that may be impacted, if these types of resources are discovered prior to or during construction. Consultation with culturally affiliated Tribes shall focus on identifying measures to avoid or minimize impacts on any such resources discovered during construction. If Tribal Cultural Resources are identified in the APE prior to or during construction, the following performance standards shall be met before proceeding with construction and associated activities that may result in damage to or destruction of Tribal Cultural Resources:

3-3 The comment requests additional text be added to the description of the archaeological discovery plan in Mitigation Measure CR-2. Because the suggested text clarifies State law requirements which would apply to historic or cultural resources discovered on State lands rather than imposing a project-specific mitigation requirement, USACE and CVFPB do not propose to modify the text of Mitigation Measure CR-2. No change to the EIS/EIR is necessary.

**Comment Letter 4: Central Valley Regional Water Quality Control Board**

4-1 Comment acknowledged. The comment describes regulatory processes administered by RWQCB. No change to the EIS/EIR is necessary.

**Comment Letter 5: Yolo-Solano Air Quality Management District**

5-1 Rule 2.5 states that "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property."

Based on the analysis in the draft Supplemental EIS/EIR (pages 113-122), with implementation of mitigation measures AIR-1, AIR-2, AIR-3, AIR-4, and AIR-6 (renumbered to AIR-5 in the final Supplemental EIS/EIR), construction activities associated with the Sacramento Weir Widening project will conform to the requirements of Rule 2.5. No other change to the EIS/EIR is necessary.

5-2 In response to this comment, USACE and CVFPB have removed Mitigation Measure AIR-5 from the document, and renumbered Mitigation Measure AIR-6 to AIR-5. USACE and CVFPB concur with YSAQMD's stated expectation that $PM_{10}$ generated during construction will be reduced to the extent feasible through the implementation of onsite fugitive dust control measures.

5-3 Comment acknowledged and considered. For consistency with other American River Common Features (ARCF) 2016 projects and to monitor emissions relative to General Conformity *de minimis* standards in combination with other ARCF 2016 projects, USACE and CVFPB will require monthly inventories from construction contractors. If

YSAQMD would prefer, these inventories will be maintained by USACE and CVFPB. USACE and CVFPB have edited the text of Mitigation Measure AIR-3 (pages 120-121 of the draft Supplemental EIS/EIR) as follows:

> Mitigation Measure AIR-3: Require Lower Exhaust Emissions for Construction Equipment.
>
> If the project is implemented, USACE shall require its contractors to use a fleet-wide average of 90 percent Tier 4 emissions vehicles for off-road construction equipment, and on-road haul trucks must be equipped with 2010 or newer engines. In order to demonstrate compliance with this requirement:
>
> - The construction contractor shall submit to USACE and ~~SMAQMD~~ YSAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project.
>
> - The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The construction contractor shall provide the anticipated construction timeline including start date, and name and phone number of the project manager, and on-site foreman. This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The SMAQMD Construction Mitigation Tool can be used to submit this information. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.
>
> - The construction contractor shall provide a plan for approval by USACE and ~~SMAQMD~~ YSAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet average of ~~75~~90 percent Tier 4 emissions vehicles. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.
>
> - SMAQMD's Construction Mitigation Tool can be used to identify an equipment fleet that achieves this reduction~~. The construction contractor shall ensure that emissions from all off-road diesel-powered equipment used on the Project Area do not exceed 40 percent opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented, and a summary provided monthly to USACE and SMAQMD. A visual survey of all in-operation equipment shall be made at least weekly. A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in~~

~~which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.~~

- Use the Construction Mitigation Tool to track PM10 emissions and mileage traveled by on-road trucks, reporting results to USACE~~ and SMAQMD~~ on a monthly basis.

5-4 USACE and CVFPB have edited the text on page 123 of the draft Supplemental EIS/EIR as proposed by the commenter:

> In October 2014, SMAQMD (which regulates air quality in the same air basin and Federal non-attainment area) adopted a resolution that recommends the following GHG significance thresholds:
>
> - Construction phase of projects: ~~1,000~~1,100 metric tons of carbon dioxide equivalent (CO2e) per year;

**Comment Letter 6: Sacramento Metropolitan Air Quality Management District**

6-1 USACE and CVFPB have edited the text on page 120 of the draft Supplemental EIS/EIR as proposed by the commenter:

> Post a publicly visible sign with the telephone number and person to contact at USACE regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of ~~SMAQMD~~YSAQMD also will be visible to ensure compliance.

.

6-2 USACE and CVFPB have edited the text on pages 120 and 121 as proposed by the commenter. Please refer to the response to comment 5-3, where the text change is shown in underline/strikethrough.

6-3 USACE intends to require Tier 3 or 4 marine engines in construction specifications as proposed by the commenter, with the requirement that the contractor demonstrate use of these engines would be infeasible if lower-tier engines are proposed. Construction specifications are currently in draft form. No change to the EIS/EIR is necessary.

6-4 USACE and CVFPB have edited the text on page 123 as proposed by the commenter. Please refer to the response to comment 5-4, where the text change is shown in underline/strikethrough.

6-5 USACE and CVFPB have edited the text on page 125 of the draft Supplemental EIS/EIR as proposed by the commenter:

> Purchase GHG offset for program-wide GHG emissions (direct emissions plus indirect emissions from on-road haul trucks plus commute vehicles)

exceeding SMAQMD significance thresholds applicable at the time of construction. Carbon offset credits shall be purchased from programs that have been approved by ~~SMAQMD~~YSAQMD.

**Comment Letter 7: Balukoff**

7-1 USACE would award a construction contract in January 2022, and railroad service would cease prior to the railroad embankment being degraded during the first phase of construction. No change to the EIS/EIR is necessary.

# Appendix F. Revisions to the Draft Document

# REVISIONS TO THE DRAFT DOCUMENT

## Introduction

This appendix presents corrections and revisions made to the text contained in the proposed project's Draft Supplemental Environmental Impact Statement/Environmental Impact Report (Supplemental EIS/EIR) to address comments on the Draft Supplemental EIS/EIR and project changes since publication of the Draft Supplemental EIS/EIR. New text is indicated with an underline and text to be deleted is reflected by a strike-through. Text changes are presented in the page order in which they appear in the Supplemental EIS/EIR.

The changes identified below clarify or amplify the information and analysis contained in the Supplemental EIS/EIR. None of the changes identified below result in a significant impact that was not already identified in the Supplemental EIS/EIR. Furthermore, none of the impacts identified in the Supplemental EIS/EIR would be substantially more severe as the result of the following changes. For these reasons, recirculation of the Supplemental EIS/EIR is not warranted.

## Corrections and Revisions

### Section 2.4 Alternative 1: Proposed Action Alternative

*The following edit is made to the first paragraph on page 16:*

The expanded portion of the Sacramento Weir would be a passive structure with a fixed crest elevation at 26.0 feet NAVD88. The concrete ~~ogee~~ broad-crested weir would be designed to accept potential future installation of stop logs to a maximum elevation of 29.9 feet NAVD88 as contemplated in Alternative 2. The fish passage gates would only be opened after a flood event has overtopped the passive weir crest. The fish passage structure would then be operated depending on fish passage considerations. Operation with the stop logs in place is evaluated in Alternative 2. The following describes how the weir would operate for the crest elevation at 26.0 feet NAVD88, under rising and receding flood conditions.

*The following edit is made to the first paragraph following Table 2-1 on page 27:*

Necessary aggregate base rock material would be obtained from a commercial sand and gravel operation, most likely in the Sacramento area. Riprap material would be obtained from a commercial source or would be transported by barge from quarries located within 100 miles of the site. Soil material would be obtained from onsite or from the adjacent LEBLS project site, or could be obtained from a permitted source within 30 miles of the project site. The construction contractor would select the specific suppliers based on suitability and pricing. All materials would be determined to be suitable for use and would be demonstrated to be free of contamination. Transportation of all aggregate, asphalt, erosion control materials, and ancillary equipment from suppliers to the site is expected to occur via highway. In addition, highway truck trips could be required to dispose of surplus material from excavation (if hauled off-site),

and may be needed to carry demolition debris, construction debris, and other materials to a suitable landfill.

## Section 2.5 Alternative 2: Higher Weir Elevation Alternative

*The following edit is made to the second paragraph under Section 2.5, "Alternative 2: Higher Weir Elevation Alternative" on page 27:*

The higher elevation relative to the Proposed Action would be achieved by installing stop logs at the ~~ogee~~ top of the weir, increasing the elevation of the passive weir to 29.2 feet NAVD88, the same elevation as the top of the needle gates on the existing weir. The stop logs would be approximately 30 feet long and constructed of high-strength steel. A forklift would be used to lift the stop logs into the grooves cast into the piers and supports along the crest of the weir.

## Section 3.4 Hydrology and Hydraulics

*The following edit is made to Table 3.4-1 on page 45:*

**Table 3.4-1. Summary Comparison of Hydraulic Analysis Scenario Features**

| Feature | CEQA Baseline (2008)* [1] | NEPA Existing (2019)[1] | Future with Project (2024)[1] | Future Cumulative (2024)[1] |
|---|---|---|---|---|
| Folsom Joint Federal Project and forecast-based releases | Yes | Yes | Yes | Yes |
| Natomas Levee Improvement Program | No | Yes | Yes | Yes |
| Southport Levee Improvement Project | No | Yes | Yes | Yes |
| Sacramento Weir widening | No | No | Yes | Yes |
| Sacramento Bypass expansion | No | No | Yes | Yes |
| Arcade Creek, Dry Creek, and Magpie Creek improvements | No | No | Yes | Yes |
| Folsom Dam Raise Project | No | No | No | Yes |
| Lower Elkhorn Basin Levee Setback Project | No | No | No | Yes |
| Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project ~~Fremont Weir Fish Passage Project~~ | No | No | No | Yes |

Yes = Included
No = Not included
* At the time of the analysis, a Central Valley Hydrology Study event selection had not been performed for the pre-Joint Federal Project (JFP) condition; therefore, the Baseline Condition simulations used the Existing Condition Folsom Dam releases, which include the effects of the JFP.
Source: MBK 2019a
[1]Note: the CEQA and NEPA scenarios are referred to as Baseline 1 (CEQA) and Baseline 2 (NEPA), in Appendix A.

**Section 3.9 Cultural Resources**

*The text on pages 92 and 93 in the draft Supplemental EIS/EIR is edited as follows:*

The project APE contains known cultural resources, including flood control structures and transportation structures. Although no Native American archaeological resources are known to be present in the APE, it is possible that additional studies or construction could reveal such resources. Due to its proximity adjacent to the Sacramento River, the project APE is considered to be sensitive for the presence of buried Native American archaeological sites. USACE has consulted with the state Historic Preservation Officer (SHPO), Native American Tribes, and other parties and has executed a Programmatic Agreement (PA) that establishes the process USACE shall follow for compliance with Section 106 of the National Historic Preservation Act (NHPA) for the project. The PA stipulates time frames and document review procedures; delineation of project APEs; development of a Historic Properties Management Plan (HPMP) to guide identification, evaluation, and Section 106 findings of effect; development of Historic Property Treatment Plans (HPTPs) to identify treatment for Historic Properties that would be adversely affected by project activities; a process to guide limited geotechnical investigations; Native American consultation procedures; and other processes and implementation procedures.

**Recent Surveys and Investigations**

Efforts to identify Historic Properties and potential Historic Properties in the project APE that have been conducted since the ARCF GRR Final EIS/EIR was prepared include records searches, archival research, archaeological pedestrian surveys and surveys by historians, and geoarchaeological investigations. Some of these investigations were conducted for the LEBLS project ~~and~~ which encompassed a majority of the Sacramento Weir Widening Project APE, which is approximately 465 acres (all but approximately 45 acres of the Sacramento Weir Widening Project APE is within the LEBLS project APE). Additional investigations in areas not within the LEBLS project area were conducted in the Sacramento Weir Widening project APE.

**Records Search**

The initial records search at the Northwestern Information Center (NWIC) was conducted in February 2016 by DWR (NWIC File No. 15-1004). DWR requested a records search by the Northwest Information Center of the California Historical Resources Information System on February 9, 2016 for the LEBLS project. The records search area included the Sacramento Weir Widening project APE. Referenced documents included base maps, reports from previous projects, California Department of Parks and Recreation site records, and California Historic Landmarks documentation. The records searches included the sources listed below:

- NRHP-listed properties (NPS 1996) and updates
- California Inventory of Historic Resources (DPR 1976 and updates)
- California Points of Historical Interest (DPR 1992 and updates)
- Caltrans Bridge Inventory (Caltrans 1989, 2000, and 2004)

- Historic Maps
- California Historical Landmarks (OHP 1996 and updates)
- Directory of Properties in the Historic Resources Inventory (OHP 2006)
- Gold Districts of California (Clark 1970)
- California Gold Camps (Gudde 1975)
- California Place Names (Gudde 1969)
- *Historic Spots in California* (Hoover et al. 1966, 1990)

In January 2020, GEI Consultants, Inc. (GEI) conducted an updated search with the NWIC and a supplemental record search at the North Central Information Center (NCIC) (NCIC File No. SAC-20-24). The update search with the NWIC identified one additional resource (not identified during the initial records search) which extends from Sacramento County in the APE and vicinity (P-34-005225 Sacramento River Traditional Cultural Landscape).

The search consisted of an electronic search of the NWIC's and NCIC's Geographic Information System containing reported resources and previous investigations organized by base U.S. Geological Survey (USGS) 7.5' quadrangle maps. The USGS 7.5' Sacramento West quadrangle map was search for Yolo and Sacramento counties for resources and reports in and within 0.25-mile of the APE.

~~For the LEBLS project (the APE of which encompassed all but about 45 acres of the Sacramento Weir Widening project), GEI Consultants, Inc. (~~GEI~~)~~ conducted archival research at the California History Room and the Government Publications Section of the California State Library, Sacramento; California Digital Newspaper Collection; Yolo County Offices; and the GEI cultural resource library in an effort to identify important historic people, events, and trends that may have been associated with both the Sacramento Weir Widening project ~~and the LEBLS project~~ vicinity. Archival research conducted by GEI addressed the entirety of the Weir Widening APE.

**Field Surveys**

A pedestrian survey, conducted for the LEBLS project and covering all but approximately 45 acres of the Sacramento Weir Widening Project APE, was conducted to identify archaeological and historical cultural resources visible on the ground surface. ~~A pedestrian survey of the 45-acre area that has not yet been surveyed will be conducted when rights of entry have been secured, and in accordance with Mitigation Measure CR-1, described below.~~ This archaeological pedestrian survey was conducted on December 21–22, 2016; January 5, 2017; April 5–7 and 25–27, 2017; and May 31, 2017 by GEI archaeologists under the supervision of James Mayer, Ph.D., Registered Professional Archaeologist. The survey was conducted to intensive standards (pedestrian transects spaced no more than 15 meters apart). A Trimble 7 Series GPS unit capable of sub-meter accuracy was carried to record the location of

any identified resources. An archaeological pedestrian survey of all portions of the APE not surveyed during the previous surveys conducted for the LEBLS project was conducted on April 23-24, 2020 by GEI archaeologists. The surveys were conducted to intensive standards (pedestrian transects spaced no more than 15 meters apart).

~~One~~Two historic-period archaeological sites, the Old Bryte Landfill and CA-YOL-224H, ~~was~~were identified during the field surveys. No prehistoric archaeological sites have been identified in the APE.

*The following text is added to "Archaeological Resources" (page 95 of the draft Supplemental EIS/EIR), following the discussion of the Old Bryte Landfill:*

CA-YOL-224H (P-57-000610)

P-57-000610, consists of the remains of at least five buildings, associated structures, and an associated scatter of historic-era to modern-era cultural materials. P-57-000610 is situated on a terrace along the western bank of the Sacramento River, in the southeastern corner of the APE, and covers approximately 720 feet along a northwest-southeast alignment, with a width of approximately 300 feet.

This resource was evaluated for NRHP eligibility and determined to be ineligible for listing because of a lack of historical significance and a lack of integrity. The SHPO concurred in this determination in a letter dated September 15, 2020

Traditional Cultural Landscape

One Traditional Cultural Landscape (TCL) (P-34-005225 Sacramento River Traditional Cultural Landscape) extends into the APE. The Sacramento River TCL encompasses both banks of the lower Sacramento River from just south of Knights Landing in Sutter and Yolo counties in the north to Sherman Island in the Delta in the south. The character defining elements of this landscape, according to the site record form are the waterways, tule habitat, fisheries, and other wildlife.

This site has previously been recommended to be eligible for listing on the NRHP, however the identified resource attributes of this site consist entirely of natural resources such as waterways and natural habit. Formal evaluation of this resource was not conducted due to the vast geographic area it encompasses. For the purpose of the impact analysis, the resource is considered eligible for the NRHP. Because the project will not significantly affect the natural environment composing this resource and is not changing the environment, setting, or integrity of this resource; GEI recommended that P-34-005225 would not be adversely affected by implementation of this project.

In a letter dated September 15, 2020, SHPO specified that there was no comment on this approach.

*The following edits are made to the last paragraph under the discussion of Levee Unit 122 (page 96 of the draft Supplemental EIS/EIR):*

As a result of construction of the LEBLS project, planned for 2020, a large portion (approximately 50%) of Levee Unit 122 would be degraded. Under post-degrade circumstances, it is recommended by a GEI architectural historian who meets the Secretary of the Interior's Qualification Standards for History that Levee Unit 122 would no longer meet NRHP eligibility criteria. The levee unit was originally designed to work in tandem with the Yolo Bypass to control flooding and protect regional farmland. Although segments of the levee would remain in place and continue to contribute to flood management in the area, several miles of the levee would be removed through implementation of the LEBLS project. With essentially half the resource gone, the levee would ~~likely~~ not retain its original design and workmanship and would ~~likely~~ no longer maintain adequate integrity to convey its association with the 20th century SRFCP and the Yolo Bypass, a significant engineering feature to which Levee Unit 122 is directly related ~~to~~.

In a letter dated September 15, 2020, the SHPO concurred in the determination that demolition of a large part of Levee Unit 122 during construction of the LEBLS project would result in Levee Unit 122 no longer being considered a Historic Property.

*The following text is added at the end of the discussion of the Sacramento Bypass and Sacramento Weir (page 97 of the draft Supplemental EIS/EIR):*

GEI recommended that the introduction of the new approximately 1,500-foot long weir in close vicinity to the Sacramento Weir detracts from the original character of the surrounding environment and represents a substantial change. Its construction also alters the intended purpose of the Sacramento Weir, from the primary weir in the immediate area, to a secondary water control feature working in tandem with the new weir. The integrity of setting and feeling of the Sacramento Weir which help convey its historical significance would be altered. Therefore, the project would have an Adverse Effect.

The SHPO concurred in the finding that the Sacramento Weir would be adversely affected in a letter dated September 15, 2020.

*The following text is edited to conclude the discussion of the Sierra Northern Railway (page 98 of the draft Supplemental EIS/EIR):*

The SHPO concurred in this determination in a letter dated September 15, 2020. ~~Under Section 106, to be implemented under the ARCF PA, confirmation of NRHP eligibility determinations will be made through consultation between USACE, SHPO and other ARCF PA consulting parties. If SHPO does not concur with NRHP eligibility findings, USACE would re-assess the evaluation and if determined to be eligible, then the ARCF PA requirements for a Finding of Effect would be conducted. Potential additional steps, such as resolution of Adverse Effects, would be conducted in accordance with the ARCF PA.~~

*The text in the last paragraph under Methodology (pages 99 and 100 of the draft Supplemental EIS/EIR) is edited as follows:*

USACE has ~~not~~completed consultation with SHPO and other ARCF PA consulting parties regarding the NRHP eligibility ~~of some~~ of the cultural resources identified in the APE

and effects on those resources that are considered Historic Properties. Therefore, the impact analysis presented in this document ~~does not~~ reflects consensus findings under Section 106 of the NHPA as implemented through the ARCF PA. ~~In accordance with the ARCF PA, confirmation of NRHP eligibility and findings of effect and appropriate mitigation would be made through consultation between USACE, SHPO, and other ARCF PA consulting parties, as appropriate.~~

*The text under "Damage to or Destruction of Built-Environment Historic Properties" (page 100 of the draft Supplemental EIS/EIR) is edited as follows:*

Damage to or Destruction of Built-Environment Historic Properties

Four historic-era built-environment resources in the APE have been identified and evaluated for historical significance: Levee Unit 122 (including the Sacramento River West Levee and a small portion of the Sacramento Bypass North Levee), the Sacramento Weir and Bypass, the Lower Elkhorn South Cross Levee, and the Sierra Northern Railway. Two of these resources —Levee Unit 122 and the Sacramento Weir and Bypass are considered Historic Properties and have been determined to be eligible for listing in the NRHP. The Lower Elkhorn South Cross Levee has been determined to be ineligible for listing in the NRHP, and the Sierra Northern Railway is recommended as ineligible for listing in the NRHP. The NRHP eligibility recommendation for the Sierra Northern Railway and the reevaluation of Levee Unit 122 (based on conditions of post-Lower Elkhorn Basin Levee Setback Project implementation) presented in this document ~~do not~~ constitute NRHP eligibility determination by USACE, and NHPA Section 106 consultation with SHPO concerning the NRHP eligibility of these resources and findings of effect on Historic Properties ~~has not yet been initiated~~. ~~USACE has not concluded a determination of NRHP eligibility of the Sierra Northern Railway or the reevaluation of Levee Unit 122 that are recommended in this document.~~ NHPA Section 106 consultation with SHPO concerning NRHP eligibility of these resources has ~~not yet~~ been conducted and SHPO has concurred with USACE's findings in a letter dated September 15, 2020, therefore the NRHP eligibility recommendations used in this analysis ~~do not~~ reflect consensus findings under Section 106 of the NHPA. ~~Under Section 106, to be implemented under the ARCF PA, confirmation of NRHP eligibility determinations will be made through consultation between USACE, SHPO and other ARCF PA consulting parties. In the event that final determinations of NRHP eligibility are different from the recommendations presented in this impact analysis, the ARCF PA requires processes to be implemented to consider effects on eligible resources and, if those effects cannot be avoided, to identify measures to resolve (mitigate) adverse effects.~~

Based on these findings under Section 106 of the NHPA, one Historic Property, the Sacramento Weir and Bypass would be adversely affected by the Proposed Action and Higher Weir Alternative. Implementing new Mitigation Measure CR-1 would reduce this impact to a less-than-significant level because this measure requires completion of a Historic Properties Treatment Plan that identifies specific treatment measures to resolve the adverse effect under Section 106 of the NHPA.

Potential Damage to or Destruction of Previously Undiscovered Archaeological Sites or Tribal Cultural Resources

To date, cultural resources investigations have not identified archaeological resources or Tribal Cultural Resources (Tribal Cultural Resources are a type of resource recognized under

CEQA but not Section 106 of the NHPA) in the APE. Because ~~a small area (approximately 45 acres) has not been inspected using intensive pedestrian archaeological techniques, and because~~ Native American consultation is on-going ~~has not been completed~~, it is possible that unknown archaeological resources and Tribal Cultural Resources could be identified in the APE during additional ~~studies and~~ consultation conducted in compliance with the PA and HPMP and CEQA mitigation measures. Unknown archaeological resources also could be discovered and inadvertently damaged during project construction. Implementing new Mitigation Measures CR-1, CR-2, CR-3, CR-4, and CR-5 detailed below would reduce the potential for a significant effect resulting from inadvertent damage to or destruction of presently undocumented archaeological resources and Tribal Cultural Resources to a less-than-significant level. Because these measures would require that if archaeological resources or Tribal Cultural Resources are discovered prior to or during project-related construction activities, appropriate treatment and protection measures must be implemented.

*The following new impact discussion is added following "Damage to or Destruction of Human Remains during Construction (page 101 of the draft Supplemental EIS/EIR):*

Potential Damage to or Destruction of Traditional Cultural Landscape

Site P-34-005225, the Sacramento River Traditional Cultural Landscape was identified as a result of the updated records search conducted for this investigation. The resource encompasses both banks of the lower Sacramento River from just south of Knights Landing in Sutter and Yolo counties in the north to Sherman Island in the Delta in the south. The character defining elements of this landscape, according to the site record form are the waterways, tule habitat, fisheries, and other wildlife. This site has previously been *recommended* to be eligible for listing on the NRHP (SHPO has not concurred in this finding), however the identified resource attributes of this site consist entirely of natural resources such as waterways and natural habit. Formal NRHP evaluation of this resource was not conducted due to the vast geographic area it encompasses. Because the project will not significantly affect the natural environment composing this resource and is not changing the environment, setting, or integrity of this resource there would be less-than-significant impact to P-34-005225 and no mitigation is necessary.

*The text of Mitigation Measure CR-1 (page 101 of the draft Supplemental EIS/EIR) is edited as follows:*

Mitigation Measure CR-1: Prepare a Historic Properties Treatment Plan and ~~Complete~~ Continue ~~Cultural Resources Investigations and~~ Consultation in Accordance with the Programmatic Agreement and the Historic Properties Management Plan.

In accordance with the requirements of the ARCF PA and the procedures described in Section 8.2 of the ARCF HPMP, a Historic Properties Treatment Plan (HPTP) shall be prepared to address treatment of adverse effects to the Sacramento Weir and Bypass Historic Property. The ARCF HPMP specifies the content, procedures and consultation requirements for the HPTP. ~~additional investigations to identify, evaluate and determine effects on Historic Properties shall be completed. Additional investigations shall include an archaeological pedestrian survey of the portions of the APE that were not surveyed as part of the investigations for the LEBLS project~~

~~(approximately 45 acres), evaluation of any cultural resources that are identified as a result of additional investigations, determinations of effect on any newly identified Historic Properties, and consultation with Native American Tribes and historical societies. Other investigations, such as archaeological test excavations, may also be conducted if determined appropriate by USACE and CVFPB.~~

CVFPB shall contact the Native American contacts, including those already identified by the Native American Heritage Commission (NAHC), in an effort to identify cultural resources important to Native Americans, including Tribal Cultural Resources as defined in California Public Resources Code 21074, that may be present in the project area. If Tribal Cultural Resources are identified in the APE, then the requirements of Mitigation Measure CR-5 shall be implemented by the CVFPB.

*The text in the first paragraph of Mitigation Measure CR-5 (page 103 in the draft Supplemental EIS/EIR) is edited as follows:*

California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the project is located may have expertise concerning their Tribal Cultural Resources (California PRC Section 21080.3.1). Consistent with the California Natural Resources Agency Tribal Consultation Policy, CVFPB will consult with culturally affiliated Tribes concerning the identification and evaluation of Tribal Cultural Resources and the treatment of any Tribal Cultural Resources that may be impacted, if these types of resources are discovered prior to or during construction. Consultation with culturally affiliated Tribes shall focus on identifying measures to avoid or minimize impacts on any such resources discovered during construction. If Tribal Cultural Resources are identified in the APE prior to or during construction, the following performance standards shall be met before proceeding with construction and associated activities that may result in damage to or destruction of Tribal Cultural Resources:

## Section 3.10 Transportation and Circulation

*The following edit is made to the first bullet of Mitigation Measure TR-1 on page 111:*

- Follow the standard construction specifications of affected jurisdictions ~~and obtain the appropriate encroachment permits, if required. I~~ with regard to use and repair of the roads, and incorporate the conditions of the encroachment permit into the construction contract. ~~Encroachment permit conditions will be enforced by the agency that issues the encroachment permit.~~

## Section 3.11 Air Quality

*Tables 3.11-5 and 3.11-7 (pages 115 through 117) have been updated to reflect the results of more recent modeling for other ARCF project elements. The updated results do not change any significance conclusions.*

*Mitigation Measure AIR-5 is removed from the document in response to a comment from the Yolo-Solano Air Quality Management District (YSAQMD). Therefore, the following change is proposed to the text immediately following "Proposed Action and Higher Weir Elevation*

*Alternative" on page 118:*

Potential Conflict with Air Quality Plan or Contribute Substantially to Air Quality Violation – Yolo-Solano Air Quality Management District Standards

As shown in Table 3.11-5, unmitigated emissions would exceed local air district standards for $NO_x$ and $PM_{10}$. However, implementing Mitigation Measures AIR-1, AIR-2, AIR-3, and AIR-4~~, and AIR-5~~ described below would reduce $NO_x$ and $PM_{10}$ emissions to a less-than-significant level by requiring use of more efficient construction equipment, imposing BMPs to reduce airborne dust, and requiring payment of mitigation fees to offset emissions in excess of standards.

*The following text is modified in the 7th bullet on page 120:*

- Post a publicly visible sign with the telephone number and person to contact at USACE regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of ~~SMAQMD~~YSAQMD also will be visible to ensure compliance.

*The following text is edited in Mitigation Measure AIR-3 on pages 120 and 121:*

Mitigation Measure AIR-3: Require Lower Exhaust Emissions for Construction Equipment.

If the project is implemented, USACE shall require its contractors to use a fleet-wide average of 90 percent Tier 4 emissions vehicles for off-road construction equipment, and on-road haul trucks must be equipped with 2010 or newer engines. In order to demonstrate compliance with this requirement:

- The construction contractor shall submit to USACE and ~~SMAQMD~~ YSAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project.

- The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The construction contractor shall provide the anticipated construction timeline including start date, and name and phone number of the project manager, and on-site foreman. This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The SMAQMD Construction Mitigation Tool can be used to submit this information. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.

- The construction contractor shall provide a plan for approval by USACE and ~~SMAQMD~~ YSAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet average of ~~75~~90 percent Tier 4 emissions vehicles. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing

emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

- SMAQMD's Construction Mitigation Tool can be used to identify an equipment fleet that achieves this reduction. ~~The construction contractor shall ensure that emissions from all off-road diesel-powered equipment used on the Project Area do not exceed 40 percent opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented, and a summary provided monthly to USACE and SMAQMD. A visual survey of all in-operation equipment shall be made at least weekly. A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.~~

- Use the Construction Mitigation Tool to track PM10 emissions and mileage traveled by on-road trucks, reporting results to USACE ~~and SMAQMD~~ on a monthly basis.

*The following text on pages 121 and 122 is deleted:*

~~Mitigation Measure AIR-5: Pay Off-site Mitigation Fees to Reduce $PM_{10}$ Emissions.~~

~~If the project is implemented, USACE shall implement measures to reduce $PM_{10}$ construction-related emissions. Pursuant to applicable thresholds of significance, if the projected construction-related emissions exceed the $PM_{10}$ threshold of significance based on the equipment inventory, USACE shall contribute to SMAQMD's or YSAQMD's off-site mitigation fee program sufficiently to offset the amount by which the project's $PM_{10}$ emissions exceed the threshold. The determination of the mitigation fee shall be conducted in coordination with SMAQMD or YSAQMD before any ground disturbance occurs for any phase of project construction. All mitigation fees shall be paid prior to the start of construction activity, allowing SMAQMD or YSAQMD to obtain emissions reductions for the project. If there are changes to construction activities (e.g., equipment lists, increased equipment usage or schedules), USACE shall work with SMAQMD or YSAQMD to ensure emission calculations and fees are adjusted appropriately.~~

**Section 3.12 Climate Change**

*The following edit is made to the second bullet on page 123:*

In October 2014, SMAQMD (which regulates air quality in the same air basin and Federal non-attainment area) adopted a resolution that recommends the following GHG significance thresholds:

- Construction phase of projects: ~~1,000~~1,100 metric tons of carbon dioxide equivalent ($CO_2e$) per year;

*The following edit is made to the last bullet on page 125:*

- Purchase GHG offset for program-wide GHG emissions (direct emissions plus indirect emissions from on-road haul trucks plus commute vehicles) exceeding SMAQMD significance thresholds applicable at the time of construction. Carbon offset credits shall be purchased from programs that have been approved by ~~SMAQMD~~YSAQMD.

**Section 5.1 Federal Laws and Regulations**

*The following edit is made to text starting on page 161:*

**Section 5.1.8 Federal Clean Water Act as amended, 33 USC 1251, et seq.**

*Partial Compliance.* The CWA is the primary Federal law governing water pollution. It established the basic structure for regulating discharges of pollutants into waters of the United States and gives EPA the authority to implement pollution control programs, such as setting wastewater standards for industries (EPA 2002). In some states, such as California, EPA has delegated authority to regulate the CWA to state agencies.

Section 401 of the CWA regulates the water quality for any activity that may result in any in-water work or discharge into navigable waters. These actions must not violate Federal water quality standards. The Central Valley RWQCB administers Section 401 of the CWA in California and either issues or denies water quality certifications. Water quality certifications typically include project-specific requirements established by RWQCB to ensure attainment of water quality standards. USACE will apply for a Section 401 water quality certification from the Central Valley RWQCB upon certification of the Supplemental EIS/EIR by CVFPB.

Section 404 of the CWA requires that a permit be obtained from USACE when an action will result in the discharge of dredged or fill material into wetlands and waters of the United States. Under Section 404, USACE regulates such discharges and issues individual and/or general permits for these activities. Before USACE can issue a permit under Section 404, it must determine that the project complies with CWA Section 404(b)(1) Guidelines. The 404(b)(1) guidelines specify that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR Section 230.10[a]).

When conducting its own civil works projects, as is the case with the project, USACE does not issue permits to itself. Rather, USACE complies with the guidelines and substantive requirements of the CWA, including Section 404 and Section 401. ~~The project may require discharge of fill material into Waters of the United States.~~

The Sacramento Weir Widening project includes constructing a 1,500-foot-long passive weir, with associated levee, roadway, rail, and fish passage improvements. This project is a component of the ARCF GRR. The passive weir structure would have a crest elevation at 26 feet on the North American Vertical Datum of 1988 (NAVD88). The approximately 375-acre project site is located along the west bank of the Sacramento River situated at Latitude

38.60901°, Longitude -121.56004° in Yolo County, California. The purpose of the project is to provide flood control to the city of Sacramento and surrounding communities.

The discharge and dredging of fill material is anticipated to occur in both the Sacramento River and Tule Canal. Excavation would consist of earthen material and existing previous rip rap levee angular rock. Excavation would occur with excavators and tractors. Approximately 0.25 acre of permanent fill would be placed, consisting of earthen materials and some angular rock. Placement of fill material would occur by excavator or potentially barges. Majority of the fill material will be placed within the excavated area. It is anticipated there will be approximately no more than 0.10 acre loss of waters. This loss is anticipated to occur in Tule Canal. The project would result in expansion of floodplain habitat by expanding the Sacramento Bypass. Due to the projects impacts consisting of like for like dredging and fill replacement with minimal loss of waters, with a potential net gain of seasonal flood plain habitat, mitigation is not required under the Clean Water Act. There will be an additional 0.15 acre of temporary dredge and fill impacts. All temporary impacts will be restored to pre-disturbance conditions following construction of the activity. The project would result in approximately 0.25 acre of permanent excavation within the Sacramento River and Tule Canal. A general Section 401 Water Quality Control certification will be issued for the project in 2021. The activity will result in no more than minimal individual and cumulative adverse effects on the aquatic environment and will not be contrary to the public interest.

~~If so, a Section 404(b)(1) analysis will be conducted and included in the Final Supplemental EIS/EIR. The discharge of fill material would comply with the 404(b)(1) Guidelines, with the inclusion of appropriate measures to minimize pollution or adverse effects on the aquatic ecosystem. Section 401 Water Quality Certification would also be obtained.~~

The project would require a Construction General Permit (CWA 402 NPDES permit) because it would disturb 1 acre or more of land and involve possible storm water discharges to surface waters. Prior to construction, the contractor would prepare a SWPPP and submit a Notice of Intent form to the California State Water Resources Control Board, requesting approval of the proposed work. This storm water plan would identify BMPs to avoid or minimize any adverse effects of construction on surface waters. When work is completed, the contractor would submit a Notice of Termination to end coverage by the permit.

*The following edits are made beginning with the first paragraph on page 164:*

In accordance with the PA and HPMP procedures, USACE has consulted with Native Americans who attach religious or cultural significance to Historic Properties that may be affected by the proposed undertaking. A summary of consultations with Native Americans is provided under "Native American Consultation" in Section 3.9.1. In accordance with the PA, USACE ~~will~~ has consulted with the SHPO to request concurrence on the delineation of the APE, adequacy of inventory methods, findings of cultural resources investigations, evaluation of cultural resources for National Register of Historic Places eligibility and ~~the resolution of any~~ findings of ~~adverse~~ effects from the project.

In a letter dated September 15, 2020 the SHPO concurred in the finding that one Historic Property, the Sacramento Weir and Bypass, would be adversely affected by the Proposed Action

and Higher Weir Alternative. In accordance with the PA and Mitigation Measure CR-1 USACE, in consultation with SHPO, will prepare a Historic Properties Treatment Plan that identifies specific treatment measures to resolve the adverse effect under Section 106 of the NHPA.

### 5.1.14 Rivers and Harbors Act of 1899, 33 USC 403

*Compliance.* The project location and activity is located within jurisdictional navigable waters under Section 10 of the Rivers and Harbors Act. It is anticipated that dredging, placement of fill material and temporary construction of coffer dams would occur in Section 10 navigable waters. Construction activities will not limit navigation. The work is not anticipated to affect the course, location or condition of the water body to the extent that navigation will be limited.