APPENDIX A. AIR QUALITY MODELING RESULTS

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 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 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 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 (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) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 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 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). 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	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)	Program	4		

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

Soil Hauling Emissions 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	0.00			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 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)	0.00	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 Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip	20			
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 Input	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
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 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
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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
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 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
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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
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 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		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
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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
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 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
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

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

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	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 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 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 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 (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) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 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 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). 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	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		

Program

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

Soil Hauling Emissions 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			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 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	3.65	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 Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip	20			
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 Input	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
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 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	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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
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 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
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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
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 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		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
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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
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 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
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

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

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	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				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**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				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**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.

APPENDIX B. BIOLOGICAL RESOURCES DATA

Appendix B-1: Land Cover Maps and Sensitive Biological Resources

Appendix B-2: Species Lists

Appendix B-3: Special-Status Species Occurrence Tables

Appendix B-1: Land Cover Maps and Sensitive Biological Resources

Legend

Habitat Type

- DEV - 24.76 Acres
- FCF - 5.20 Acres
- LAND - 13.82 Acres
- SBWT - 0.43 Acres
- VOW -5.74 Acres
- WOG - 16.12 Acres
- Project Boundary
- Elderberry

BROADWAY
50
RIVERSIDE BLVD
Sacramento River
5
LITTLE POCKET
FRUITRIDGE RD
Sacramento River
POCKET RD
POCKET
5

SHEET 1 of 6

US Army Corps of Engineers
Sacramento District

SPK EGIS

SREL C2
HABITAT/ELDERBERRY

ARCF 2016

1 in = 1,204 ft

Feet
0 2,000 4,000

Date Saved: 9/3/2020 7:58:03 PM

Legend

Habitat Type

- DEV - 24.76 Acres
- FCF - 5.20 Acres
- LAND - 13.82 Acres
- SBWT - 0.43 Acres
- VOW -5.74 Acres
- WOG - 16.12 Acres
- Project Boundary
- Elderberry

1065+00
1070+00
1075+00
1080+00
1085+00
1090+00
1095+00
1100+00
1105+00
1110+00
1115+00
1120+00
1125+00
1130+00
FRONT STREET
BROADWAY
50
5
Sacramento River
SHEET 2 of 6

US Army Corps of Engineers
Sacramento District

SREL C2
HABITAT/ELDERBERRY

1080+00 - 1125+00

ARCF 2016

1 in = 200 ft

Feet
0 350 700

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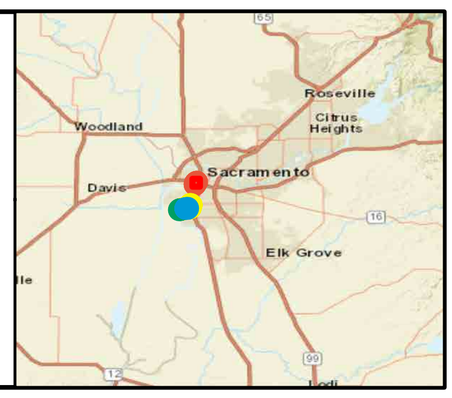

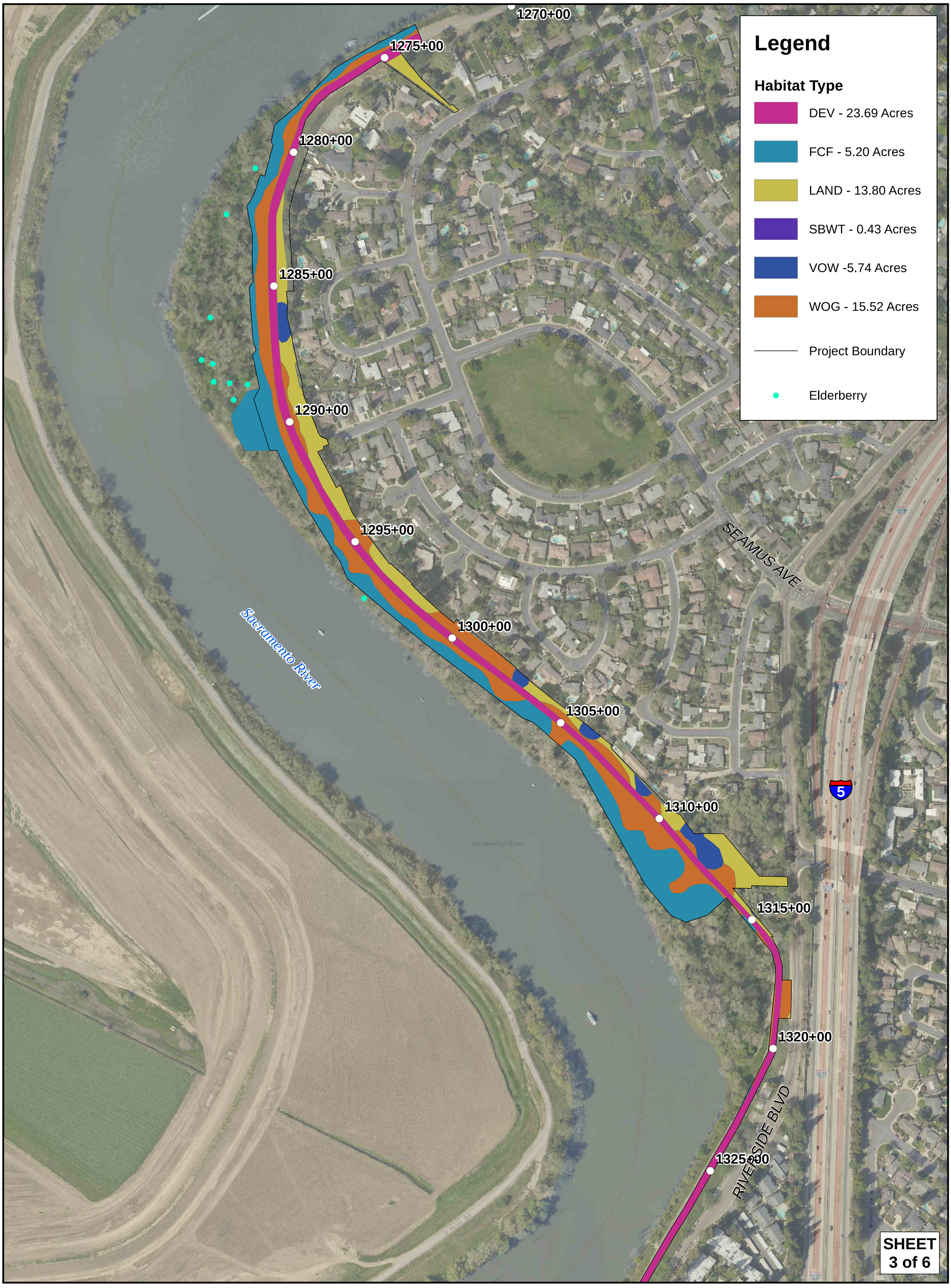

US Army Corps of Engineers
Sacramento District

SREL C2
HABITAT/ELDERBERRY/ RARE PLANT

1275+00 - 1325+00

ARCF 2016

1 in = 150 ft

Feet
0 260 520

Date Saved: 6/15/2020 1:23:50 PM

Legend

Habitat Type

- DEV - 23.69 Acres
- FCF - 5.20 Acres
- LAND - 13.80 Acres
- SBWT - 0.43 Acres
- VOW -5.74 Acres
- WOG - 15.52 Acres
- Project Boundary
- Elderberry

1320+00
1325+00
1330+00
1335+00
1340+00
1345+00
1350+00
1355+00
1360+00
1365+00
1370+00
1375+00
1380+00
1385+00
1390+00
1395+00
1400+00
1405+00
1410+00
1415+00

Sacramento River

POCKET RD

BIG POCKET

SHEET 4 of 6

US Army Corps of Engineers
Sacramento District

SPK EGIS

SREL C2
HABITAT/ELDERBERRY/RARE PLANT

1320+00 - 1415+00

ARCF 2016

Feet
0 430 860

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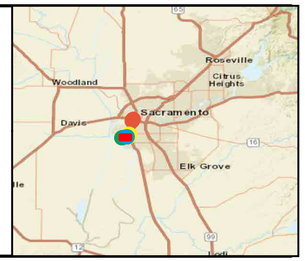

Legend

Habitat Type

- DEV - 23.69 Acres
- FCF - 5.20 Acres
- LAND - 13.80 Acres
- SBWT - 0.43 Acres
- VOW -5.74 Acres
- WOG - 15.52 Acres
- Project Boundary
- Elderberry

1405+00
1410+00
1415+00
1420+00
1425+00
1430+00
1435+00
1440+00
1445+00
1450+00
1455+00
1460+00
1465+00
1470+00
1475+00
Sacramento River

SHEET 5 of 6

US Army Corps of Engineers
Sacramento District

SREL C2 HABITAT/ELDERBERRY/ RARE PLANT

1407+50 - 1475+00

ARCF 2016

1 in = 208 ft

Feet
0 360 720

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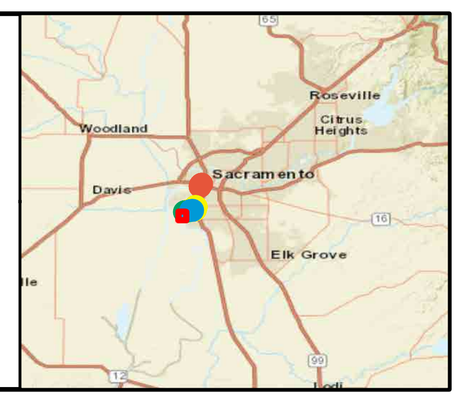

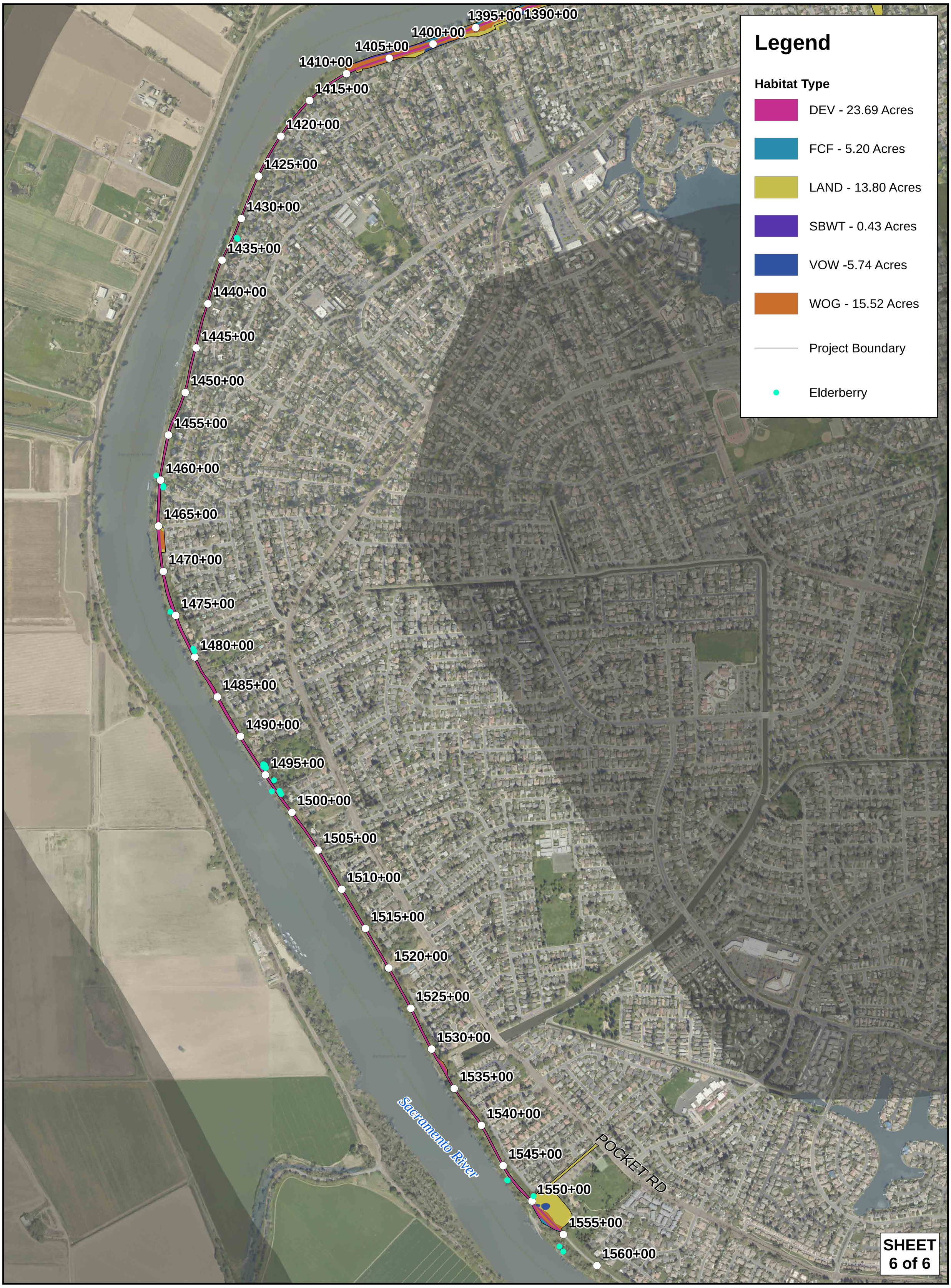

US Army Corps of Engineers
Sacramento District

EGIS SPK

SREL C2
HABITAT/ELDERBERRY/ RARE PLANT

1407+50 - 1555+00

ARCF 2016

1 in = 450 ft

Feet
0 770 1,540

Date Saved: 6/15/2020 1:15:27 PM

Appendix B-2: Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: June 15, 2020
Consultation Code: 08ESMF00-2020-SLI-0923
Event Code: 08ESMF00-2020-E-06697
Project Name: ARCF 2016 Sacramento River East Levee Contract 2

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

Project Summary

Consultation Code: 08ESMF00-2020-SLI-0923

Event Code: 08ESMF00-2020-E-06697

Project Name: ARCF 2016 Sacramento River East Levee Contract 2

Project Type: LAND - FLOODING

Project Description: Levee improvements to address seepage and stability issues along Sacramento River's East Levee. Contract is comprised of cutoff walls.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.50797619605764N121.53828345401654W

Counties: Sacramento, CA | Yolo, CA

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. 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.

Birds

NAME	STATUS
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* https://ecos.fws.gov/ecp/species/321#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
Phone: (916) 930-5603 Fax: (916) 930-5654
http://kim_squires@fws.gov

In Reply Refer To: June 15, 2020
Consultation Code: 08FBDT00-2020-SLI-0090
Event Code: 08FBDT00-2020-E-00455
Project Name: ARCF 2016 Sacramento River East Levee Contract 2

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08FBDT00-2020-SLI-0090

Event Code: 08FBDT00-2020-E-00455

Project Name: ARCF 2016 Sacramento River East Levee Contract 2

Project Type: LAND - FLOODING

Project Description: Levee improvements to address seepage and stability issues along Sacramento River's East Levee. Contract is comprised of cutoff walls.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.50797619605764N121.53828345401654W

Counties: Sacramento, CA | Yolo, CA

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. 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.

Birds

NAME	STATUS
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* https://ecos.fws.gov/ecp/species/321#crithab	Final

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

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

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni 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 bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Cuscuta obtusiflora var. glandulosa Peruvian dodder	PDCUS01111	None	None	G5T4?	SH	2B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Hibiscus lasiocarpos var. occidentalis 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
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Oncorhynchus tshawytscha pop. 6 chinook salmon - Central Valley spring-run ESU	AFCHA0205A	Threatened	Threatened	G5	S1	
Oncorhynchus tshawytscha pop. 7 chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5	S1	
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Plegadis chihi white-faced ibis	ABNGE02020	None	None	G5	S3S4	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tuctoria mucronata Crampton's tuctoria or Solano grass	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC

Record Count: 75

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

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

Search Criteria

Found in Quads 3812145 and 3812155;

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

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank	Photo
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	1B.1	S1	G2T1	no photo available
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	2B.1	S2	G5	 2009 Kerry Heise
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	1B.2	S2	G3T2	 2007 Christopher Bronny
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3	 2003 George W. Hartwell

Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	1B.2	S3	G5T3	 2012 Steven Perry
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	Apr-May	1B.1	S1	G1	 2012 Neal Kramer
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	1B.2	S1	G4T1	 Carol Witham and CNPS
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	1B.1	S2	G2	 2005 Timothy Milliken 2005
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	1B.2	S2	G2	 2015 John Doyen
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2	


2005 Aaron Schusteff

Suggested Citation

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 08 May 2020].

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Questions and Comments
rareplants@cnps.org

Appendix B-3: Special-Status Species Occurrence Tables

Table 1. Special-status Plant Species with Potential to Occur in the Project Area

Species Name	Legal Status[1]	Habitat, Elevation Range, and Blooming Period	Potential for Occurrence[2]
Watershield *Brasenia schreberi*	CRPR 2B.3	Freshwater ponds, marshes, and swamps, often in association with duckweed (*Lemna* spp.), from 98 to 7,218 feet in elevation. Blooms April–October.	Unlikely to occur
Bristly sedge *Carex comosa*	CRPR 2B.1	Marshes and swamps, generally on lake margins and wet places such as ditches, sloughs, and freshwater marsh, from 0 to 2,050 feet in elevation. Blooms May–September.	Unlikely occur
Bolander's water hemlock *Cicuta maculata* var. *bolanderi*	CRPR 2B.1	Coastal, freshwater, or brackish marshes and swamps, from 0 to 650 feet in elevation. Blooms July–September.	Unlikely to occur
Peruvian dodder *Cuscuta obtusiflora* var. *glandulosa*	CRPR 2B.2	Freshwater marshes and swamps; from 49 to 919 feet in elevation. Blooms July–October.	Unlikely to occur
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	CRPR 1B.2	Freshwater marshes and swamps, generally found on wetted river banks and low peat islands in sloughs; known from the Delta watershed, also recorded in riprap on levee slopes, from 0 to 390 feet in elevation. Blooms June–November.	Known to occur
Northern California black walnut *Juglans hindsii*	CRPR 1B.1	Riparian forest and woodland, from 0 to 1,440 feet in elevation. Although there is one documented occurrence along the Sacramento River between Freeport and Walnut Grove (CNDDB occurrence number 3), it is believed to have been extirpated and the species is believed to be extirpated from Sacramento County. Blooms April–May.	Unlikely to occur
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	CRPR 1B.2	Freshwater and brackish marshes; generally restricted to the Delta, also recorded in riprap on levee slopes, from 0 to 13 feet in elevation. Blooms May–July (rarely into September).	Unlikely to occur
Mason's lilaeopsis *Lilaeopsis masonii*	CR; CRPR 1B.1	Freshwater and brackish marshes, riparian scrub; generally found in tidal zones, on bare depositional soils in the Delta, from 0 to 33 feet in elevation. Blooms April–November.	Unlikely to occur
Delta mudwort *Limosella australis*	CRPR 2B.1	Riparian scrub, freshwater marsh, brackish marsh; generally occurs on intertidal mud banks of the Delta in marshy or scrubby riparian associations, from 0 to 10 feet in elevation. Blooms April–August.	Unlikely to occur
Sanford's arrowhead *Sagittaria sanfordii*	CRPR 1B.2	Assorted shallow freshwater marshes and swamps; generally occurs in standing or slow-moving freshwater ponds, marshes, ditches, and sloughs from 0 to 2,000 feet in elevation. Blooms May–October.	Unlikely to occur
Marsh skullcap *Scutellaria galericulata*	CRPR 2B.2	Lower montane coniferous forest, meadows and seeps, and marshes and swamps; generally occurs in swamps and wet places, also recorded on floating logs and pilings in river and slough channels, from 3,000 to 6,900 feet in elevation. Blooms June–September.	Unlikely to occur

Table 1. Special-status Plant Species with Potential to Occur in the Project Area

Species Name	Legal Status[1]	Habitat, Elevation Range, and Blooming Period	Potential for Occurrence[2]
Side-flowering skullcap *Scutellaria lateriflora*	CRPR 2B.2	Meadows and seeps, marshes and swamps; generally occurs in wet meadows and marshes in the Delta, also recorded on floating logs and pilings in river and slough channels, from 0 to 1,600 feet in elevation. Blooms May–September.	Unlikely to occur
Suisun Marsh aster *Symphyotrichum lentum*	CRPR 1B.2	Brackish and freshwater marshes and swamps; endemic to the Delta; generally occurs in marshes and swamps, often along sloughs, also recorded in riprap on levee slopes and pilings in river and slough channels, from 0 to 10 feet in elevation. Blooms May–November.	Unlikely to occur

Notes: CNDDB = California Natural Diversity Database; CRPR = California Rare Plant Rank; Delta = Sacramento–San Joaquin Delta

[1] **Legal Status Definitions**

CR = State status of Rare (legally protected).

California Rare Plant Ranks:

1B Plant species considered rare or endangered in California and elsewhere (but not legally protected under the Federal or California Endangered Species Acts).

2B Plant species considered rare or endangered in California but more common elsewhere (but not legally protected under the Federal or California Endangered Species Acts).

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.

[2] **Potential for Occurrence Definitions**:

- *No potential to occur:* Potentially suitable habitat is not present.
- *Unlikely to occur:* Potentially suitable habitat present but species unlikely to be present because of very restricted distribution and/or because it was not observed during focused surveys.
- *Known to occur:* The species was observed during focused surveys.

Sources: Baldwin et. al. 2012; CDFW 2019; CNPS 2019

Table 2. Special-Status Fishes With Potential to Occur in the Project Area

Scientific Name Common Name	Status[1] (Federal/State)	Description
Entosphenus tridentatus Pacific lamprey	–/SSC	Anadromous; expected to occur at the proposed levee improvement sites. Adults and rearing juveniles have the potential to be present year-round.
Lampetra ayresi river lamprey	–/SSC	Anadromous; though the distribution is not well known, the project area is within the species' known range and habitat is present in the Lower Sacramento River. Adults enter the streams in the fall, and spawning is believed to occur in April and May; young hatch in 2–3 weeks and remain in freshwater streams for 3–5 years (Moyle 2002).
Acipenser medirostris green sturgeon	FT, FX/SSC	Anadromous; expected to occur at the proposed levee improvement sites as adults migrating upstream to their spawning habitat (between late February and late July), and as larvae and juveniles, rearing and migrating to the ocean (year-round).
Acipenser transmontanus white sturgeon	–/SSC	Anadromous; expected to occur at the proposed levee improvement sites as adults migrating upstream to their spawning habitat (winter and spring), and as larvae moving downstream to the estuary (spring to early summer).
Mylopharadon conocephalus hardhead	–/SSC	Resident; expected to occur year-round in the Lower Sacramento River. Adults occur in deep, clear pool and run habitats, whereas juveniles are found in shallow water and along the shoreline (Moyle et al. 1982, Moyle 2002).
Pogonichthys macrolepidotus Sacramento splittail	–/SSC	Resident/semi-anadromous; expected to occur in wet years in the project area along the Lower Sacramento River as adults migrating from the Delta to flooded spawning areas in February–June, and as juveniles migrating from upstream spawning habitats to tidal habitat shortly after emergence, primarily in April and May (Sommer et al. 1997; Baxter 1999, 2000, both as cited in Moyle 2002).
Hypomesus transpacificus delta smelt	FT, FX/SE	Semi-anadromous; adults and juveniles are uncommon at the proposed levee improvement sites, but may be present in December–July, though typically restricted to the Delta and the Lower Sacramento River downstream of Isleton (RM 18); juveniles move downstream with the currents (USFWS 1996, Sommer et al. 2001a, Moyle 2002).
Spirinchus thaleichthys longfin smelt	FC/ST, SSC	Anadromous; rare migrant to the project area. Similar to delta smelt, adults and juveniles are uncommon, but may be present along the Lower Sacramento River in December–July when they enter freshwater streams to spawn, though typically restricted to the Delta and the lower Sacramento River downstream of Rio Vista (RM 12) (Moyle 2002, Baxter et al. 2008).
Oncorhynchus mykiss Central Valley steelhead	FT, FX/–	Anadromous; expected to occur in the Lower Sacramento River as adults migrating to their upstream spawning habitat, and as juveniles and smolts rearing and migrating towards the ocean. Adult migration to upstream spawning areas occurs in July–March (Hallock 1987). Juveniles typically spend 1–3 years in fresh water before migrating to the ocean, generally in December–August (McEwan 2001).
Oncorhynchus tshawytscha Central Valley spring-run Chinook salmon	FT, FX/ST	Anadromous; expected to occur in the Lower Sacramento River as adults migrating upstream in March–September, (peak May–June) (Yoshiyama et al. 1998), and as juveniles and yearlings migrating downstream from the onset of the winter storm season through June (CDFG 1998, Fisher 1994, S.P. Cramer and Associates 1995, Hill and Webber 1999, NMFS 2014).
Oncorhynchus tshawytscha Sacramento River winter-run Chinook salmon	FE, FX/SE	Anadromous; expected to occur in the Lower Sacramento River as adults, migrating upstream in December–July (peak in March) (Moyle 2002), and as juveniles migrating downstream soon after fry emerge, typically beginning in August and peaking in September and October (Vogel and Marine 1991). Juveniles and smolts (juveniles that are physiologically ready to enter seawater) may migrate through the project area in November–May (Yoshiyama et al. 1998).

Table 2. Special-Status Fishes With Potential to Occur in the Project Area

Scientific Name Common Name	Status[1] (Federal/State)	Description
Oncorhynchus tshawytscha Central Valley fall-/late fall-run Chinook salmon	FSC/SSC	Anadromous; fall-run are expected to occur throughout the project area, either as adults migrating upstream to their spawning habitat, or as juveniles and smolts rearing and migrating toward the ocean. Late fall-run are expected to occur in the Lower Sacramento River. Fall-run adults migrate through the project area in June–December. Fall-run juveniles rear in fresh water for only a few months after emerging, migrating downstream through the project area in March–July (Yoshiyama et al. 1998). Late fall-run adults migrate through the project area in October–April. Late fall-run juveniles rear in their natal stream during summer; in some streams they remain throughout the year. Late fall-run smolt outmigration can occur in November–May (Yoshiyama et al. 1998).

Notes: CDFG = California Department of Fish and Game; CDFW = California Department of Fish and Wildlife; CESA = California Endangered Species Act; Delta = Sacramento-San Joaquin Delta; ESA = Federal Endangered Species Act; NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service

[1] Status (CDFW 2016, NMFS 2016, USFWS 2016):

Federal

FE = endangered under the ESA
FT = threatened under the ESA
FC = candidate species for listing under the ESA
FSC = Federal sensitive, or species of concern
FX = designated critical habitat under the ESA
– = no status

State

SE = endangered under CESA
ST = threatened under CESA
SSC = CDFW Species of Special Concern
– = no status

Source: Data compiled by Stillwater Sciences in 2016

Table 3. Special-status Wildlife Species Evaluated for Potential to Occur in the Project Area

Species Name	Legal Status[1] Federal	State	Habitat Associations and Species Occurrences	Potential for Occurrence[2]
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	–	Closely associated with blue elderberry (*Sambucus* sp.), which is an obligate host for the beetle larvae; occurrences along the Sacramento River.	Known to occur
Reptiles				
Giant garter snake *Thamnophis gigas*	FT	ST	Open water associated with marshes, sloughs, and irrigation/drainage ditches within the Central Valley; requires emergent herbaceous wetland vegetation, grassy banks, and openings in waterside vegetation, and higher elevation upland habitat. A historical occurrence is recorded from Laguna Creek (CDFW 2016), but species experts consider this record to be an error, and there is no reliable evidence of giant garter snake presence in the Upper Beach Lake area (E. Hansen, pers. comm., 2015).	Unlikely to occur
Northwestern 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 require basking sites such as logs, rocks, cattail mats, and exposed banks; documented in the levee improvements area and Upper Beach Lake area.	Known to occur
Birds				
California least tern *Sterna antillarum browni*	FE	SE	Typically found at coastal beaches, bays, estuaries, and other water bodies, but known to occur at several scattered inland sites, including very small numbers in some years at the Sacramento Regional WWTP (SRCSD 2014).	Could occur
Western snowy plover *Charadrius alexandrines nivosus*	FT	–	Primarily a coastal species, but scattered inland breeding populations exist; CNDDB occurrences of migrant individuals from several wastewater treatment facilities in the region.	Unlikely to occur
Greater sandhill crane *Grus canadensis tabida*	–	ST	Grasslands, moist croplands with stubble, and open, emergent wetlands; does not breed in the Central Valley but regularly occurs in the Sacramento Regional WWTP Bufferlands in September through March (SRCSD 2014).	Could occur
White-tailed kite *Elanus leucurus*	–	FP	Nests in woodlands and isolated trees and forages in grasslands, pasture, and agricultural fields; nests documented in the Woodlake area and adjacent to Sacramento Regional WWTP Bufferlands.	Known to occur
Swainson's hawk *Buteo swainsoni*	–	ST	Nests in woodlands and scattered trees and forages in grasslands and agricultural fields; known to nest and forage in the vicinity of the project area, including potential woodland mitigation sites.	Known to occur

Table 3. Special-status Wildlife Species Evaluated for Potential to Occur in the Project Area

Species Name	Legal Status[1] Federal	State	Habitat Associations and Species Occurrences	Potential for Occurrence[2]
Northern harrier *Circus cyaneus*	–	SSC	Nests and forages in grasslands, agricultural fields, and marshes, mostly within dense patches of vegetation no CNDDB occurrences in vicinity of project area, but this species is rarely documented in the CNDDB.	Could occur
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	SE	Riparian forest with dense deciduous trees and shrubs; migrant individuals are likely to pass through the area in transit to breeding sites along the Sacramento River north of Colusa.	Could occur
Burrowing owl *Athene cunicularia*	–	SSC	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with natural or artificial burrows or friable soils; known to occur near the Upper Beach Lake potential woodland mitigation area (SRCSD 2000).	Could occur
Bank swallow *Riparia riparia*	–	ST	Forages in a variety of habitats and nests in vertical banks or bluffs of suitable soil, typically adjacent to water; historical CNDDB occurrences of nest colonies have been documented along the lower American River, but no documented occurrences along the Sacramento River in the vicinity of the project area.	Could occur
Purple martin *Progne subis*	–	SSC	Nests in bridges in the Sacramento urban area and forages in adjacent open habitats; nest colonies are documented in the CNDDB, but no suitable nest sites are present in the project area or vicinity.	Could occur
Loggerhead shrike *Lanius ludovicianus*	–	SSC	Forages and nests in grasslands, shrublands, and open woodlands; no CNDDB occurrences in the project area or vicinity, but this species is rarely documented in the CNDDB.	Could occur
Least Bell's vireo *Vireo bellii pusillus*	FE	SE	Typically occurs in structurally diverse riparian habitat with dense shrub layer; the subspecies is largely extirpated from the Central Valley, but has recently been documented attempting to nest in the Yolo Bypass Wildlife Area, and a migrant individual has been observed in the Sacramento Regional WWTP Bufferlands (SRCSD 2014).	Could occur
Grasshopper sparrow *Ammodramus savannarum*	–	SSC	Nests and forages in grasslands, with a mix of grasses, forbs, and scattered shrubs, on rolling hills and lowland plains; CNDDB occurrences in the project area and vicinity are limited to eastern Sacramento County.	Unlikely to occur
Song sparrow ("Modesto" population) *Melospiza melodia*	–	SSC	Nests and forages in emergent freshwater marsh and riparian scrub and woodland; several CNDDB occurrences in the Upper Beach Lake area.	Could occur
Tricolored blackbird *Agelaius tricolor*	–	SE	Nests in freshwater marsh, riparian scrub, grain crops, and other dense, low vegetation and forages in grasslands and agricultural fields; CNDDB nesting colony locations nearest to the project area are in the Natomas Basin and Yolo Bypass.	Unlikely to occur

Table 3. Special-status Wildlife Species Evaluated for Potential to Occur in the Project Area

Species Name	Legal Status[1] Federal	State	Habitat Associations and Species Occurrences	Potential for Occurrence[2]
Mammals				
Pallid bat *Antrozous pallidus*	–	SSC	Occurs in a wide variety of habitats and roosts in tree cavities and caves, as well as artificial sites (e.g., bridges and buildings); several historic and recent occurrences from Sacramento (County of Sacramento et al. 2010) and Yolo Counties.	Likely to occur
Western red bat *Lasiurus blossevillii*	–	SSC	Roosts solitarily in foliage of mature trees associated with woodland borders, rivers, and walnut orchards, especially in mature riparian corridors more than 164 feet wide; numerous historic and recent occurrences from Sacramento County (County of Sacramento et al. 2010).	Likely to occur
American badger *Taxidea taxus*	–	SSC	Arid, open grassland, shrubland, and woodland with soils suitable for burrowing; historic and recent CNDDB occurrences from Sacramento County, but none closer to the project area than the former Mather Air Force Base.	Unlikely to occur

Notes: CNDDB = California Natural Diversity Database; Sacramento Regional WWTP = Sacramento Regional Wastewater Treatment Plant; USFWS = U.S. Fish and Wildlife Service

[1] **Status Definitions:**
FT = Federally listed as Threatened under the Federal Endangered Species Act
FE = Federally listed as Endangered under the Federal Endangered Species Act
ST = State-listed as Threatened under the California Endangered Species Act
SE = State-listed as Endangered under the California Endangered Species Act
FP = State fully protected
SSC = State species of special concern
– = No status

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

Sources: CDFW 2016; CNDDB 2016; County of Sacramento et al. 2010; SRCSD 2000, 2014; USFWS 2016a

APPENDIX C. COMMENTS AND RESPONSES ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT/ENVIRONMENTAL IMPACT REPORT

Introduction

This appendix provides responses to public and agency comments on the Sacramento River East Levee (SREL) Contract 2 Draft Supplemental Environmental Assessment /Environmental Impact Report (SEA/EIR) received during the public comment period.

Public Comment Summary

The draft SEA/EIR was posted with the State Clearinghouse (SCH #2005072046) on July 8, 2020. The draft SEA/EIR was circulated at least 45-days for review by Federal, State, and local agencies; organizations; and members of the public from July 8, 2020 through August 22, 2020. The draft SEA/EIR was made available on the Sacramento District, Corps of Engineers and Central Valley Flood Protection Board websites. Hard copies of the draft SEA/EIR were provided upon request.

A virtual public meeting was held on July 22, 2020 to provide additional opportunities for comments on the draft SEA/EIR. All comments received during the public review period were considered and incorporated into the final SEA/EIR as appropriate.

The virtual meeting was held, instead of the typical in-person meetings, due the restrictions on meeting sizes 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, the public asked clarifying questions the project and impacts. Additionally, comments could be submitted through mail or electronic mail.

During the draft SEA/EIR public review period, a total of fourteen comments (four comment letters) were received from five different parties, including:

- (4) U.S. Environmental Protection Agency
- (8) State agencies (Delta Stewardship Council)
- (1) Local/regional agencies (Sacramento Regional County Sanitation District)
- (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.

REGIONALSAN
TAKING THE WASTE OUT OF WATER
Sacramento Regional County Sanitation District

Main Office
10060 Goethe Road
Sacramento, CA 95827-3553
Tel: 916.876.6000
Fax: 916.876.6160

Treatment Plant
8521 Laguna Station Road
Elk Grove, CA 95758-9550
Tel: 916.875.9000
Fax: 916.875.9068

www.regionalsan.com

July 29, 2020

Mr. Miles Claret
Department of Water Resources
3464 El Camino Avenue – Room 150
Sacramento, CA 95821

Subject: Notice of Availability of a Draft Supplemental EA/EIR for the American River Watershed Common Features, Water Resources Development Act of 2016, Sacramento River East Levee Contract 2 Project

Dear Mr. Claret,

Sacramento Regional County Sanitation District (Regional San) has reviewed the subject application and has the following comments.

The U.S. Army Corps of Engineers (USACE) and Central Valley Flood Protection Board (CVFPB) propose to construct approximately 9,540 cumulative feet of levee improvements by installing a series of cutoff walls along the eastern levee of the Sacramento River from north and south of the Pioneer Bridge on US Highway 50 and from the southern end of the Little Pocket Neighborhood to the northern end of the Big Pocket Neighborhood.

Although the proposed project will have no significant impacts on Regional San infrastructure, there is reference within the EA/EIR pertaining to the potential for the use of the Sacramento Regional Wastewater Treatment Plant (SRWTP) as a borrow site utilizing the current SRWTP expansion project's excavated material to construct the proposed levee improvements.

Regional San and the USACE have had preliminary discussions on the potential use of the SRWTP's excavated materials. As mentioned within the EA/EIR, testing is required to be performed by the USACE and an agreement in place between Regional San and the USACE for acquisition of the subject fill material. 1-1

If you have any questions regarding this letter, please feel free to contact me at (916) 876-6104 or by email: armstrongro@sacsewer.com.

Sincerely,

Robb Armstrong

Robb Armstrong
Regional San Development Services & Plan Check

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

August 13, 2020

Nikole May
Project Manager
U.S. Army Corps of Engineers, Sacramento District
1325 J Street, Room 1513
Sacramento, California 95814

Subject: Draft Supplemental Environmental Assessment/Environmental Impact Report for the American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento River East Levee Contract 2, Sacramento County, California

Dear Nikole May:

The U.S. Environmental Protection Agency has reviewed the above-referenced document. Our review is 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.

Thank you for the opportunity to provide comments on the Proposed Action. We note 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 required further design refinement. The current document analyzes impacts from the construction of cutoff walls at the levee centerline to prevent seepage and improve the stability along five miles of the Sacramento River East Levee. Additionally, it identifies the locations of staging areas, haul routes, and potential spoils disposal areas. Please consider the following recommendations to assist in completing the Final EA.

Air Quality

The source of the Sacramento Valley Air Basin Attainment Status data in Table 3-1 (p. 59) is from the Sacramento Metropolitan Air Quality Management District dated 2020. However, in the cumulative effects analysis, the Supplemental EA says that no single project is sufficient in size to result in nonattainment of regional air quality standards according to 2014 SMAQMD data (p.137).

> ***Recommendation***: Please clarify/update which set of standards – 2020 or 2014 – are being used to support these statements. 2-1

The Supplemental EA implies uncertainty about whether the thresholds for PM_{10} and $PM_{2.5}$ will be exceeded (p. 60). The Supplemental EA says it will periodically survey off-road diesel-powered equipment to ensure that emissions do not exceed 40% opacity for more than 3 minutes

in any 1 hour period (pgs. 60, 65). However, the Western Regional Air Partnership[1] limits visible dust emissions to 20% opacity for many construction, demolition, and materials handling activities as well as in areas where wind erosion may cause particulate emissions from agricultural and open areas (See Handbook at pgs. 3-18 through 3-20, 4-6, 7-13 and 8-20).

> ***Recommendation***: For the Final EA, the EPA recommends that the Corps consult with the Sacramento Metropolitan Air Quality Management District to determine whether there are additional control measures not already identified in Mitigation Measures AIR 1-3 available on this and future American River Common Features projects that could reduce fugitive PM dust to the recommended 20% opacity limit. 2-2

Water Quality

The Supplemental EA notes that potential dewatering to facilitate construction activities (e.g., removing groundwater that may fill trenches dug for cutoff wall construction) could result in erosion and/or release of sediment into surface or groundwater. 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 Supplemental EA acknowledges that damage to these drying beds could result in the release of sediment into surface or groundwater (p. 107), 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 potential need for low-threat general waste discharge permit[2] coverage for construction dewatering offered by the Central Valley Regional Water Quality Control Board. 2-3

Impacts to Riparian Habitat

The Proposed Action would remove up to 60 trees from the top of the levee, with 1.86 of 2.51 canopy acres lost from the water side of the levee (pgs. 37, 56). Although the Supplemental EA determined that the temporal loss of shaded riverine aquatic habitat upon fisheries would not be expected to result from tree removal, it also noted that impacts caused by project removal of valley oaks and other woodland riparian habitat would be significant (p. 69).

Mitigation to compensate for removal of these trees is proposed by planting 5.02 acres (2:1 ratio) of new riparian habitat at the Beach/Stone Lakes Mitigation Site. The Corps has guidance for setting mitigation ratios in areas where constructed habitats would take time to mature and replace lost functions.[3] Where there is a lag between when the impacts occur and the time when constructed

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[1] The Western Regional Air Partnership's Fugitive Dust Handbook estimates uncontrolled fugitive dust emissions and emission reductions achieved by demonstrated control techniques for eight major fugitive dust source categories, including sources from heavy construction and erosion in agricultural or open areas. https://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf

[2] https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

[3] *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

mitigation is 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 EA and subsequent levee 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. 2-4

We appreciate the opportunity to review this Supplemental Draft EA and are available to discuss our comments. Please send one electronic copy of the Final Supplemental EA when it becomes available to Robin Truitt, the lead reviewer for this project, at truitt.roberta@epa.gov. If you have any questions, please contact me at (415)947-4167 or prijatel.jean@epa.gov, or Robin at (415)972-3742.

Sincerely,

Jean Prijatel
Manager, Environmental Review Branch

cc: Miles Claret, Department of Water Resources
Karen Huss, Sacramento Metropolitan Air Quality Management District
Scott Hatton, WDR Program, Central Valley Regional Water Quality Control Board

From: Maggie Beddow
Sent: Friday, August 7, 2020 6:54 PM
To: DWR Public Comment ARCF 16 <PublicCommentARCF16@water.ca.gov>
Subject: Pocket/Greenhaven 95831 projects on the levee - thank you and make the levees publicly accessible to ALL!

Short and sweet - the sooner, the better to make the Pocket/Greenhaven levees safe and fortified, and make the levees public and accessible to all. Do not issue any permits to allow fences to go up again, ever! Make it a walking/bike trail. 3-1

Thank you,

Maggie Beddow

Pocket homeowner

DELTA STEWARDSHIP COUNCIL
A California State Agency

980 NINTH STREET, SUITE 1500
SACRAMENTO, CALIFORNIA 95814
HTTP://DELTACOUNCIL.CA.GOV
(916) 445-5511

August 21, 2020

Miles Claret
California Department of Water Resources
Division of Flood Management
3464 El Camino Avenue Room 150
Sacramento CA 95821

Sent via email: PublicCommentARCF16@water.ca.gov

RE: Comments on Draft Supplemental Environmental Assessment/Environmental Impact Report for the American River Common Features, Water Resources Development Act 2016, Sacramento River East Levee Contract 2 Project

Dear Miles Claret:

The Delta Stewardship Council (Council) appreciates the opportunity to comment on the Draft Supplemental Environmental Assessment/Environmental Impact Report (Draft Supplemental EA/EIR) for the American River Common Features, Water Resources Development Act 2016, Sacramento River East Levee Contract 2 (Project). The purpose of the Project is to reduce the flood risk associated with through and under-seepage of water from the Sacramento River to the City of Sacramento. The Project proposes to construct approximately 9,540 cumulative feet of levee improvements along the Sacramento River by installing a series of cutoff walls to reduce seepage and improve levee stability.

Most of the levee improvements included in the Project were analyzed in the American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement/Environmental Impact Report (EIS/EIR). The Draft Supplemental EA/EIR addresses project modifications and refinements since publication of the ARCF GRR EIS/EIR. The Council previously submitted comments to the Central Valley Flood Protection Board (Flood Board) on the ARCF GRR Draft EIS/EIR (see **Attachment 1**). That comment letter explained the Council's regulatory authority under the Sacramento-San Joaquin Delta Reform Act of 2009 (SBX7 1; Delta Reform Act (Wat. Code, section 85000 et seq.)); identified Water Code section 85225 requirements for the Flood Board to determine whether the Project is a covered action and, if so, submit a certification of consistency to the Council before implementing the Project; and identified Delta Plan regulatory policies that would be potentially implicated by the Project.

Council staff appreciated the opportunity to discuss the Project and the covered action process with you and other project partners from the U.S. Army Corps of Engineers and Sacramento Area Flood Control Agency at a July 30, 2020 early consultation meeting for the Project. Early consultation represents a critical step in the process for determination of consistency with the Delta Plan for covered actions; it also provides a state or local public agency the opportunity to discuss possible impacts on and benefits to the coequal goals, the Council's regulatory processes, and the Delta Plan (including adaptive management plans and use of best available science) as they pertain to the Project.

Covered Action Determination and Certification of Consistency with the Delta Plan

As explained in the Council's comment letter on the ARCF GRR Draft EIS/EIR and noted in the Draft Supplemental EA/EIR (page 151), the Project appears to meet the definition of a covered action. As defined in Water Code section 85057.5 subdivision (a), a covered action is a plan, program, or project as defined pursuant to Section 21065 of the Public Resources Code that meets all of the following conditions:

1. Will occur in whole or in part within the boundaries of the Delta (Water Code, §12220) or Suisun Marsh (Pub. Resources Code, § 29101). The Project would occur in part within the boundaries of the Delta.
2. Will be carried out, approved, or funded by the State or a local public agency. The Project would be approved by the Flood Board, which is a State agency.
3. Will have a significant impact on the achievement of one or both of the coequal goals or the implementation of a government-sponsored flood control program to reduce risks to people, property, and State interests in the Delta. The Project would have a significant impact on the implementation of a government-sponsored flood control program to reduce risks to people, property, and State interests in the Delta.
4. Is covered by one or more of the regulatory policies contained in the Delta Plan (Cal. Code Regs., tit. 23, §§ 5003-5015). Delta Plan regulatory policies that may apply to the Project are discussed below.

Prior to implementing the Proposed Action, the Flood Board would submit a Certification of Consistency with the Delta Plan to the Council in accordance with section 85225 of the California Water Code. (Draft Supplemental EA/EIR p. 151)

Comments Regarding Delta Plan Policies and Potential Consistency Certification

The following section describes the Delta Plan regulatory policies that may apply to the Project. The Council offers this information to assist the Flood Board to prepare a certification of consistency for the Project.

General Policy 1: Detailed Findings to Establish Consistency with the Delta Plan

Delta Plan Policy **G P1** (Cal. Code Regs., tit. 23, § 5002) specifies what must be addressed in a certification of consistency by the state or local public agency for a plan, program, or project that is a covered action. This policy applies only after a proposed action has been determined by the agency to be a covered action because one or more of the Delta Plan regulatory policies (Cal. Code Regs. tit. 23, §§ 5003-5015) is implicated. The following policy requirements under G P1 may apply to the Project:

Mitigation Measures

4-1

Delta Plan Policy **G P1(b)(2)** (Cal. Code Regs. tit. 23, § 5002(b)(2)) requires that covered actions not exempt from the California Environmental Quality Act (CEQA) must include all applicable feasible mitigation measures adopted and incorporated into the Delta Plan as amended April 28, 2018 (unless the measure(s) are within the exclusive jurisdiction of an agency other than the agency that files the certification of consistency), or substitute mitigation measures that the agency that files the certification of consistency finds are equally or more effective. Mitigation measures in the Delta Plan's Mitigation Monitoring and Reporting Program (MMRP, Appendix O to the Delta Plan) are available at https://deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf.

The Draft Supplemental EA/EIR identifies significant impacts that require mitigation for visual resources, air quality, vegetation and wildlife, special status species, climate change, cultural resources, geological resources, hazardous wastes and materials, water quality and groundwater resources, noise, recreation, transportation and circulation, and public utilities and service systems. The Flood Board should review Delta Plan Appendix O and ensure that the Final Supplemental EA/EIR includes all applicable feasible mitigation measures adopted and incorporated into the Delta Plan or identifies substitute mitigation measures that the agency finds are equally or more effective.

Best Available Science

4-2

Delta Plan Policy **G P1(b)(3)** (Cal. Code Regs., tit. 23, § 5002(b)(3)) states that actions subject to Delta Plan regulations must document use of best available science as relevant to the purpose and nature of the project. The Delta Plan defines best available science as “the best scientific information and data for informing management and policy decisions.” (Cal. Code Regs, tit. 23, § 5001(f).) Best available science is also required to be consistent with the guidelines and criteria in Appendix 1A of the Delta Plan (https://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1a.pdf).

The Final Supplemental EA/EIR should document the use of best available science, as relevant to the Project.

Ecosystem Restoration Policy 4: Expand Floodplains and Riparian Habitats in Levee Projects 4-3

The Council's comments on the Draft ACRF GRR EIS/EIR highlighted Delta Plan Policy **ER P4** (Cal. Code Regs., tit. 23, § 5008), which requires levee projects to increase floodplains and riparian habitats where feasible. The policy also requires the evaluation of setback levees in several areas of the Delta, including urban levee improvement projects in the City of Sacramento. The Flood Board should consider including information in the Final Supplemental EA/EIR to document how the Project evaluated the feasibility of incorporating floodplain and riparian habitats, including setback levees where required, into the design and construction of the Project.

The Flood Board should also consider including information in the Final EA/EIR that explains and substantiates how other alternatives that would increase riparian habitats were evaluated and incorporated, where feasible.

Ecosystem Restoration Policy 5: Avoid Introductions of and Habitat Improvements for Invasive Nonnative Species 4-4

Delta Plan Policy **ER P5** (Cal. Code Regs., tit. 23, § 5009) requires that covered actions fully consider and avoid or mitigate the potential for new introductions of, or improved habitat conditions for, nonnative invasive species, striped bass, and bass in a way that appropriately protects the ecosystem. The Flood Board should consider including information on Policy ER P5 in the Vegetation and Wildlife section of the Final Supplemental EA/EIR. That section should analyze how the Project would address both nonnative wildlife species as well as terrestrial and aquatic weeds. It should also analyze how the project would avoid or mitigate conditions that would lead to establishment of nonnative invasive species. In the event that mitigation is warranted, mitigation and minimization measures must include Delta Plan Mitigation Measure 4-1 (available at: https://deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf) or a substitute mitigation measure that is equally or more effective.

Delta as Place Policy 2: Respect Local Land Use when Siting Water or Flood Facilities or Restoring Habitats 4-5

Delta Plan Policy **DP P2** (Cal. Code Regs., tit. 23, § 5011) reflects one of the Delta Plan's charges to protect the Delta as an evolving place by siting water management facilities, ecosystem restoration, and flood management infrastructure to avoid or reduce conflicts with existing or planned future land uses when feasible, considering comments from local agencies and the Delta Protection Commission.

The Draft Supplemental EA/EIR identifies a variety of significant impacts to existing uses that could result from the Project, including temporary impacts on visual character, temporary and short-term recreational opportunities during construction, and vegetation removal. The Flood Board should consider including information in Final Supplemental EA/EIR on how the specific proposed flood management infrastructure, as well as rights-of-way, staging areas, borrow disposal areas, and other areas would be sited to avoid or reduce these impacts. In addition, the Flood Board should consider including information on any changes in project design or siting that were made to reduce impacts to existing or planned uses.

We appreciate the modification of ARCF GRR EIR/EIS Mitigation Measure REC-1, Implement Bicycle and Pedestrian Detours, Provide Construction Period Information on Facility Closures, and Coordinate with the City of Sacramento to Repair of Damage to Bicycle Facilities, based on Council guidance to provide clear communication of detours for pedestrians and bicyclists, and to provide information on alternative park and boat launch locations to replace facilities that will be temporarily closed.

Risk Reduction Policy 1: Prioritization of State Investments in Delta Levees and Risk Reduction 4-6

Delta Plan Policy **RR P1** (Cal. Code Regs., tit. 23, § 5012) calls for the prioritization of State investments in Delta flood risk management, including levee operation, maintenance and improvements. Delta Plan Policy RR P1 includes three high-level goals that are to be implemented across three benefit analysis categories. For the Project, Goal 1, *Protect existing urban and adjacent urbanizing areas by providing 200-year flood protection*, is particularly relevant. The Flood Board should consider including information in the Final Supplemental EA/EIR on how the Project meets this and other priorities identified under RR P1.

In addition, as part of the Delta Levees Investment Strategy (DLIS), the Council is currently working to update the investment priorities set forth in RR P1. This process is anticipated to be completed in 2021-2022. In the interim, the priorities described under RR P1 remain in effect.

CEQA Regulatory Setting 4-7

For each resource section in which a Delta Plan policy is applicable, the Final Supplemental EA/EIR regulatory setting should describe the Delta Plan and reference specific applicable regulatory policies.

Conclusion 4-8

As the Flood Board has determined that the Project is a covered action (Draft Supplemental EA/EIR p. 151), the Flood Board should submit a certification of consistency with the Delta Plan to the Council. We encourage the Flood Board to continue to engage in early consultation with Council staff prior to developing and submitting a certification of consistency for the Project. Please contact Erin Mullin at Erin.Mullin@deltacouncil.ca.gov with any questions.

Sincerely,

Jeff Henderson, AICP
Deputy Executive Officer
Delta Stewardship Council

Comment 1: Sacramento Regional County Sanitation District

1-1 Comment acknowledged. USACE will continue to coordinate with the Sacramento Regional County Sanitation District regarding using excavated material from the Sacramento Regional Wastewater Treatment Plant as borrow material for the Proposed Action.

Comment 2: U.S. Environmental Protection Agency

2-1 2020 standards were used in the analysis. In response to this comment, the Corps proposes the following update to the text in the first paragraph under "Air Quality" on page 137:

By its nature, air pollution is largely a cumulative impact. Ambient air quality standards are violated or approach nonattainment levels because of past activities, and increasing emissions-generating activity across the region may jeopardize attainment (SMAQMD 2020). ~~Air quality is inherently a cumulative effect because existing air quality is a result of past and present projects. No single project will be sufficient in size, by itself, to result in nonattainment of the regional air quality standards (SMAQMD 2014).~~

2-2 The Draft SEA/EIR's estimated mitigated PM10 emissions in Table 3-4 did not include adjustments to the RCEM model results to account for use of the SMAQMD Enhanced Fugitive PM Dust Control Measures, which the project will implement in accordance with Mitigation Measure AIR-2. In the Final SEA/EIR, the mitigated emissions for PM10 are corrected from 126.5 pounds per day to 71.5 pounds per day, and from 5.7 tons per year to 3.0 tons per year. The estimated mitigated emissions for PM10 will therefore not exceed the SMAQMD thresholds of significance for PM10, which are 80 pounds per day and 14.6 tons per year.

Mitigation Measure AIR-3 includes a requirement for periodic surveys to ensure that vehicle exhaust does not exceed 40 percent opacity. The Western Regional Air Partnership requirement identified in the comment limits visible dust emissions to 20% opacity. PM emissions from the SREL C2 project are not expected to exceed local air district standards. Furthermore, SMAQMD prohibits visible dust emissions leaving construction sites under its Rule 401.

2-3 All appropriate Regulatory Permits (e.g. a Low Threat Discharge permit, Dewatering permit, or Individual Permit from the Central Valley Regional Water Quality Control Board) 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 prompt mitigation measures to prevent potential groundwater contamination in the event of drying bed damage.

2-4 The 2015 Biological Opinion from the 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." The Beach Stone Lakes Mitigation site being used for the Proposed Action is within close proximity to the project. USACE's guidance for setting mitigation ratios at 3:1 applies specifically to impacted wetlands or other waters of the U.S. The proposed project does not impact wetlands or other waters of the U.S.

Comment 3: Maggie Beddow

3-1 This comment does not refer to an action of the project and remarks on the future use of the project site that is beyond the scope of this SEA/EIR.

Comment 4: Delta Stewardship Council

4-1 Comment acknowledged. Delta Plan Appendix O was considered during preparation of the Final Supplemental EA/EIR.

4-2 Comment acknowledged. The Proposed Action was designed in accordance with the latest USACE engineering standards.

4-3 Comment acknowledged and considered. Given the urban location of the Proposed Action, levee setback alternatives are not feasible. Additional information regarding the feasibility of setback levee alternatives can be found in the American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement / Environmental Impact Report (EIS/EIR).

4-4 Comment acknowledged and considered. The Proposed Action does not affect aquatic environments or nonnative aquatic species. The Proposed Action will disturb existing habitat that is currently dominated by nonnative species. Areas disturbed by the Proposed Action will be re-seeded using native grasses and/or forbs. Additional information addressing this comment can be found in the American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement / Environmental Impact Report (EIS/EIR). Based on the analysis provided in the ARCF GRR EIS/EIR and this supplemental document, the Proposed Action will not lead to the increased establishment of nonnative invasive species compared to exiting conditions.

4-5 Comment acknowledged and considered. The Proposed Action includes improvements to existing levee infrastructure and does not include expansion or changes to the footprint of these facilities or acquisition of private property beyond the existing flood control infrastructure. Additional information addressing this comment can be found in the American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement / Environmental Impact Report (EIS/EIR) and in Chapter 3 of this document.

4-6 Comment acknowledged and considered. The Proposed Action will improve levees and protect existing urban development in an area defined as a "very high priority" (the highest priority category) for risk reduction improvements in Chapter 7 of the Delta Plan. The geotechnical design criteria adopted for the Proposed Action followed published

USACE and DWR Urban Levee Design Criteria (ULDC). A 200-year water surface profile was used in the design analysis to evaluate project compliance with geotechnical criteria under DWR's ULDC 200-year level of protection. Additional information addressing the project purpose can be found in the American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement / Environmental Impact Report (EIS/EIR) and in Chapter 1 of this document.

4-7 Comment acknowledged. Additional information addressing this comment can be found in the American River Watershed Common Features General Reevaluation Report (ARCF GRR) Environmental Impact Statement / Environmental Impact Report (EIS/EIR) and Chapters 3 and 5 of this document. As described in Chapter 3 of this document, supplemental information on existing conditions, including environmental and regulatory setting, is provided for resource topics only where necessary to support the supplemental impact analysis. Otherwise, the document relies on the regulatory setting as described in the ARCF GRR EIS/EIR and is not repeated.

4-8 Comment acknowledged. As stated in the Supplemental EA/EIR, CVFPB will submit a certification of consistency with the Delta Plan to the Council.

APPENDIX D. REVISIONS TO THE DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT/ENVIRONMENTAL IMPACT REPORT

Introduction

This appendix presents corrections and revisions made to the proposed project's Draft Supplemental Environmental Assessment/Environmental Impact Report (Supplemental EA/EIR). This appendix does not identify administrative changes to the Supplemental EA/EIR text which do not affect the analysis contained in the Supplemental EA/EIR (for example, updates to the public review process). New text is indicated with an underline and text to be deleted is indicated by a strike through. Text changes are presented in the page order in which they appear in the Supplemental EA/EIR.

The changes identified below are clarifications or amplification of the information and analysis contained in the Supplemental EA/EIR. None of the changes identified below results in a significant impact that was not already identified in the Supplemental EA/EIR. Furthermore, none of the impacts identified in the Supplemental EA/EIR were found to be substantially more severe as the result of the following changes. For these reasons, recirculation of the Supplemental EA/EIR is not warranted.

Section 1.4 Project Purpose

The first paragraph on page 20 is revised as follows:

The purpose of the Proposed Action is to reduce the flood risk associated with through and under-seepage of water from the Sacramento River near Broadway, Pioneer Reservoir, and the ~~in the~~ Pocket and Little Pocket neighborhoods in the City. The Sacramento metropolitan area is one of the most at-risk areas for flooding in the United States. There is a high probability that flows in the Sacramento River will stress the network of levees protecting central and southern Sacramento to the point that levees could fail. The consequences of such a levee failure would be severe in the Pocket area since the inundated area is highly urbanized and the flooding could be up to 20 feet deep.

Section 2.3 Proposed Action

The last paragraph on page 24 is revised as follows:

This section describes the ~~levee improvement project components,~~ features of levee improvements, borrow areas, staging areas, haul routes, and spoils disposal sites that comprise the levee improvement alternative (Proposed Action). Although the ARCF GRR EIS/EIR analyzed the general design and impacts of the Proposed Action, design specifics were not available until the SREL Contract 2 design was complete. ~~Although this Supplemental EA/EIR focuses on specific components of the elements of the Proposed Action analyzed in the ARCF GRR Final EIS/EIR but later characterized in greater detail through project design and refinement (staging areas, haul routes, borrow site, and spoils disposal), the entire project is described below, for completeness.~~ For clarity, the entirety of SREL Contract 2, including those components described in the ARCF GRR EIS/EIR, are described below. The proposed levee improvement areas are located in Reaches D, E, and F as defined in the ARCF GRR; Reaches 4-2, 5-2, 6-1, 13b, 15, 16, and 17 in this contract. Figure 2-1 through Figure 2-4 illustrates the

overall project boundary and potential staging areas. The proposed types of improvements are described in detail in Section 2.3.1. The specific types of levee improvements considered for individual levee improvement sites (along with preferred improvements for each site) are discussed in detail in Section 2.3.2; and the proposed improvements are illustrated in Figure 2-5 through Figure 2-7. Table 2-1 provides a summary of the proposed improvements by station.

Table 2-1 'Proposed Levee Improvements Summary' on page 25 is revised as follows:

Feature	**Reach**	**Stations**	**Stations**	**Length (feet)**	**Description of Works**
Cutoff Wall	4-1~~2~~	1092+50	1099+50	500~~400~~	Jet grout cutoff wall to El. -75 feet (about 115 feet below existing ground) and lowering the elevation of three (3) existing relief wells
Cutoff Wall	5-2	1104+50	1112+50	800	Jet grout cutoff wall to El. -15 feet (about 55 feet below existing ground)
Cutoff Wall	6-1	1113+80	1116+20	240	Jet grout cutoff wall to El. -15 feet (about 55 feet below existing ground)
Cutoff Wall	13b	1300+50	1310+00	950	Conventional cutoff wall to El. -30 feet (about 70 feet below degrade surface)
Cutoff Wall	15	1336+00	1348+00	1,200	Conventional cutoff wall to El. -45 feet (about 82 feet below degrade surface)
Cutoff Wall	15	1348+00	1366+50	2,150	Mix-in-place cutoff wall to El. -88 feet (about 120 feet below degrade surface)
Cutoff Wall	15, 16, & 17	1366+50	1407+50	3,800	Conventional cutoff wall to El. -25 feet from Station 1369+50 to Station 1381+00, El. -15 feet from Station 1381+00 to 1400+00, and El. -10 feet from Station 1400+00 to 1407+50 (about 40 to 55 feet below degrade surface)

Source: GEI Consultants 2020
Note: All elevations in North American Vertical Datum of 1988 (NAVD88)

Figures 2-1 and 2-5 on pages 27-31 are updated to include the Chevron property grading within construction limits.

The following paragraph is added to the end of subsection 2.3.1 'Proposed Types of Levee Improvements' on page 37:

Relief Wells

Relief wells are used adjacent to levees to safely release seepage pressures caused by the differential water surface elevations during flood conditions between the riverside and landside of the levee and thus to prevent the collapse of the levee. Higher water elevations in the river during a flood creates a pressure gradient, causing water to infiltrate the soil of the levee and its foundation. Water may then flow through the soil towards the dry side of the levee and can result in the formation of boils, piping, and ultimately the failure of the levee. Relief wells act like valves to relieve the water pressure before boils form and allow excess water to be diverted safely to a canal or other drainage feature.

The first paragraph under 'Station 1092+50 to Station 1099+50: Jet Grout Cutoff Wall' on page 38 in subsection 2.3.2 'Proposed Levee Improvements' is revised as follows:

The identified improvement in this segment is a jet grout cutoff wall installed through the levee crown from Station 1093+50 to Station 1098+50. The purpose of the jet grout cutoff wall is to prevent through-seepage and underseepage in the portion of the reach between the landfill and the Pioneer Reservoir inlet and outlet pipes. The wall is proposed to extend to Elevation -73 feet, which is about 110 feet below the existing levee crown. Additionally, to reduce the length of the jet grout cutoff wall feature, improvements in this segment will also include modification of three of the four existing relief wells, allowing them to relieve seepage pressures sooner. The modification entails lowering the elevation of each of the relief well discharge pipes by approximately three feet.

The following paragraph is added to 'Station 1105+00 to Station 1112+40: Jet Grout Cutoff Wall' on page 38 in subsection 2.3.2 'Proposed Levee Improvements':

This reach also includes the re-grading of a low spot located near the landside levee toe at Station 1107+00 within the Chevron petroleum storage tanks containment basin. Re-grading would be performed with existing onsite material only within the containment basin and will be focused on balancing the cut and fill such that there is no net gain or loss of material on the site, only shifting the low spot further landward.

Section 3.1 Introduction

The second paragraph on page 50 in subsection 3.1.1 'Approach to Analysis' is revised as follows:

Each resource topic section includes a brief summary of the analysis of this topic in the ARCF GRR Final EIS/EIR. Supplemental information on existing conditions (environmental and regulatory setting under CEQA) is provided for particular resource topics, where necessary to support the supplemental impact analysis. Thresholds used to evaluate the significance of impacts are carried forward from the GRR Final EIS/EIR, with additional thresholds identified where necessary. Only those thresholds requiring an updated analysis due to new information are discussed. Under each resource, any significance criteria lacking an evaluation section remains

unchanged from the GRR Final EIS/EIR, and previous analyses remain sufficient. For some impacts, mitigation described in the GRR Final EIS/EIR may not apply to the proposed action. For other impacts, additional or different mitigation actions are required to reduce effects of the project refinements described in the Proposed Action. In either case, the proposed change to mitigation from the ARCF GRR Final EIS/EIR is identified. Overall, environmental impacts are not more severe than those addressed in the ARCF GRR EIR/EIR.

Section 3.2 Visual Resources

The third paragraph on page 53 in subsection 3.2.1 'Existing Conditions' is revised as follows:

The northern portion of the levee improvements area consists primarily of industrial developments. Levee improvements and staging areas will take place in the vicinity of a City of Sacramento overflow wastewater treatment facility, rail lines, the California Automobile Museum, and above ground diesel and gasoline fuel storage tanks and associated pipelines operated by Chevron and Union 76. The visual quality in this area is low due to the presence of these industrial structures, including tall white fuel storage tanks, buildings, trains, pavement, fencing, overhead power lines, prominent night lighting, and other elements associated with industrial development that represent a lack of vividness, intactness, and unity. The viewer sensitivity is considered high, because this area is visible to recreational users of the Sacramento River Parkway bike trail and Miller Park.

The second paragraph on page 55 under 'Summary of ARCF GRR Final EIS/EIR Effects' in subsection 3.2.2 'Environmental Consequences' is revised as follows:

Short-term visual effects during construction activities along the Sacramento River were determined to be significant and unavoidable, because the presence of construction crews and equipment will degrade the existing visual character and obstruct scenic vistas; no feasible mitigation measures were identified. Long-term visual effects from maintaining the new landside levee maintenance corridor were determined to be significant and unavoidable, because the corridor will be adjacent to existing residential backyards, and removal of landscaping from the maintenance corridor will degrade the current visual character of the individual properties; no feasible mitigation measures were identified. Construction of the Proposed Action, including the addition of night work that was not addressed in the ARCF GRR EIS/EIR, will not result in visual resources impacts that are more severe than stated in the ARCF GRR EIS/EIR. ~~The GRR EIS/EIR did not analyze the impacts of night work.~~

The last paragraph on page 57 under 'Create New Sources of Substantial Light or Glare' in subsection 3.2.2 'Environmental Consequences' is revised as follows:

None of the project-related activities will include buildings or other facilities that will require permanent lighting, and therefore no new long-term sources of light or glare will be introduced into viewsheds. Temporary 24-hour lighting ~~will be necessary~~ for the night work

related to the jet grout cut off wall installation, not addressed by the GRR EIS/EIR, ~~that~~ is limited to the industrial area ~~related~~ along the City of Sacramento's Pioneer Reservoir (from levee stations 1093+50 to 1098+50), and the Chevron and Phillips 66 oil tank facilities (from levee stations 1105+00 to 1116+15). During construction of the Proposed Action, staging areas will have lighting for the purposes of security of construction equipment and stored materials resulting in new sources of nighttime light that will be visible by neighboring residences and vehicles passing near the staging areas, however these light sources will in some cases be adjacent to existing bright lights. However, some lights will potentially illuminate adjacent residences. This will result in an unavoidable short-term temporary significant impact, however the impacts of the 24-hour night work fall within the visual resource impacts previously described and analyzed in the GRR EIS/EIR and do not represent a new significant impact related to the SREL Contract 2 work. However, Mitigation Measure LIGHT-1 will reduce the impact of nighttime light ~~to less-than-significant.~~sensitive fish species in the Sacramento River.

In subsection 3.2.3 'Avoidance, Minimization, and Mitigation Measures' on page 58, Mitigation Measure 'LIGHT-1: Minimize Disturbance to Nocturnal Wildlife' is revised as follows:

LIGHT-1: Minimize Disturbance to ~~Nocturnal Wildlife~~ Wildlife at Night

The Corps will minimize or avoid the effects of nighttime lighting on special-status fish species by implementing the following actions in the area of 24-hour night work near Pioneer Bridge.

- Avoiding construction activities at night, to the maximum extent practicable.
- Using the minimal amount of lighting necessary to safely and effectively illuminate the work areas.
- Shielding and focusing lights on work areas and away from the water surface of the Sacramento River, to the maximum extent practicable.
- Temporary and permanent lighting will have correlated color temperatures and under 3000K to minimize disturbance to ~~nocturnal wildlife~~ wildlife at night.
- A qualified biologist will monitor the work area at appropriate intervals to assure that all avoidance and minimization measures are implemented. Mitigation Measure BIRD-1 applies to night work as well.

Section 3.3 Air Quality

The Draft SEA/EIR's estimated mitigated PM10 emissions in Table 3-4 in subsection 3.3.2 'Environmental Consequences' did not include adjustments to the RCEM model results to account for use of the SMAQMD Enhanced Fugitive PM Dust Control Measures, which the project would implement in accordance with Mitigation Measure AIR-2. Thus, Table 3-4 on Page 62 is revised as follows:

Table 3-4. Emissions Estimates for the Proposed Action

Pollutant	Unmitigated/ Mitigated (pounds per day)	Unmitigated/ Mitigated (tons per year)	Significance Threshold
ROG	47.9/24.9	2.9/1.5	N/A
CO	458.3/456.5	28.2/28.1	N/A
NO_x	511.6/116.1	31.3/7.0	85 pounds/day
PM_{10}	154.6/~~126.5~~71.5	6.8/~~5.7~~3	80 pounds/day and 14.6 tons/year
$PM_{2.5}$	48.7/32.0	2.4/1.4	82 pounds/day and 15 tons/year

Notes: Bold numbers indicate concentrations above thresholds CO = carbon monoxide; NOx = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; Sacramento Metropolitan Air Quality Management District (SMAQMD) considers construction activities unlikely to generate substantial quantities of CO (SMAQMD 2018) CEQA significance thresholds for PM assume that fugitive dust Best Available Control Technology/Best Management Practices are implemented in accordance with SMAQMD guidance.

Section 3.4 Vegetation and Wildlife

The third and fourth paragraphs on page 67 in subsection 3.4.1 'Existing Conditions' are revised as follows:

Borrow Site

Much of the SRCSD borrow site has been previously disturbed and is now barren of vegetation. Areas around the perimeter of and adjacent to the site support non-native grassland habitat that provides some value for wildlife species that occur in open grassland habitats and are tolerant of disturbance associated with the City's wastewater treatment facilities. An alternative borrow site chosen at the contractor's discretion must demonstrate environmental compliance is complete.

Soil Disposal Site

The Railyards disposal site has undergone extensive excavation and grading and is essentially barren soil. The site is surrounded by urban development and provides almost no biological resource habitat value. An alternative disposal site chosen at the contractor's discretion must demonstrate environmental compliance is complete.

The first paragraph on page 69 under 'Adverse Effects on Riparian Habitat and Waters of the United States' in subsection 3.4.2 'Environmental Consequences' is revised as follows:

Implementing Mitigation Measure VEG-1 will compensate for removing 2.51 canopy acres of riparian habitat at a 2:1 ratio by planting 5.02 acres of new riparian habitat at the Beach/Stone Lakes Mitigation Site (BSLMS). However, because it will take many years for

compensation habitat to provide the value of habitat that will be removed, the short-term habitat loss will remain significant, and thus will not be more severe than those addressed in the ARCF GRR EIS/EIR. Therefore, the construction-related impacts on visual resources are already adequately addressed in the ARCF GRR EIS/EIR.

Section 3.8 Geological Resources

The third paragraph on page 96 in subsection 3.8.2 'Environmental Consequences' is revised as follows:

Under this alternative, no temporary or short-term construction-relation erosion effects would occur. However, catastrophic levee failure could result in collapse of miles of levee slopes and alteration of regional and local flows that would result in substantial increases in erosion and sedimentation. Erosion causing the loss of the levee foundation and eroded topsoil from banks of a river or sloughs would increase turbidity and total dissolved solids in the Sacramento River and ultimately affect the environmental resources of the Delta by impairing the beneficial uses of waters of the Delta. Levee failure would require immediate flood fighting efforts that would not include BMP measures to reduce erosion. A flood event could lead to widespread bank erosion, loss of soil, could comprise existing riparian habitat and could result in siltation of existing channels. ~~A flood event could also lead to widespread bank erosion, loss of soil, and could substantially alter the Sacramento River channel.~~ If a levee breach were to occur, emergency repair activities would be implemented and could result in the loss of channel capacity and alteration of present-day geomorphic processes with the placement of large quantity of rock in the river to close the breach. All of these effects could be considered significant. However, the timing, duration, and magnitude of a flood event are speculative and unpredictable, and therefore a precise determination of significance is not possible.

The last bullet on page 99 in subsection 3.8.3 'Avoidance, Minimization, and Mitigation Measures' is removed.

Section 3.9 Hazard Waste and Materials

The second-to-last bullet on page 100 in subsection 3.9.1 'Existing Conditions' is changed to a new paragraph and revised as follows:

A Phase II site investigation (HDR 2018) was performed and found that elevated concentrations of lead in a limited volume of superficial soil strippings from the levee embankment and foundation that will be excavated for drained stability berm construction in Reach 4, just north of the Highway 50 viaduct (Pioneer Bridge), which is a part of SREL Contract 1. Phase II sampling also verified arsenic impacts along the rail lines as well as aerially deposited lead near Broadway. Additional contamination testing was completed in summer 2020 by Kleinfelder and GEI Consultants with results and analysis forthcoming.

The first paragraph under 'Possible Exposure of People and the Environment to Existing Hazardous Materials, Including Cortese-listed Sites' on page 103 is revised as follows:

Excess soil from the project may be transported and deposited at the Sacramento Railyards, for use at the Railyards project site. Most of the contaminated soil at the Railyards has been remediated, although groundwater remediation is ongoing (City of Sacramento 2016). Deposition of excess soil from the Proposed Action at the Railyards site will simply involve dumping of loaded haul trucks in areas of the Railyards that are permitted to receive imported fill. If applicable, the contractor will be required to test fill to show imported fill requirements are met prior to dumping.

The following paragraph is added after the last paragraph under 'Possible Exposure of People and the Environment to Existing Hazardous Materials, Including Cortese-listed Sites' on page 103:

Contaminants are likely to exist within the soil to be re-graded on the Chevron property, such as hydrocarbons, lead, arsenic, cyanide (location was formerly a manufactured gas plant facility), and other common contaminants found in and around petroleum facilities. However, all soil worked will remain within the same area on the property, thus no disposal of contaminants will be necessary. The construction Contractor is required to quantify the nature of the contaminants and develop a work plan for review and approval by the Government and other applicable Federal, State, and local agencies to ensure they perform the work in an appropriate manner and follow the appropriate safety protocols.

Section 3.11 Noise

The first paragraph on page 111 under 'Summary of ARCF GRR Final EIS/EIR Effects' in subsection 3.11.2 'Environmental Consequences' is revised as follows:

The GRR Final EIS/EIR found that ground vibration could cause a significant effect if construction is required within 40 feet of a vibration-sensitive building (defined as a building with either plaster or wallboard for internal walls and ceilings). Mitigation to prepare a vibration control plan will be implemented prior to construction.

Although Sacramento County has a construction noise exemption during daylight hours, noise levels above 55 dBA are generally considered to be a significant effect on sensitive receptors. Noise levels could range from 83–95 dBA at 50 feet from the source. Therefore, based on projected construction equipment noise estimates (including haul trucks), the GRR Final EIS/EIR found effects to sensitive receptors to be significant during construction of the Sacramento River east levee improvements. A suite of mitigation measures to reduce construction noise will be implemented where construction will occur within 500 feet of any sensitive receptor to reduce the impact to less than significant. Construction noise will be generated 24-hours per day to install the jet grout cut off wall along the City of Sacramento's Pioneer Reservoir (from levee stations 1093+50 to 1098+50) and the Chevron and Phillips 66 oil

tank facilities (from levee stations 1105+00 to 1116+15). This is an industrial area near Interstate 5 and US Highway 50 with the nearest sensitive receptor greater than 1000 feet away, thus there will not be a significant increase to ambient noise levels at the closest residences. The impacts of the 24-hour night work fall within the noise impacts previously described and analyzed in the GRR EIS/EIR.

The second-to-last bullet on page 114 in subsection 3.11.3 'Avoidance, Minimization, and Mitigation Measures' is revised as follows:

- A voluntary pre- and post-construction survey will be conducted to assess potential architectural damage from levee construction vibration at each residence within ~~75~~100 feet of construction. The survey will include visual inspection of the structures that could be affected and documentation of structures by means of photographs and video. This documentation will be reviewed with the individual owners prior to any construction activities. Post-construction monitoring of structures will be performed to identify (and repair, if necessary) damage, if any, from construction vibrations. Any damage will be documented with photographs and video. This documentation will be reviewed with the individual property owners.

Section 4.2 Cumulative Effects

The first paragraph on page 137 in subsection 4.2.2 'Air Quality' is revised as follows:

By its nature, air pollution is largely a cumulative impact. Ambient air quality standards are violated or approach nonattainment levels because of past activities, and increasing emissions-generating activity across the region may jeopardize attainment (SMAQMD 2020). ~~Air quality is inherently a cumulative effect because existing air quality is a result of past and present projects. No single project would be sufficient in size, by itself, to result in nonattainment of the regional air quality standards (SMAQMD 2014).~~ The Federal attainment status in the SVAB for pollutants of concern is shown in Table 3-1. Several other construction projects are expected to occur simultaneously in the SVAB during the planned construction period for the Proposed Action. The related projects have the potential to generate construction-related emissions that individually exceed SMAQMD's threshold of significance. However, all construction projects in the SMAQMD, including the Proposed Action are required to offset emissions that have the potential to negatively affect air quality in the SVAB through implementation of SMAQMD emissions reductions practices. In addition, many offset projects create long-term, permanent emissions reductions (which result in a benefit).

Section 5.0 Compliance with State and Federal Laws and Regulations

The first paragraph on page 146 under '5.1.2 Endangered Species Act of 1973, as amended, 16 USC 1531, et seq.' is revised as follows:

USACE is required to reinitiate formal consultation with USFWS and/or NMFS if effects to listed species will vary from what was provided at the time of formal consultation. USACE continues to update USFWS and NMFS on impacts and mitigation for covered species associated with implementing ARCF Project actions, and USACE will reinitiate consultation with USFWS and/or NMFS, in accordance with 50 CFR 402.16, if completed design documents and specifications for associated ARCF projects provide more detailed data that "reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered."