Appendix A. Air Quality Calculations

Appendix A

Air Quality and Greenhouse Gases Appendix

Sacramento Metropolitan Air Quality Management District

Road Construction Emissions Model Version 8.1.0

Data Input and Emissions Output

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Calle La Cruz Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	4.84	33.69	49.41	12.39	2.39	10.00	4.25	2.17	2.08	0.08	7,764.65	1.64	0.10	7,836.38
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)	4.84	33.69	49.41	12.39	2.39	10.00	4.25	2.17	2.08	0.08	7,764.65	1.64	0.10	7,836.38
Total (tons/construction project)	0.21	1.48	2.17	0.54	0.10	0.44	0.19	0.10	0.09	0.00	341.64	0.07	0.00	344.80

Notes:

Project Start Year ->	2018
Project Length (months) ->	4
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	0	0
Grading/Excavation	0	0	0	0	0	0
Drainage/Utilities/Sub-Grade	0	0	400	0	400	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 -> Calle La Cruz 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.21	1.48	2.17	0.54	0.10	0.44	0.19	0.10	0.09	0.00	341.64	0.07	0.00	312.80
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.21	1.48	2.17	0.54	0.10	0.44	0.19	0.10	0.09	0.00	341.64	0.07	0.00	312.80
Total (tons/construction project)	0.21	1.48	2.17	0.54	0.10	0.44	0.19	0.10	0.09	0.00	341.64	0.07	0.00	312.80

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

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

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

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
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	Calle La Cruz	
Construction Start Year	2018	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)	1	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	1.00	mile
Total Project Area	2.00	acres
Maximum Area Disturbed/Day	1.00	acre
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			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

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

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

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.40	6/1/2018	1/1/2018
Grading/Excavation	0.00	1.60	6/1/2018	1/1/2018
Drainage/Utilities/Sub-Grade	4.00	1.40	6/1/2018	1/1/2018
Paving	0.00	0.60	10/1/2018	5/3/2018
Totals (Months)	4			

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

Soil Hauling Emissions User 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	40.00		10	0	400.00
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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**

Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.06	0.32	1.33	0.09	0.04	0.01	1,402.37	0.00	0.05	1,416.19
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.06	0.00	0.00	0.00	61.70	0.00	0.00	62.31
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	61.70	0.00	0.00	62.31

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

Asphalt Hauling Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated
User Input	Miles/Round Trip	Miles/Round Trip	Round Trips/Day	Round Trips/Day	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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
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	0.00
No. of employees: Grading/Excavation			0	0.00
No. of employees: Drainage/Utilities/Sub-Grade	10		20	400.00
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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.33	0.15	0.05	0.02	0.00	393.83	0.01	0.01	395.91
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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	1.17	3.21	0.26	0.00	0.00	0.00	87.83	0.02	0.01	91.49
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.08	1.31	0.14	0.04	0.02	0.00	351.17	0.01	0.01	353.16
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.01	0.00	0.00	0.00	15.45	0.00	0.00	15.54
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	0.06	0.01	0.00	0.00	0.00	15.45	0.00	0.00	15.54

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					0.00
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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.36	1.51	0.10	0.04	0.02	1,590.26	0.00	0.05	1,605.93
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade	1.00		10.00	0.44	2.08	0.09

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
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.40	2.47	2.67	0.20	0.20	0.00	375.27
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.06	0.31	0.37	0.01	0.01	0.00	50.52
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cranes	0.56	2.47	6.67	0.29	0.27	0.01	568.03
			Model Default Tier	Crawler Tractors	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
1.00			Model Default Tier	Excavators	0.30	3.38	3.19	0.15	0.14	0.01	536.03
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.51	3.75	4.11	0.26	0.26	0.01	623.04
			Model Default Tier	Graders	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
2.00			Model Default Tier	Off-Highway Trucks	1.54	8.36	16.57	0.60	0.56	0.03	2,646.00
			Model Default Tier	Other Construction Equipment	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
			Model Default Tier	Other Material Handling Equipment	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
			Model Default Tier	Paving Equipment	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
			Model Default Tier	Pressure Washers	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
			Model Default Tier	Rollers	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
1.00			Model Default Tier	Rubber Tired Dozers	1.08	8.96	11.70	0.54	0.50	0.01	896.22
			Model Default Tier	Rubber Tired Loaders	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
			Model Default Tier	Signal Boards	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
			Model Default Tier	Surfacing Equipment	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
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.27	2.36	2.66	0.19	0.17	0.00	316.00
			Model Default Tier	Trenchers	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

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
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade		pounds per day	4.70	32.06	47.94	2.25	2.11	0.06	6,011.10
Drainage/Utilities/Sub-Grade		tons per phase	0.21	1.41	2.11	0.10	0.09	0.00	264.49

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
			Model Default Tier	Aerial Lifts	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
			Model Default Tier	Bore/Drill Rigs	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
			Model Default Tier	Concrete/Industrial Saws	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
			Model Default Tier	Crawler Tractors	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
			Model Default Tier	Excavators	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
			Model Default Tier	Generator Sets	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
			Model Default Tier	Off-Highway Tractors	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
			Model Default Tier	Other Construction Equipment	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
			Model Default Tier	Other Material Handling Equipment	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
			Model Default Tier	Paving Equipment	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
			Model Default Tier	Pressure Washers	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
			Model Default Tier	Rollers	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
			Model Default Tier	Rubber Tired Dozers	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
			Model Default Tier	Scrapers	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
			Model Default Tier	Skid Steer Loaders	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
			Model Default Tier	Sweepers/Scrubbers	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
			Model Default Tier	Trenchers	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

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
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2
Paving	pounds per day	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
Total Emissions all Phases (tons per construction period) =>		0.21	1.41	2.11	0.10	0.09	0.00	264.49

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

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8

Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Appendix B. Biological Resource Study

Biological Resource Analysis

CALLE LA CRUZ PIPELINE REPLACEMENT PROJECT
Unincorporated Monterey County, California

February 2018

Prepared by:
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On behalf of:
Carmel Area Wastewater District
Mr. Drew Lander
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SECTION 1. INTRODUCTION

This Biological Resource Analysis has been prepared for the approximately 7.2-acre Calle la Cruz Pipeline Replacement Project Site located in unincorporated Monterey County, California (herein referred to as the project site) (Appendix A, Figures 1 and 2). The proposed project includes the replacement of a wastewater outfall pipeline and a sewage force main pipeline which currently exist aboveground over the northwestern portion of the Carmel River Lagoon, with two undergrounded pipelines at the same location. This analysis has been prepared to provide a detailed description of biological resources existing on the project site and to identify potentially significant impacts that could be incurred by these biological resources from the construction of the proposed development. In this assessment, biological resources include both common and rare plant and animal species, as designated by the United States Fish and Wildlife Service (USFWS), the California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and the scientific community which includes organizations such as the California Native Plant Society (CNPS) (Appendix B, Tables 1 and 2); as well as waters of the United States and the State of California, regulated under the jurisdiction of the United States Army Corps of Engineers (Corps), the Regional Water Quality Control Board (RWQCB), and/or CDFW.

SECTION 2. PROJECT SITE LOCATION AND SETTING

The approximately 7.2-acre project site is located within unincorporated Carmel, Monterey County, California, within the Monterey U.S. Geological Survey (USGS) 7.5' topographic quadrangle (quad) (T16S, R1W). The project site occurs southwest of the Carmel Area Wastewater Treatment Plant (operated by the Carmel Area Wastewater District [CAWD]), just inland from the Carmel River State Beach, approximately 0.5 mile west of the intersection of Rio Road and Highway 1 (36.537631° N, 121.922714° W) (Appendix A, Figure 2). The project site is bordered by the Carmel Area Wastewater Treatment Plant to the northeast, the Carmel River to the northwest, and the Carmel River Lagoon to the south and west. The project site is partially within the Carmel River State Beach, owned and operated by California State Parks, and a portion of the Caltrans' Carmel River Mitigation Bank. The greater area surrounding the project site is dominated by medium-density residential development to the north (Carmel-By-The-Sea) and south (Carmel Meadows), undeveloped land to the east, and the Pacific Ocean to the west.

2.1 PROJECT SITE HISTORY

The project site and surrounding land has a history dominated by agriculture, having been subjected to cultivation since the late 1700s, when the area was converted from riparian forest and wetlands to agricultural land. In the 1920s, the Odello family acquired the land and grew artichokes on it for the next 75 years. In 1994, the land was acquired by State Parks and incorporated into what became the 300-acre Carmel River Lagoon and Wetlands Natural Preserve. In 1996, California Department of Transportation (Caltrans) and State Parks began restoration work to restore the lagoon through conversion of the agricultural lands back to wetlands and riparian forest. In 2004, State Parks implemented the Carmel River Lagoon Enhancement Project to recreate the southern arm of the lagoon and the adjacent habitat. Restoration work included lowering the elevation of the western portion of the existing CAWD access road (which is within the project site) to the meet/match elevation of the surrounding flood plain. An historic topographic map is included in Appendix A, Figure 3; this map reflects site conditions prior to the restoration work discussed above.

2.2 PROPOSED PROJECT

The project proponent (CAWD) proposes to replace an existing aboveground, 24-inch by 204-foot long treated wastewater outfall and temporary 6-inch by 204-foot long sewage force main. This outfall and force main currently span the south arm of the Carmel River Lagoon. The two pipelines would be replaced with a below-ground (below the lagoon) 24-inch wastewater outfall and an 8-inch sewage force main. To install the new pipes under the bed of the lagoon, construction would necessitate trenching and installation of a cofferdam across the south arm of the Carmel Lagoon. To access the pipelines, clearing and grubbing of vegetation at certain locations along the access roads to the north and south of the lagoon would be necessary in order to widen the roads for vehicular access. Staging areas would also be cleared and graded to the north and south of the lagoon for construction access, construction equipment, and soil stockpiles. Proposed locations for the access roads, staging areas, cofferdam installation, and trenching are shown in Appendix A, Figure 4. A draft project site plan is provided in Appendix C.

2.3 PROJECT SITE INVESTIGATIONS

Extensive site surveys were conducted on the project site on November 10, 2014 and September 13 and 14, 2017. Surveys included walking the project site to characterize current site conditions including vegetation, topography, and the presence of suitable resting, nesting, and/or roosting wildlife habitat. In addition, general current and historic uses of the site were noted, as well as general observations of neighboring property uses. On September 13, 2017, Johnson Marigot Consulting, LLC (JMC) personnel Sadie McGarvey and Lauren Bingham conducted a field survey to determine the location and extent of potential waters of the U.S. within the project site. The wetland delineation was conducted using the methods described in the *Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), supplemented with guidance as directed by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008).

Prior to site investigations, literature reviews were conducted of known and potential special-status species, including analysis of the California Natural Diversity Database (CNDDB) and a query of the Inventory of Rare, Threatened, and Endangered Plants of California (California Native Plant Society; CNPS), and review of the on-site soils pursuant to the US Department of Agriculture (USDA).

SECTION 3. EXISTING SITE CONDITIONS

The project site consists of undeveloped land surrounding a rarely maintained access road. The project site occurs primarily on the former northern levee of the former Odello family artichoke farm; the western portion of the project site was regraded approximately 13 years ago to match the surrounding floodplain elevations (see site history above). The project site occurs on a gentle south and southwestern facing slope, with elevations ranging between approximately 20 feet above mean sea level (AMSL) at the northeastern portion of the site and approximately 8 feet AMSL at the western portion of the site (adjacent to the lagoon).

3.1 VEGETATION COMMUNITIES

The project site is dominated by riparian woodland and ruderal habitat, as well as seasonal and perennial wetland; a small area of coastal sage scrub occurs at the southwestern corner of the project site (Appendix A, Figure 5). A list of plant species observed on the project site are provided in Appendix D.

3.1.1 RIPARIAN WOODLAND

A majority of the project site is comprised of riparian woodland, which dominates the northern and central portions of the project site. The fairly dense canopy (70-100% canopy cover) is dominated by willows (*Salix* spp.), coast live oak (*Quercus agrifolia*), and cottonwood (*Populus fremontii*), with sub-dominant species including elderberry (*Sambucus nigra*), and dogwood (*Cornus sericea*). The understory is fairly densely vegetated, and is dominated by California blackberry (*Rubus ursinus*) and poison oak (*Toxicodendron diversilobum*).

3.1.2 RUDERAL

The northeastern portion of the project site is dominated by ruderal vegetation. These species may be native or non-native, but are often thought of as "weedy" species. Dominant species in this area include non-native herbaceous species such as Italian thistle (*Carduus pycnocephalus*), poison hemlock (*Conium maculatum*), bristly ox-tongue (*Helminthotheca echioides*), and Canada horseweed (*Erigeron canadensis*), as well as non-native grasses such as Italian wildrye (*Festuca perennis*), slender wild oat (*Avena barbata*), and rip-gut brome (*Bromus diandrus*). A small native contingent occurs within the shrub layer and includes species such as coyote brush (*Baccharis pilularis*), California blackberry, and California sage (*Artemisia californica*).

3.1.3 COASTAL SAGE SCRUB

The northernmost section of the southwestern portion of the project site is dominated by a small area of coastal sage scrub. The onsite scrub habitat is densely vegetated and is dominated by Monterey cypress (*Hesperocyparis macrocarpa*), California sage, poison oak, coyote brush, poison hemlock, and black mustard (*Brassica nigra*).

3.1.4 WETLAND

3.1.4.1 SEASONAL WETLAND

Seasonal wetlands occur throughout the central portion of the project site. These wetlands are dominated by brown-headed rush (*Juncus phaeocephalus*), hardstem bulrush (*Schoenoplectus acutus*), and salt grass (*Distichlis spicata*), with lesser common species including cutleaf plantain (*Plantago coronopus*) and seaside barley (*Hordeum marinum*).

3.1.4.2 PERENNIAL WETLAND

The southwestern portion of the project site is dominated by perennial wetland. This wetland area is clearly subjected to greater periods of inundation than the seasonal wetlands due to its closer proximity to the topographic low portions of the adjacent lagoon. At the time of the September site visit, some portions of this wetland were still inundated with several inches of water. Dominant species in the perennial wetland included Santa Barbara sedge (*Carex barbarae*), fleshy jaumea (*Jaumea carnosa*), spotted ladies thumb (*Persicaria maculosa*), dotted smartweed (*Persicaria punctata*), and hardstem bulrush.

3.2 AQUATIC RESOURCES

Approximately 1.813 acres of potential waters of the U.S. have been mapped on the project site, including 0.352 acre of seasonal wetland, 0.95 acre of perennial wetland, 0.33 acre of navigable waters, and 0.001 acre of drainages. A wetland delineation was conducted on September 13, 2017, and JMC submitted a Request for Preliminary Jurisdictional Determination to the Corps on December 14, 2017. To date, the Corps has not determined the extent of waters of the U.S./State on the project site.

The implementation of the proposed project would result in temporary impacts to a total of approximately 0.29 acre of waters of the U.S./State. Temporary impacts will be incurred to 0.02 acre of seasonal wetland (to be impacted by the access road), 0.21 acre of perennial wetland (to be impacted by the construction of a staging areas and crane pad), 0.0003 acre of drainages (to be impacted by the access road), and 0.06 acre of navigable waters (to be impacted by the construction of a coffer dam and the dewatering and trenching work associated with undergrounding the new pipeline).

SECTION 4. POTENTIAL IMPACTS TO SPECIAL-STATUS SPECIES

Special-status species include species considered to be rare by federal and/or state resource agencies (USFWS, NMFS, CDFW) and/or the scientific community (CNPS) and are accordingly legally protected via the federal, state, and/or local laws defined below.

Endangered Species Act (ESA): The USFWS and NMFS (Resource Agencies), with regulatory authority over listed plants, wildlife, and fish, oversee the ESA (50 CFR § 402.7, Section 305(b)(4)(B). The ESA prohibits the "take" of any wildlife species listed as threatened or endangered, by the Resource Agencies, including the destruction of habitat that could hinder species recovery. The Resource Agencies administer the ESA and authorize take through issuance of Biological Opinions in consultation with the federal action agency (e.g. CORPS or FEMA).

Migratory Bird Treaty Act (MBTA): The MBTA of 1918 (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755; as amended in 1936; 1960, 1968, 1969, 1974, 1978, 1986, and 1998) prohibits the take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of any migratory bird or any part, nest, or egg of any such bird.

California Endangered Species Act (CESA): CESA prohibits the "take" of any wildlife species listed as endangered and threatened by the state of California. Section 2090 of the CESA requires state agencies to comply with regulations for protection and recovery of listed species and to promote conservation of these species. The CDFW administers the act and authorizes "take" through section 2081 agreements (except for designated "fully protected species"). Regarding rare plant species, the CESA defers to the California Native Plant Protection Act of 1977.

California Native Plant Protection Act & California Fish and Game Code (Plants): The California Native Plant Society (CNPS) designates California Rare Plants through a ranking system. Rank 1A, 1B, and 2 meet the definitions established in Sec. 1901, Chapter 10 (Native Plant Protection Act of 1977) or Secs. 2062 and 2067 of the CESA and are eligible for state listing (CNPS Inventory, 2015).

California Fish and Game Code (Fully Protected Species): To provide additional protections for wildlife that is rare or faces potential extinction, California Fish and Game Code Sections 3511, 4700, 5050, and 5515 designates "fully protected" status for specific birds, mammals, reptiles and amphibians, and fish. Fully protected species cannot be taken or possessed at any time and no licenses or permits can be issued for their take. Exceptions are established for scientific research collection, relocation of the bird species for the protection of livestock, and take resulting from recovery activities for state-listed species.

California Fish and Game Code (Birds): California Fish and Game Code (Section 3503) prohibits the take of nest or eggs of any bird. Raptors and other fully protected bird species are further protected in Sections 3503.5 and 3511, which states that raptors/fully protected birds or parts thereof may not be taken or possessed at any time.

California Fish and Game Code (Species of Special Concern): A species of special concern is a designation given by the State to a native species that meets one or more of the following criteria: extirpated for the State; Federally (but not State) listed; experiencing, or formerly experienced, population declines or range restrictions; has naturally small populations at high risk of declines.

A search of the CNDDB and the CNPS Inventory of Rare, Threatened, and Endangered Plants of California was conducted for state and federally listed and candidate species, as well as CNPS-ranked species known to occur in the vicinity of the property. The species identified in this search were compiled in tables (Tables 1 and 2) and evaluated for likelihood of occurrence on the project site. The potential for species to be adversely affected by the proposed project was classified as high, moderate, or low, using the definitions provided below. When a species was not expected to occur on or adjacent to the project site, the potential for adverse effects was identified as "none."

High: The potential for a species to occur was considered high when the project site was located within the range of the species, recorded observations were identified within known dispersal distance of the project site, and suitable habitat was present on the project site.

Moderate: The potential for a species to occur was considered moderate when the project site was located within the range of the species, recorded observations were identified nearby but outside known dispersal distance of the project site, and suitable habitat was present on the project site. A moderate classification was also assigned when recorded observations were identified within known dispersal distance of the project site but habitat on the project site was of limited or marginal quality.

Low: The potential for a species to be adversely affected was considered low when the project site was within the range of the species, but no recorded observations within known dispersal distance were identified, and habitat on the project site was limited or of marginal quality. The potential for adverse effects was also classified as low when the project site was located at the edge of a species' range and recorded observations were extremely rare, but habitat in the project site was suitable.

4.1 SPECIAL-STATUS PLANTS

According to the CNDDB and the CNPS Inventory of Rare, Threatened, and Endangered Plants of California, a total of 36 special-status plant species are known to occur in the vicinity of the project site (Appendix B, Table 1). The closest of these recorded occurrences of special-status plant species (according to the CNDDB and CNPS databases) is approximately 0.7-mile northeast of the project site. Eleven of these species require specialized habitats that do not occur on the project site (coniferous forest, broadleafed upland forest, cismontane woodland, chaparral, coastal prairie, coastal dunes, and valley and foothill grassland).

While no occurrences of special-status plant species have been documented on or adjacent to the project site, the project site provides suitable habitat for the 25 remaining species. A brief description of each of these species is included below, including the species' distribution, habitat, life cycle, threats to the species, and potential impacts to the species resulting from development of the proposed project.

4.1.1 HICKMAN'S ONION (ALLIUM HICKMANII)

Hickman's onion is a small, white to pale-pink-flowered perennial bulbiferous herbaceous member of the onion family (Alliaceae), that blooms between March and May. This species is endemic to California and is known to occur in closed-cone coniferous forest, maritime chaparral, coastal prairie, coastal scrub, and valley and foothill grassland habitats. Hickman's onion is not state or

federally listed, but is a CNPS Rank 1B.2 species, threatened by urbanization, grazing, non-native plants, trampling, road construction, and military activities.

A 1985 occurrence of this species was recorded on grassy slopes in coastal prairie approximately 0.7-mile northeast of the project site (CNDDB Occurrence No. 5). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Hickman's onion. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.2 HOOKER'S MANZANITA (ARCTOSTAPHYLOS HOOKERI SSP. HOOKERI)

Hooker's manzanita is a white to pink-flowered shrub member of the heather family (Ericaceae), that blooms between February and April. This species is endemic to California and is known to occur in closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub habitats. Hooker's manzanita is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by agriculture, development, fire suppression, and competition with non-native *Eucalyptus*.

A 2005 occurrence of this species was recorded in maritime chaparral on a west-facing ridgeline approximately 1.2 miles south of the project site (CNDDB Occurrence No. 15). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While no manzanita species were observed during site surveys, the surveys conducted on the project site were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Hooker's manzanita. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.3 TORO MANZANITA (ARCTOSTAPHYLOS MONTEREYENSIS)

Toro manzanita is a white to pink-flowered perennial evergreen shrub member of the heather family, that blooms between February and March. This species is endemic to California and is known to occur in maritime chaparral, cismontane woodland, and coastal scrub. Toro manzanita is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by development.

An historic record for this species is documented approximately 0.9 mile north of the project site (CNDDB Occurrence No. 25), however, that occurrence is presumed extirpated. The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While no manzanita species were observed during site surveys, the surveys conducted on the project site were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to toro manzanita. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the

General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.4 Sandmat Manzanita (Arctostaphylos pumila)

Sandmat manzanita is a white to pink-flowered perennial evergreen shrub member of the heather family, that blooms between February and May. This species is endemic to California and is known to occur in closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub. Sandmat manzanita is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by urbanization and military activities.

An historic record for this species is documented in the vicinity of the project site (exact location is unknown) (CNDDB Occurrence No. 12), however, that occurrence is considered possibly extirpated. The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While no manzanita species were observed during site surveys, the surveys conducted on the project site were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to sandmat manzanita. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.5 Coastal Dunes Milk-Vetch (Astragalus tener var. titi)

Coastal dunes milk-vetch is a purple-flowered annual herbaceous member of the pea family (Fabaceae), that blooms between March and May. This species is endemic to California and is known to occur in sandy coastal bluff scrub, coastal dunes, and mesic coastal prairie. Coastal dunes milk-vetch is state and federally endangered, and is a CNPS Rank 1B.1 species, threatened by urbanization, recreational activities, and non-native plants.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to coastal dunes milk-vetch. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.6 Pink Johnny-Nip (Castilleja ambigua ssp. insalutata)

Pink Johnny-nip is a pink, yellow, and white-flowered hemiparasitic annual herbaceous member of the broomrape family (Orobanchaceae), that blooms between May and August. This species is endemic to California and is known to occur in coastal prairie and coastal scrub. Pink Johnny-nip is not state or federally listed, but is a CNPS Rank 1B.1 species, threatened by development and non-native plants.

An historic record for this species is documented approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 6). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to pink Johnny-nip. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.7 MONTEREY SPINEFLOWER (CHORIZANTHE PUNGENS VAR. PUNGENS)

Monterey spineflower is a white-flowered annual herbaceous member of the buckwheat family (Polygonaceae), that blooms between April and August. This species is endemic to California and is known to occur in sandy-soiled maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland. Monterey spineflower is federally threatened, and is a CNPS Rank 1B.2 species, threatened by urbanization, recreational development and activities, agriculture, military activities, and non-native plants.

The closest record for this species occurs approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 45). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Monterey spineflower. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.8 JOLON CLARKIA (CLARKIA JOLONENSIS)

Jolon clarkia is a pale lavender-flowered annual herbaceous member of the evening primrose family (Onagraceae), that blooms between April and June. This species is endemic to California and is known to occur in chaparral, cismontane woodland, coastal scrub, and riparian woodland. Jolon clarkia is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by grazing, foot traffic, and non-native plants.

An historic record for this species is documented in the vicinity of the project site (exact location is unknown) (CNDDB Occurrence No. 15). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to jolon clarkia. These impacts can be reduced to a level considered less than significant pursuant to CEQA

with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.9 SAN FRANCISCO COLLINSIA (COLLINSIA MULTICOLOR)

San Francisco collinsia is a white and purple-flowered annual herbaceous member of the plantain family (Plantaginaceae), that blooms between February and May. This species is endemic to California and is known to occur in closed-cone coniferous forest and coastal scrub. San Francisco collinsia is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by urbanization, foot traffic, and non-native plants.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to San Francisco collinsia. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.10 SEASIDE BIRD'S-BEAK (CORDYLANTHUS RIGIDUS SSP. LITTORALIS)

Seaside bird's-beak is a yellow-flowered hemiparasitic annual herbaceous member of the broomrape family, that blooms between April and October. This species is endemic to California and is known to occur in sandy closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub. Seaside bird's-beak is state-listed as endangered, and is a CNPS Rank 1B.1 species, threatened by development, energy projects, road widening, vehicles, military operations, and non-native plants.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, even though the surveys were conducted during the blooming season, they were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to seaside bird's-beak. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.11 HUTCHINSON'S LARKSPUR (DELPHINIUM HUTCHINSONIAE)

Hutchinson's larkspur is a blue-purple-flowered perennial herbaceous member of the buttercup family (Ranunculaceae), that blooms between March and June. This species is endemic to California and is known to occur in broadleafed upland forest, chaparral, coastal prairie, and coastal scrub.

Hutchinson's larkspur is not state or federally listed, but is a CNPS Rank 1B.1 species, threatened by foot traffic, non-native plants, recreational activities, grazing, and trampling.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Hutchinson's larkspur. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.12 EASTWOOD'S GOLDENBUSH (ERICAMERIA FASCICULATA)

Eastwood's goldenbush is a yellow-flowered perennial evergreen shrub member of the sunflower family (Asteraceae), that blooms between July and October. This species is endemic to California and is known to occur in sandy openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub in the Monterey Bay area. Eastwood's goldenbush is not state or federally listed, but is a CNPS Rank 1B.1 species, threatened by development.

Multiple historic observations (1889-1913) of Eastwood's goldenbush are documented in the vicinity of the project site (exact locations are unknown) (CNDDB Occurrence No. 8). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, even though the surveys were conducted during the blooming season, they were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Eastwood's goldenbush. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.13 FRAGRANT FRITILLARY (FRITILLARIA LILIACEA)

Fragrant fritillary is a white-flowered perennial bulbiferous herbaceous member of the lily family (Liliaceae), that blooms between February and April. This species is endemic to California and is known to occur in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. Fragrant fritillary is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by grazing, agriculture, urbanization, and non-native plants.

An historic record (1940) for this species is documented in the vicinity of the project site (exact location is unknown) (CNDDB Occurrence No. 5). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-

level rare plant surveys on the project site, the proposed project may result in adverse impacts to Fragrant fritillary. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.14 MONTEREY GILIA (GILIA TENUIFLORA SSP. ARENARIA)

Monterey gilia is a purple and pink-flowered annual herbaceous member of the phlox family (Polemoniaceae), that blooms between April and June. This species is endemic to California and is known to occur sandy openings in maritime chaparral, cismontane woodland, coastal dunes, coastal scrub. Monterey gilia is federally listed as endangered, state-listed as threatened, and is a CNPS Rank 1B.2 species, threatened by development, sand mining, vehicles, recreational activities, foot traffic, and non-native plants.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Monterey gilia. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.15 KELLOGG'S HORKELIA (HORKELIA CUNEATA SSP. SERICEA)

Kellogg's horkelia is a white-flowered perennial herbaceous member of the rose family (Rosaceae), that blooms between April and September. This species is endemic to California and is known to occur in sandy or gravelly openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub. Kellogg's horkelia is not state or federally listed, but is a CNPS Rank 1B.1 species, threatened by coastal development.

An historic record (1896) for this species is documented in the vicinity of the project site (exact location is unknown) (CNDDB Occurrence No. 15). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, even though the surveys were conducted during the blooming season, they were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Kellogg's horkelia. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.16 BEACH LAYIA (LAYIA CARNOSA)

Beach layia is a white and yellow-flowered annual herbaceous member of the sunflower family, that blooms between March and July. This species is known to occur coastal dunes and coastal scrub in

California and Oregon. Beach layia is state and federally endangered, and is a CNPS Rank 1B.1 species, threatened by coastal development, foot traffic, vehicles, and non-native plants.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to beach layia. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.17 CARMEL VALLEY BUSH-MALLOW (MALACOTHAMNUS PALMERI VAR. INVOLUCRATUS)

Carmel Valley bush-mallow is a white to pale-pink-flowered perennial deciduous shrub member of the hibiscus family (Malvaceae), that blooms between April and October. This species is endemic to California and is known to occur in chaparral, cismontane woodland, and coastal scrub. Carmel Valley bush-mallow is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by development.

An historic record (1955) for this species is documented approximately 2.6 miles east of the project site (exact location is unknown) (CNDDB Occurrence No. 30). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, even though the surveys were conducted during the blooming season, they were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Carmel Valley bush-mallow. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.18 CARMEL VALLEY MALACOTHRIX (MALACOTHRIX SAXATILIS VAR. ARACHNOIDEA)

Carmel Valley malacothrix is a white-flowered perennial rhizomatous herbaceous member of the sunflower family, that blooms between March and December. This species is endemic to California and is known to occur in rocky chaparral and coastal scrub. Carmel Valley malacothrix is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by road maintenance.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, even though the surveys were conducted during the blooming season, they were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Carmel Valley malacothrix. These impacts

can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.19 OREGON MECONELLA (MECONELLA OREGANA)

Oregon meconella is a white-flowered annual herbaceous member of the poppy family (Papaveraceae), that blooms between March and April. This species is known to occur in coastal prairie and coastal scrub in California, Oregon, and Washington. Oregon meconella is not state or federally listed, but is a CNPS Rank 1B.1 species, threatened by alteration of fire regimes.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Oregon meconella. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.20 MARSH MICROSERIS (MICROSERIS PALUDOSA)

Marsh microseris is a yellow-flowered perennial herbaceous member of the sunflower family, that blooms between April and July. This species is endemic to California and is known to occur in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland. Marsh microseris is not state or federally listed, but is a CNPS Rank 1B.2 species.

An historic record (1901) for this species is documented in the vicinity of the project site (exact location is unknown) (CNDDB Occurrence No. 30). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to marsh microseris. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.21 NORTHERN CURLY-LEAVED MONARDELLA (MONARDELLA SINUATA SSP. NIGRESCENS)

Northern curly-leaved monardella is a lavender to purple-flowered annual herbaceous member of the mint family (Lamiaceae), that blooms between April and September. This species is endemic to California and is known to occur in sandy chaparral, coastal dunes, coastal scrub, and lower montane coniferous forest. Northern curly-leaved monardella is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by on-native plants, development, habitat loss, habitat fragmentation, and climate shifts.

This species is known to occur on the same quad as the project site (Monterey Quad). The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, even though the surveys were conducted during the blooming season, they were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to northern curly-leaved monardella. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.22 YADON'S REIN ORCHID (PIPERIA YADONII)

Yadon's rein orchid is a green and white-flowered perennial herbaceous member of the orchid family (Orchidaceae), that blooms between February and August. This species is endemic to California and is known to occur in sandy coastal bluff scrub, closed-cone coniferous forest, maritime chaparral. Yadon's rein orchid is federally endangered, and is a CNPS Rank 1B.1 species, threatened by urbanization, recreational development, non-native plants, road maintenance, and herbivory.

The closest record for this species occurs in a Monterey pine/coast live oak woodland approximately 0.7-mile northeast of the project site (CNDDB Occurrence No. 24) The southwestern portion of the project site is comprised of coastal sagebrush scrub and provides suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Yadon's rein orchid. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.23 HICKMAN'S CINQUEFOIL (POTENTILLA HICKMANII)

Hickman's cinquefoil is a yellow-flowered perennial herbaceous member of the rose family, that blooms between April and August. This species is endemic to California and is known to occur in coastal bluff scrub, closed-cone coniferous forest, vernally mesic meadows and seeps, and freshwater marshes and swamps. Hickman's cinquefoil is state and federally endangered, and is a CNPS Rank 1B.1 species, threatened by urbanization, recreational activities, non-native grasses, and grazing.

This species is known to occur on the same quad as the project site (Monterey Quad). The coastal sagebrush scrub and the wetland habitat that occur on the project site provide suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Hickman's cinquefoil. These impacts can be reduced to a level considered less

than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.24 SALINE CLOVER (TRIFOLIUM HYDROPHILUM)

Saline clover is a white, pink, red, and/or purple-flowered annual herbaceous member of the pea family (Fabaceae), that blooms between April and June. This species is endemic to California and is known to occur in marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools. Saline clover is not state or federally listed, but is a CNPS Rank 1B.2 species, threatened by development, trampling, road construction, and vehicles.

This species is known to occur on the same quad as the project site (Monterey Quad). The onsite wetlands provide suitable habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to saline clover. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.1.25 PACIFIC GROVE CLOVER (TRIFOLIUM POLYODON)

Pacific Grove clover is a pink to white and purple-flowered annual herbaceous member of the pea family, that blooms between April and July. This species is endemic to California and is known to occur in mesic closed-cone coniferous forest, coastal prairie, meadows and seeps, and valley and foothill grassland. Pacific Grove clover is a state-listed rare species, and is a CNPS Rank 1B.1 species, threatened by urbanization, recreation, foot traffic, trampling, and non-native plants.

This species is known to occur on the same quad as the project site (Monterey Quad). The project site provides marginal habitat for this species. While this species was not observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to Pacific Grove clover. These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2 STATE AND FEDERALLY LISTED WILDLIFE

A total of 11 special-status wildlife species are known to occur in the vicinity of the project site (Appendix B, Table 2): black legless lizard (*Anniella pulchra* ssp. *nigra*), California red-legged frog (*Rana draytonii*), black swift (*Cypseloides niger*), California brown pelican (*Pelecanus occidentalis* ssp. *californicus*), California tiger salamander (*Ambystoma californiense*), coast range newt (*Taricha torosa* ssp. *torosa*), monarch butterfly (*Danaus plexippus* ssp. *plexippus*), Smith's blue butterfly (*Euphilotes enoptes* ssp. *smithi*), steelhead (*Oncorhynchus mykiss* ssp. *irideus*), western pond turtle (*Emys marmorata*), white-tailed kite (*Elanus leucurus*). Four of these species require specialized

habitats that do not occur on the project site, such as steep, rocky cliffs (black swift), offshore islands (California brown pelican); grasslands adjacent to sufficiently deep freshwater seasonal wetlands and ponds (California tiger salamander); tall stands of eucalyptus (*Eucalyptus* sp.), Monterey cypress, Monterey pine (*Pinus radiata*), and western sycamore trees (*Platanus racemosa*) [monarch butterfly].

Of the 10 special-status wildlife species known to occur in the vicinity of the project site, four have been recorded on the project site (California red-legged frog, steelhead, western pond turtle, and white-tailed kite). While not detected on the project site, the site provides suitable habitat for black legless lizard and coast range newt, and potentially suitable habitat for Smith's blue butterfly. A description of these species is included below, including the species' distribution, habitat, life cycle, threats to the species, current habitat conservation efforts, and potential impacts to the species resulting from implementation of the proposed project.

4.2.1 Black Legless Lizard (Anniella pulchra ssp. nigra)

The black legless lizard (BLL) is a small, slender lizard, with smooth, shiny scales, a blunt tail, and no legs. BLL range in body length from 4.5 to 7 inches, with females generally slightly larger (Lee 2008). This lizard is often mistaken for a snake, but can be easily differentiated from a snake by the presence of eyelids. Adult BLL have a black upper (dorsal) body with a yellow belly. The BLL is considered by many to simply represent a melanistic form of *Anniella pulchra*, however is recognized as a separate subspecies (ssp. *nigra*) by some herpetologists and state agencies.

The BLL burrows in loose, sandy soils, and is known to occupy sand dunes as well as other sandy-soiled areas such as oak or pine-oak woodland, chaparral, wooded stream edges, and desert-scrub. Often foraging in loose soil and leaf litter, and under rocks, logs, and/or driftwood, black legless lizards eat larval insects, small adult insects, and spiders. This species breeds in late spring/early summer, gestates for approximately 4 months, and gives birth to one to four live young in the fall (Zeiner et. al. 1988, updated 2000; Hollingsworth and Hammerson 2007).

BLL is known only from the Monterey Bay area and is a state Species of Special Concern. Major threats to this species include habitat loss due to agriculture, development, sandmining, recreation, and the introduction of exotic plants such as ice plant.

The closest record for this species occurs in the immediate vicinity of the project (the exact location is suppressed by CNDDB and is unavailable for public viewing) (CNDDB Occurrence No. 22). The project site provides suitable habitat for this species, and as such, the implementation of the proposed project has the potential to result in adverse impacts to BLL, both directly (physical impacts to individual BLL) and indirectly (temporary alteration of suitable habitat). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.2 California Red-legged Frog (Rana draytonii)

The California red-legged frog (CRLF) has coarsely granular skin, with coloring that ranges from brown, to grey, to olive, to reddish, with dark, irregular blotches. Although a distinctive feature of this species is the often-prominent ridges (dorsolateral folds) running from behind the eyes down

to the hips, this species gets its name from the generally reddish-coloring on its lower abdomen and ventral side of its legs (Storer 1925). The CRLF is the largest native frog in the western United States, ranging in body length from 1.5 to 5.1 inches, and exhibiting sexual dimorphism, with females growing significantly longer than males (Wright and Wright 1949, Hayes and Miyamoto 1984).

CRLF is a highly aquatic species, generally staying close to their aquatic habitat: streams and creeks, ponds, marshes, seeps, and springs. Ideal CRLF habitat includes aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Dispersal habitat generally includes moist, shaded areas with vegetation that provides cover as a protection from predators and to prevent desiccation; these frogs often travel along riparian corridors and can be found adjacent to aquatic habitats (USFWS 2002).

Ideal breeding habitat includes still water exceeding two feet in depth, with emergent vegetation. Breeding occurs November through July, with females laying between 750 and 4,000 eggs in clusters (egg masses), typically attached to emergent vegetation (Jennings et. al 1992, Stebbins 1954). The amount of time to metamorphosis is highly dependent on temperature (Calef 1973), but generally takes 11 to 20 weeks (Storer 1925, Calef 1973). Adult frogs generally become sexually mature in three to four years and may live for eight to ten years.

CRLF has sustained a 70 percent reduction in its geographic range as a result of degradation and loss of its habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native plants, impoundments, water diversions, degraded water quality, use of pesticides, and introduced predators (Jennings et al. 1992). Several introduced species prey upon CRLF, larvae, and eggs, including crayfish (*Pacifastacus leniusculus* and *Procambarus cl*ark*ii*), bullfrogs (*Rana catesbeiana*), green sunfish (*Lepomys cyanellus*), bluegill (L. *macrochirus*), largemouth bass (*Micropterus salmoides*) and smallmouth bass (M. *dolomieu*).

CRLF was listed as federally threatened in 1996 (Federal Register 61:25813-25833), with critical habitat originally designated for this species in 2001 (Federal Register 66:14626-14674). This critical habitat ruling was contested (Home Builders Association of Northern California, et al. v. Norton, et al., Civ. No. 01-1291 (RJL) (D. D.C.)), withdrawn, reduced (Federal Register 71:19244-19346), and finally re-designated in 2010 (Federal Register 75:12816-12959). CRLF is currently state-listed as a Species of Special Concern.

A 2001 record for this species documented CRLF at multiple sites throughout the project site (CNDDB Occurrence No. 472). The implementation of the proposed project has the potential to result in adverse impacts to CRLF, both directly (physical impacts to individual CRLF) and indirectly (temporary alteration of habitat). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.3 COAST RANGE NEWT (TARICHA TOROSA SSP. TOROSA)

The coast range newt (CRN) is a stocky, medium-sized newt with rough, granular skin. Adult CRN have a dark brown upper (dorsal) body with a yellow to dark orange lower (ventral) body. CRN range from approximately 5 to 8 inches in total length, with males generally slightly larger than females (Espinoza 2001).

CRN is a largely fossorial species, spending much of the year in underground refugia in upland mesic woodlands, but can be found travelling overland in moist conditions year-round. Migration to/from breeding areas is generally initiated by the first rains of fall, with many individuals migrating from their upland habitat as far as 2 miles to breeding areas. Breeding occurs in ponds, reservoirs, and streams. Egg sacks are attached to emergent vegetation and submerged sticks and stones (Hammerson 2008 and Zeiner 1988), and depending on location, CRN egg incubation lasts between 14 and 52 days, and larval stage lasts several months. Adult CRN eat earthworms, snails, slugs, and small insects, while larval CRN eat small aquatic invertebrates and decomposing organic matter (Stebbins 1972).

CRN is known to occur in scattered populations along the coast from Monterey County southward through southern California. It is a state Species of Special Concern, threatened by habitat loss and degradation, and predation by non-native introduced fish and crayfish.

The closest record for this species occurs approximately 2.4 miles southeast of the project site (CNDDB Occurrence No. 70). The project site provides suitable habitat for this species, and as such, the implementation of the proposed project has the potential to result in adverse impacts to CRN, both directly (physical impacts to individual CRN) and indirectly (temporary alteration of suitable habitat). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.4 MONTEREY DUSKY-FOOTED WOODRAT (NEOTOMA MACROTIS SSP. LUCIANA)

The Monterey dusky-footed woodrat (MDFW) is a large-sized wood rat with a blunt nose, long whiskers, and a scantily haired tail. Adult MDFW have a gray-brown dorsal body, with a pale to white ventral body. MDFW range from 10 to 17 inches in total length (Jameson and Peeters 2004).

MDFW build large houses of sticks, leaves, and other debris on the ground or in trees; with the exception of females with young, each stick house generally supports just one adult. MDFW breed primarily in winter and spring, rearing between one and five litters (with 1 to 3 young) per year, with most young born between February and May (Cassola 2016). MDFW are primarily nocturnal rodents, foraging in bushes and trees as well as on the ground, feeding mainly on woody plants, fungi, flowers, grasses, berries, and acorns (Zeiner 1988-90, updated 2008; Jameson and Peeters 2004).

MDFW is known to occur in dense oak woodlands, riparian woodlands, and cooler chaparral habitats in coastal California from Monterey Bay to Morrow Bay. It is a state Species of Special Concern, threatened by habitat loss and degradation due to coastal development.

While no records for MDFW occur within 3 miles of the project site, several woodrat nests were observed on the project site during the September 2017 site investigations. As such, the implementation of the proposed project has the potential to result in adverse impacts to MDFW, both directly (physical impacts to individual CRN) and indirectly (temporary alteration of occupied habitat). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.5 SMITH'S BLUE BUTTERFLY (EUPHILOTES ENOPTES SSP. SMITHI)

Smith's blue butterfly (SBB) is a small-sized butterfly with a wing span of just under 1 inch. Males and females have the same coloring on the ventral sides of their wings, with white-gray coloring with black dots and a band of red-orange dots along the outer edge of the hind-wings. However, SBB exhibits sexual dimorphism in the coloring on the dorsal sides of their wings, with males exhibiting bright blue wing coloring, and females exhibiting brown wing coloring with red-orange markings on the hind wings. SBB's life history is tied to its host plant(s): seacliff buckwheat (*Eriogonum parvifolium*) and seaside buckwheat (*Eriogonum latifolium*). Larvae feed on the flowers of these host plants, adults feed on the nectar and use them as mating sites (Black and Vaughn 2005).

Adult SBBs can be seen between late mid-June through early September (this timing is synchronized with the flowering of their host plants). Males emerge first, with females emerging approximately one week later. Adults immediately mate and lay eggs on the flowers of the host plants. Caterpillars hatch from these eggs after approximately four to eight days, grow for approximately four weeks, then rest for the winter (diapause). Caterpillars spend the winter and spring in a chrysalis and emerge in late summer/early fall (NatureServe 2017).

Historically, SBB occurred in scattered populations along the California coast from Monterey Bay to Point Gorda. However, this range has been greatly reduced due to habitat loss from development and recreation, and invasion of exotic plants introduced for beach stabilization purposes.

SBB was listed as federally endangered in 1976 (Federal Register 41:22041-22044). Critical habitat was proposed for SBB in 1977 (Federal Register 42:7972-7976), but was never designated. The *Smith's Blue Butterfly Recovery Plan* (SBB Recovery Plan) was approved and published in 1984 (USFWS 1984). The SBB Recovery Plan identifies existing populations and strategies to preserve and protect the species. Specifically, when the 18 existing population locations (or 18 equivalent sites) listed in the SBB Recovery Plan are protected, managed, and appear to support healthy populations of SBB, the species can be determined "recovered," and be delisted. The project site does not occur within any of the 18 identified sites, and does not provide the quality of coastal dune or cliff/chaparral habitat necessary to be considered an equivalent site.

SBB is not known to occur on or adjacent to the project site, however four records for this species occur within 3 miles of the project site. The closest record of SBB is for individuals observed approximately 1.3 miles east of the project site on preserved land within the Palo Corona Regional Park. Dune buckwheat, one of SBB's host plant species, has been observed in close proximity to the project site (0.3-mile north of the project site, adjacent to the Carmel River State Beach parking lot). While the project site provides marginal habitat for SBB, no buckwheat species of any kind were observed on the project site during the September 2017 site investigation. The presence of SBB is correlated with the presence of their host plant. The presence of the host plant, however, is not indicative of presence of SBB, as the range of the host plant species is much larger than the range of the butterfly. Regardless, in the absence of thorough botanical surveys, the presence of SBB host plants and the presence of SBB cannot be ruled out. The potential for this species to occur on the project site is low. As such, the implementation of the proposed project has the potential to result in adverse impacts to SBB, both directly (physical impacts to individual SBB) and indirectly (temporary alteration of occupied habitat). These impacts can be reduced to a level considered less

than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.6 STEELHEAD (SOUTH-CENTRAL CALIFORNIA COAST DPS) (ONCORHYNCHUS MYKISS SSP. IRIDEUS)

In North America, steelhead are found in the Pacific Ocean and associated tributaries from southern California to Alaska. Within California, known spawning populations are found in coastal streams from Malibu Creek in Los Angeles County to the Smith River near the Oregon border, and in the Sacramento and San Joaquin River systems. Steelhead are anadromous, with two-year-old smolts generally migrating from freshwater to sea and returning to freshwater after two years to spawn.

The steelhead species is divided into 10 Distinct Population Segments (DPSs) based on location. The locally occurring population is the South-Central California Coast DPS (SCCC Steelhead). SCCC steelhead occur in streams from the Pajaro River (inclusive) located in Santa Cruz County, CA, to (but not including) the Santa Maria River in San Luis Obispo County. In the Carmel River, adult migration in the river is delayed until the sandbar at the mouth of the Carmel River is breached in January to April, but may start as early as December and extend into May. The fish then travel upstream to spawning habitat in the Carmel River and peak spawning occurs from December through April. After spawning, eggs incubate 3 weeks to 2 months and fry emerge post-hatch 2 to 6 weeks in spring or early summer. Juvenile steelhead rear in the Carmel River and Carmel River Lagoon for 1 to 2 years before smolting and entering the ocean (Alley 2013). The southern arm of the lagoon is usually the deepest portion of the lagoon during the summer months, thus the area is likely to provide refuge for juvenile steelhead when the river flows cease and the lagoon size decreases. Following smolt migration, the Carmel River Lagoon provides steelhead rearing habitat from March to early June and primarily in April and May. Smolts reside in the lagoon approximately 2-3 weeks or more before entering the ocean (Alley 2014).

Threats to SCCC steelhead include the loss of fresh water and estuarine habitat, periodic poor ocean conditions, and land-use practices impacting watershed processes. The SCCC steelhead was listed as federally threatened in 2006 (Federal Register 71:834-862), with critical habitat designated for the species in 2005 (Federal Register 70:69348-69350).

The species has been well documented within the Carmel River and within the Carmel River Lagoon. SCCC steelhead smolt migrate downstream from the Carmel River to the Carmel River Lagoon where they reside prior to entering the ocean; this migration is heaviest from March to May. As the proposed project will temporarily impact the south arm of the Carmel River Lagoon, implementation of the proposed project has the potential to result in adverse impacts to SCCC steelhead, both directly (physical impacts to individual fish) and indirectly (temporary alteration of occupied habitat and acoustic impacts). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.7 WESTERN POND TURTLE (EMYS MARMORATA)

The western pond turtle (WPT) is a small, fairly flat-bodied turtle, with an olive, brown, or black carapace (dorsal "shell") with yellow dots, splotches, or lines and a plastron (ventral "shell") that is

generally yellow with dark splotches. WPT range from approximately 3.5 to 8.5 inches in shell length. Male turtles vary slightly from females in location of vent relative to carapace edge, throat coloration, and shell depth and markings. (Stebbins 1985).

WPT generally overwinter in upland habitats near permanent or intermittent waters such as rivers, creeks, small lakes/ponds, marshes, and reservoirs. Mating generally occurs between April and May, when adults are 8 to 10 years of age. Egg laying occurs between April and August, with females digging nests in upland friable soils and laying between 2 and 11 eggs. Egg incubation lasts for approximately 10-12 weeks, and young overwinter in the nest until early spring when they emerge and migrate back towards aquatic habitat (Zeiner 1988, updated 2000). WPT eat aquatic plants and invertebrates, as well as worms, amphibian larvae and eggs, and carrion.

WPT is known to occur throughout California, west of the Sierra-Cascade crest, but is absent from desert areas (except along the Mojave River and its tributaries) (Jennings and Hayes 1994). It is a state Species of Special Concern, and was petitioned for federal listing in 2012. Threats to the species include habitat loss and degradation, competition with non-native invasive turtle species (red-eared sliders and painted turtles), and predation by bullfrogs.

A 2001 record for this species documented two individuals on the project site (CNDDB Occurrence No. 1108). The project site provides suitable habitat for this species, and as such, the implementation of the proposed project has the potential to result in adverse impacts to WPT, both directly (physical impacts to individual WPT and their nests) and indirectly (temporary alteration of suitable habitat). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.2.8 WHITE-TAILED KITE (ELANUS LEUCURUS)

The white-tailed kite (WTK) is a medium-sized raptor with a wing span of approximately 39 inches. This species is easily identified by its primarily white body with a grey back and wings and red eyes. WTK forage predominantly in open grasslands, agricultural fields, and emergent wetlands hovering as much as 30 meters above the ground in search of prey (primarily on voles [*Microtus* spp.] and other small, diurnal mammals). WTK build stick nests in dense tree stands adjacent to suitable foraging habitat. Females generally lay a single clutch of 4-5 eggs each year, incubating eggs for approximately 28 days. The young generally fledge between 35 and 40 days after hatching (Zeiner et. al. 1988, updated 2005).

WTK is found throughout much of California, but is most common in coastal and valley lowlands in or in close proximity to grasslands, agricultural fields, or emergent wetlands. It is a state Fully Protected species, threatened by habitat loss and degradation due to development and agriculture.

Several WTK were observed on the project site during the September 2017 site investigations. While no nesting WTK or active or abandoned raptor nests were observed onsite during these surveys, the surveys were not conducted during the nesting season and were not sufficiently thorough to be considered protocol-level nesting raptor surveys. The project site provides suitable nesting habitat for this species, and as such, the implementation of the proposed project has the potential to result in adverse impacts to nesting WTK, both directly (physical impacts to individual WTK) and indirectly (disturbances that would cause abandonment of eggs or young). These

impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.3 FULLY PROTECTED SPECIES

Records for two fully protected species occur within 3 miles of the project site: California brown pelican and WTK. While the project site does not provide suitable habitat for the California brown pelican, WTK were observed on the project site during the September 2017 site investigations. The project site provides suitable nesting habitat for WTK, and as such, the implementation of the proposed project has the potential to result in adverse impacts to fully protected species, both directly (physical impacts to individual WTK) and indirectly (disturbances that would cause abandonment of eggs or young). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

4.4 NESTING BIRDS/RAPTORS

The trees, shrubs, and bulrush on the project site provide suitable nesting habitat for a variety of raptors and passerines. As such, the implementation of the proposed project has the potential to result in adverse impacts to MBTA protected- and California Fish and Game Code protected-species, both directly (physical impacts to individuals) and indirectly (disturbances that would cause abandonment of eggs or young). These impacts can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

SECTION 5. POTENTIAL IMPACTS TO WILDLIFE CORRIDORS

A wildlife corridor is an area of habitat adjoining two or more larger areas of similar wildlife habitat, often connecting wildlife populations separated by natural or created activities, disturbances, or structures. Wildlife corridors are used by individuals and populations for dispersal and migration, allowing for genetic exchange, population growth, and access to larger stretches of suitable habitats, and functionally reduce fragmentation.

The majority of the project site does not represent a regional or local migration corridor for any common or special-status wildlife species. However, the Carmel River Lagoon represents a significant part of the SCCC steelhead Carmel River migration route, with smolt residing in the lagoon (specifically in the southern arm of the lagoon which is usually the deepest portion of the lagoon during the summer months) after their Carmel River downstream migration and prior to entering the ocean.

While the cofferdam installed to isolate the work area from flowing water within the south arm of the Carmel River Lagoon will act as a barrier to SCCC steelhead movement to/from the lagoon to/from the Carmel River during construction, this isolation will be temporary in nature, and will not impact SCCC steelhead migration to the ocean as the construction work window will occur during the period of time prior to the sandbar at the mouth of the Carmel River being breached (i.e., outside of the migration season for the local population of SCCC steelhead).

SECTION 6. POTENTIAL IMPACTS TO AQUATIC RESOURCES

Aquatic resources are regulated by state and federal resource agencies (CORPS, California State Water Resources Control Board (SWRCB), and CDFW) and are accordingly legally protected via the federal and/or state laws defined below.

Section 404 Clean Water Act (CWA): Section 404 of the Clean Water Act (CWA), administered by the CORPS, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Per Section 404, a permit is required prior to discharge of fill material into waters of the United States, unless the activity is exempt from Section 404 regulation.

Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands. Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. 328.3(b), 51 F.R. 41250, November 13, 1986]. Wetlands can be perennial or intermittent, and isolated or adjacent to other waters.

Other waters are non-tidal, perennial, and intermittent watercourses and tributaries to such watercourses [33 C.F.R. 328.3(a), 51 F.R. 41250, November 13, 1986].

Rivers and Harbors Act (RHA) of 1899: The RHA, also administered by the CORPS, prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the U.S. Administration of section 9 has been delegated to the Coast Guard ((33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat. 1151).

Magnuson-Stevens Fishery Conservation and Management Act (MSA): The MSA (50 CFR § 600.920(b)), requires all federal agencies to consult on activities or proposed activities that may adversely affect Essential Fish Habitat (EFH) of federally managed marine and anadromous fish species. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (Magnuson-Stevens Act: 16 U.S.C. 1802 (10)).

Water Pollution Control and Storm Water Management: The National Pollutant Discharge Elimination System (NPDES) Permit Program, also authorized by the CWA, controls water pollution by regulating point sources (discrete conveyances such as pipes or constructed ditches) that discharge pollutants into waters of the United States. The implementation of this federal program has been charged to the State of California for implementation through the State Water Resource Control Board (SWRCB) and RWQCBs. In California, NPDES permits are also referred to as waste discharge requirements (WDRs) that regulate discharges to waters of the United States.

Also implemented by the RWQCB is the Municipal Storm Water Permitting Program, which regulates storm water discharges from municipal separate storm sewer systems (MS4s). The MS4 Permit Program was established to restore and maintain the chemical, physical, and biological integrity waters of the U.S./State and reduce/eliminate storm water pollution.

Section 401 CWA: The State Water Resources Control Board (SWRCB) and its nine regional water boards (Regional Water Quality Control Boards) have been charged with the protection and enhancement of water quality in the state of California. Pursuant to Section 401 of the CWA and the Porter Cologne Water Quality Control Act (Porter Cologne), the Regional Water Quality Control

Board (RWQCB) has authority to regulate discharges of fill and dredged material into Waters of the State. Pursuant to Porter Cologne, waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." This is generally taken to include all waters of the U.S., all surface waters not considered to be waters of the U.S. (non-jurisdictional wetlands), groundwater, and territorial seas (with territorial boundaries extending 3.0 nautical miles beyond outermost islands, reefs, and rocks and includes all waters between the islands and the coast).

California Fish and Game Code 1602 (Lake and Streambed Alteration): Pursuant to California Fish and Game code, the CDFW maintains jurisdiction over rivers, streams and lakes; this jurisdiction includes to all features exhibiting bed, bank, and channel (the extent of CDFW's jurisdiction on these features extends to the top of bank or the edge of riparian canopy - whichever is greater). This Fish and Game Code requires that any project that substantially diverts or obstructs the natural flow of a river, stream, or lake or substantially changes the bed or bank of a river, stream, or lake notifies CDFW prior to project implementation.

6.1 WATERS OF THE UNITED STATES

The project site contains approximately 1.813 acres of waters that would be regulated by the federal government, including 5 wetland features (totaling 1.482 acres) and two linear features (totaling 266 linear feet, 0.331 acre). The implementation of the proposed project would result in impacts to a total of approximately 0.29 acre of waters of the U.S. As such, it is assumed that project authorization from the Corps pursuant to Section 404 of the CWA would be required.

6.2 ESSENTIAL FISH HABITAT

The waters of Carmel Lagoon are designated as EFH. The fish species using the lagoon are both resident and anadromous species and therefore year-round utilization is expected. The southern arm of the lagoon is usually the deepest portion of the lagoon during the summer months, thus the area is likely to provide refuge for fish species when the river flows cease and the lagoon size decreases. The lagoon is utilized as a forage area for juveniles and adults and nursery area for larvae and juveniles. As the project includes construction activities that would impact EFH, it is likely that NMFS will include provide conservation recommendations on minimizing impacts to EFH as part of section 7 consultation.

6.3 WATERS OF THE STATE

The project site contains approximately 1.813 acres of waters that would be regulated by the state government, including 5 wetland features (totaling 1.482 acres) and two linear features (totaling 266 linear feet, 0.331 acre). The implementation of the proposed project would result in impacts to a total of approximately 0.29 acre of waters of the State. As such, it is assumed that project authorization from the RWQCB pursuant to Section 401 of the CWA would be required.

6.4 RIVERS, STREAMS, AND LAKES

The proposed project would require work within the Carmel River Lagoon and associated riparian habitat, and would accordingly result in impacts to waters/habitats regulated by CDFW. As such, it

is assumed that project authorization from CDFW pursuant to section 1602 of the California Fish and Game Code would be required.

SECTION 7. LOCAL ORDINANCES, LAND USE AND PLANNING

Additional state and local natural resource ordinances and laws, as well as local land use plans, are applicable to the proposed project; these ordinances, laws, and plans are discussed below.

Coastal Zone Management Act (CZMA) of 1972: The U.S. Congress addressed the regulation of development in the coastal zone by passing the CZMA in 1972. This act, administered by NOAA, provides for the management of the nation's coastal resources. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." The CZMA outlined the National Coastal Zone Management Program, of which 34 states including California participate. Section 307 of the CZMA, called the "federal consistency" provision, gives states a role in the federal agency decision making process for activities that may affect a state's coastal uses or resources. The CZMA encourages states to develop coastal management programs and implement the federal consistency procedures of the CZMA. Upon certification of a state's coastal management program, all federal agency activities (including federal development projects, permits and licenses, and assistance to state and local governments) affecting the coastal zone must be consistent with the enforceable policies of the state's certified program.

Coastal Act of 1976: The federal government certified the California Coastal Management Program in 1977. The enforceable policies of that document are Chapter 3 of the California Coastal Act of 1976; these policies address public access, recreation, the marine environment, land resources, development, and industrial development.

The Federal Consistency Unit of the California Coastal Commission (CCC) implements the CZMA and the Coastal Act, however, the Coastal Act was designed to be carried out by local governments through the creation and implementation of Local Coastal Programs (LCPs). The preparation of an LCP (comprised of a Land Use Plan and an Implementation Plan, and certified by the CCC) is required from all coastal counties and cities for the portion of their jurisdiction that falls within the coastal zone.

In 1988, the LCP created by and for Monterey County was certified by the CCC. The LCP divided Monterey County's coastal zone into four land segments for the purposes of adequately addressing these different areas' differing characteristics and needs; the four segments are North County, Big Sur, Carmel, and Del Monte. The project area occurs in the Carmel coastal zone land segment.

Carmel Land Use Plan: The project site is located within the Carmel Coastal Segment of the Monterey County LCP. The Carmel Coastal Segment extends from Pescadero Canyon in the north to Malpaso Creek in the south. Pursuant to the Coastal Act, development within the Carmel Coastal Segment must comply with the Carmel Area Land Use Plan and the Monterey County Coastal Implementation Plan.

Only policy measures and recommendations regarding impacts to natural resources and deemed pertinent to the proposed project are addressed in this section. Policies regarding specific project requirements such as County implementation of the review process and specific action recommendations for local, state, or federal agencies are not addressed below. Similarly, policy measures and recommendations that are clearly referring to projects or activities that are not related to the proposed project (e.g., residential, commercial, and recreational development projects) are not addressed below.

7.1 ENVIRONMENTALLY SENSITIVE HABITATS

7.1.1 GENERAL POLICY 1

General Policy 1 states that "Development, including vegetation removal, excavation, grading, filling, and the construction of roads and structures, shall be avoided in critical and sensitive habitat areas, riparian corridors, wetlands, sites of known rare and endangered species of plants and animals, rookeries and major roosting and haul-out sites, and other wildlife breeding or nursery areas identified as critical. Resource-dependent uses, including nature education and research, hunting, fishing, and aquaculture, shall be allowed within environmentally sensitive habitats only if such uses will not cause significant disruption of habitat values. Only small-scale development necessary to support the resource-dependent uses may be located in sensitive habitat areas if they cannot feasibly be located elsewhere."

The proposed project consists of preemptive work to underground the sewer and outfall pipes in order to prevent future impediments to flow within the Carmel River Lagoon as well as potential damage to pipes by floating debris within the lagoon. This work will require vegetation removal, excavation, and other temporary disturbances to riparian and wetland habitat, as well as the south arm of the Carmel River Lagoon. This development within the environmentally sensitive habitats within the project site cannot be feasibly located elsewhere as it the work is location dependent. As such, the development avoidance recommendation presented within this general policy measure does not apply to the proposed project.

7.1.2 GENERAL POLICY 2

General Policy 2 states that "Land uses adjacent to locations of environmentally sensitive habitats shall be compatible with the long-term maintenance of the resource. New land uses shall be considered compatible only where they incorporate all site planning and design features needed to prevent habitat impacts and where they do not establish a precedent for continued land development which, on a cumulative basis, could degrade the resource."

The proposed project consists of preemptive work to underground the sewer and outfall pipes in order to prevent future impediments to flow within the Carmel River Lagoon as well as potential damage to pipes by floating debris within the lagoon. This project would result in temporary impacts to environmentally sensitive habitats in order to maintain and improve the sustainability of the pipeline within the Carmel River Lagoon area, which is compatible with and beneficial to long-term maintenance of the Carmel River Lagoon habitat.

7.1.3 GENERAL POLICY 5

General Policy 5 states that "Where private or public development is proposed in documented or expected locations of environmentally sensitive habitats - particularly those habitats identified in General Policy No. I - field surveys by qualified individuals or agency shall be required in order to determine precise locations of the habitat and to recommend mitigating measures to ensure its protection. This policy applies to the entire segment except the internal portions of Carmel Woods, Hatton Fields, Carmel Point (Night heron site excluded), Odello, Carmel Meadows, and Carmel Riviera. If any habitats are found on the site or within 100 feet from the site, the required survey shall document how the proposed development complies with all the applicable habitat policies."

As detailed in the sections above, field surveys conducted by JMC personnel Ms. McGarvey and Ms. Bingham (trained biologists and ecologists) were conducted on the project site to document natural resources present on and adjacent to the project site. The results of these surveys are included within this report. Mitigation measures are presented in Section 8 (below) that would ensure the protection of sensitive natural resources found on the project site. In addition, a certified arborist, approved by the County of Monterey, will conduct a tree survey and prepare their findings in a tree survey report to document impacts to trees associated with project implementation. This tree report will be provided to the County upon completion.

7.1.4 GENERAL POLICY 6

General Policy 6 states that "The County shall require deed restrictions or dedications of permanent conservation easements in environmentally sensitive habitat areas where development is proposed on parcels containing such habitats. Where development has already occurred in areas supporting sensitive habitat, property owners should be encouraged to voluntarily establish conservation easements or deed restrictions."

The establishment of conservation easements or deed restrictions within the project site is not necessary as the project site occurs within land owned and managed by State Parks. The proposed project would result in temporary impacts within this protected land.

7.1.5 RIPARIAN CORRIDORS AND OTHER TERRESTRIAL WILDLIFE HABITATS POLICY 1

Riparian Corridors and Other Terrestrial Wildlife Habitats Policy 1 states that "Riparian plant communities shall be protected by establishing setbacks consisting of a 150-foot open space buffer zone on each side of the bank of perennial streams and 50 feet on each side of the bank of intermittent streams, or the extent of riparian vegetation, whichever is greater. No new development, including structural flood control projects, shall be allowed within the riparian corridor. However, improvements to existing dikes and levees shall be allowed if riparian vegetation damage can be minimized and at least an equivalent amount and quality of replacement vegetation is planted. In addition, exceptions may be made for carefully sited recreational trails. The setback requirement may be modified if it can be demonstrated that a narrower corridor is sufficient to protect existing riparian vegetation. Riparian vegetation is an association of plant species which typically grows adjacent to freshwater courses and needs or tolerates a higher level of soil moisture than dryer upland vegetation."

Due to the location of the proposed project, impacts to riparian habitat will be necessary in order to establish a staging area for construction equipment and temporary spoils piles necessary for project implementation. Upon completion of the project, riparian vegetation will be replanted as required by state and local permits to be issued for the project.

7.1.6 RIPARIAN CORRIDORS AND OTHER TERRESTRIAL WILDLIFE HABITATS POLICY 4

Riparian Corridors and Other Terrestrial Wildlife Habitats Policy 4 states that "To protect important wildlife habitat, all off-road recreational vehicle activity should be discouraged within riparian corridors and public access should be limited to designated areas. Accordingly, roads and trails should be sited to avoid impacts to riparian habitat."

The access road to be cleared/constructed as part of project-related activities, will be used in order for construction crews and equipment to access the pipeline replacement/undergrounding portion of the project site, and would not constitute a road or trail open for public use. As such, the avoidance recommendation presented within this general policy measure does not apply to the proposed project.

7.1.7 WETLANDS AND MARINE HABITATS POLICY 1

Wetlands and Marine Habitats Policy 1 states that "A setback of 100 feet from the edge of all coastal wetlands shall be provided and maintained in open space use. No new development shall be allowed in this setback area."

Unavoidable temporary impacts would be incurred to portions of three wetlands as a part of project-related activities. Restoration plantings and monitoring will be conducted within these temporarily disturbed wetlands as required by local, state, and federal project authorizations. All wetlands adjacent to project work that are not scheduled for disturbance will be protected from incidental disturbances via intervening barriers to placement of fill such as silt fencing. Setbacks around wetlands are not appropriate for this project.

7.2 WATER AND MARINE RESOURCES

7.2.1 WATER AVAILABILITY POLICY 5

Water Availability Policy 5 states that "Any diversion of surface sources of water shall be required to submit an approved water appropriation permit from the SWRCB prior to approval of any coastal development permit except where such water appropriation permit is not required by applicable State law."

Project implementation will require the installation of a cofferdam the dewatering of a portion of the south arm of the Carmel River Lagoon in the immediate vicinity of the pipeline replacement and undergrounding area. Project authorizations will be obtained from the RWQCB and the Corps prior to commencement of project-related activities that would impact surface sources of water.

7.2.2 WATER POLLUTION CONTROL POLICY 1

Water Pollution Control Policy 1 states that "All dumping of spoils (dirt, garbage, refuse, etc.) into riparian corridors and other drainage courses should be prohibited."

Project implementation will require that spoils taken from the south arm of the Carmel River Lagoon be temporarily placed within the staging areas. A plastic or wooden barrier will be in place between these spoil piles and the staging area substrate in order to protect keep these substrate materials separate. The wetland and riparian habitats to be temporarily impacted by the staging areas will be revegetated with wetland and riparian species and monitored, as required by local, state, and federal project authorizations.

7.3 OAK TREES

Pursuant to the Monterey County Oak Protection Ordinance, the removal of trees that have been designated as "protected" requires a permission from the County Planning Department. With regard to the proposed project, protected trees include oak trees that are six inches or more in

diameter at two feet above ground level. While a tree survey has not been conducted on the project site to date, and as such, impacts to protected trees have not been calculated, there is potential for unavoidable impacts to protected trees associated with implementation of the proposed project. Impacts associated with the removal of protected trees can be reduced to a level considered less than significant pursuant to CEQA with the implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures presented in Section 8, below.

7. 4 ZONING

The Monterey County General Plan zones the majority of the project as Coastal Agricultural Preservation (CAP), however, the open-water portion of the project site is zoned as Resource Conservation (RC-D), and the western access area is designated as Medium Density Residential (MDR).

SECTION 8. IMPACTS AND MITIGATION

In accordance with Appendix G of the State CEQA Guidelines, project-related impacts would be considered significant if the proposed project would result in one or more of the following effects:

a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS; or

b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS; or

c) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or

d) interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or

e) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Potential impacts associated with implementation of the proposed project are addressed below. With implementation of the General Avoidance and Minimization Measures as well as the specific mitigation measures recommended below, all project-related impacts to natural resources can be reduced to a level considered less than significant.

8.1 GENERAL AVOIDANCE AND MINIMIZATION MEASURES

1) Prior to project-implementation, all construction personnel working on vegetation removal, earthmoving, and/or construction activities will attend a mandatory environmental education program, led by an approved biologist.

2) All staging, maintenance, and storage of construction equipment will be performed in a manner to preclude any direct or indirect discharge of fuel, oil, or other petroleum products into waters of the U.S./State. No other debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete or washings thereof, or other construction-related materials or wastes will be allowed to enter into or be placed where they may be washed by rainfall or runoff into waters of the U.S./State. All such debris and waste shall be picked-up daily and properly disposed of at an appropriate site.

3) All food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once a day from the project site.

4) No firearms will be allowed on the project site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

5) Project personnel will not be permitted to have dogs or cats in the project area.

6) No pesticides of any kind will be used on the project site at any time during project implementation, with the exception of pre-authorized herbicide application to prevent the spread of the invasive pampas grass currently occurring on the project site.

7) No equipment will be operated in areas of flowing or standing water. No fueling, cleaning, or maintenance of vehicles or equipment will take place within any areas where an accidental discharge to waters of the U.S./State waters may occur.

8) All equipment including excavators, trucks, hand tools, etc., that may have come in contact with invasive plants or the seeds of these plants, will be carefully cleaned before arriving on the site and shall also be carefully cleaned before removal from the site to prevent spread of these plants.

9) Disturbance or removal of vegetation will not exceed the minimum necessary to complete construction.

10) To minimize harassment, injury, death, and harm in the form of temporary habitat disturbances, all project-related vehicle traffic will be restricted to established roads, construction areas, equipment staging, parking, and stockpile areas.

11) The work area will be delineated with orange wildlife exclusion fencing in order to minimize impacts to habitat beyond the work limit. A biological monitor will supervise the installation of protective fencing and will conduct preconstruction inspections of the fencing daily until construction is complete to ensure that the protective fencing remains intact. Orange cyclone fencing, or other materials that can entrap small amphibians and reptiles and other special-status species, will not be used.

12) Wetlands temporarily impacted by construction activities will be protected with a layer of filter fabric and clean crushed gravel to prevent unnecessary adverse effects to vegetation or wetland hydrology. This temporary fill will be removed at the end of construction activities.

13) Prior to any instream work, sheet pile coffer dams will be installed both up- and downstream from the area to be trenched in order to isolate the work area from the flowing stream. Water removed from within the cofferdam would be pumped back to the CAWD treatment facility or a sediment basin to remove suspended sediments. At the completion of instream work, all water-diversion systems will be removed from the work area.

14) After construction completion, any installed by-pass pipe, cofferdam, or other related construction materials installed within the project boundary shall be removed in its entirety.

15) Site conditions will be returned to pre-construction contours and will be revegetated with native habitat-appropriate species.

16) Prior to commencement of work each day, the biological monitor will check for animals under any equipment such as vehicles and stored pipes. In order to prevent inadvertent entrapment of terrestrial wildlife during the proposed project, all excavated, steep-walled holes or trenches

more than 2 feet deep will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 2-foot high vertical barrier, independent of exclusionary fences, may be used to further prevent the inadvertent entrapment of terrestrial wildlife. If it is not feasible to cover an excavation or provide an additional 2-foot high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed. Before such holes or trenches are filed, they will be thoroughly inspected for trapped animals. Similarly, in order to prevent inadvertent entrapment of special-status aquatic wildlife during the dewatering of the work area, the intake of all pumps will be installed outside of emergent vegetation and will be screened.

17) An approved biologist(s) will be onsite during all work within the south arm of the Carmel River Lagoon and during all activities that could result in impacts to special-status species. The approved biologist will have the authority to stop any work that may result in adverse impacts to special-status species. If determined to be necessary for project implementation and wildlife safety, only approved biologists will capture, handle, and monitor special-status species observed onsite. Otherwise, all wildlife will be allowed to leave the site of their own accord.

18) All project-related ground moving activities will be restricted to between June 15 and November 1 in order to avoid the time period when locally occurring special-status species are most likely to be migrating through the project site and the immediately surrounding area.

8.2 BIOLOGICAL IMPACT 1: SPECIAL-STATUS PLANTS [LESS THAN SIGNIFICANT WITH MITIGATION]

While no special-status plant species were observed on the project site during the September 2017 site investigation, the surveys were not conducted during the blooming season for most locally occurring special-status plants and were not sufficiently thorough to be considered adequate to rule out presence of special-status plant species. In the absence of protocol-level rare plant surveys on the project site, the proposed project may result in adverse impacts to special-status plants. Impacts to special-status plants would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.2.1 MITIGATION MEASURE 1: SPECIAL-STATUS PLANTS

In the Spring and Summer immediately prior to project implementation, protocol-level rare plant surveys will be conducted on the project site. Rare plant surveys will be conducted by a qualified botanist, in accordance with all applicable survey guidelines including those published by USFWS (USFWS 1996), CDFW (CDFW 2000, 2009) and CNPS (CNPS 2001). If determined to be necessary, reference site surveys will be conducted to confirm plant phenology (flowering periods).

8.3 BIOLOGICAL IMPACT 2: SPECIAL STATUS AMPHIBIANS AND REPTILES [LESS THAN SIGNIFICANT WITH MITIGATION]

The project site provides suitable habitat for breeding, nesting, foraging, and migrating special-status amphibian and reptile species known to occur locally, including black legless lizard, California red-legged frog, coast range newt, and western pond turtle. Further, California red-legged frog and western pond turtle have been documented on the project site. Project implementation

could result in adverse impacts to these species. Impacts to special-status amphibians and reptiles would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.3.1 Mitigation Measure 2: Special Status Amphibians and Reptiles

The following measures are standard avoidance measures prescribed for special-status amphibians and reptiles by state and federal agencies and have been deemed appropriate to protect special-status amphibian and reptile species potentially occurring on the project site.

Within 48 hours prior to the initiation of work that may impact special-status amphibians and reptiles, a preconstruction survey for special-status amphibians and reptiles will be conducted by an approved biologist within the boundaries of the project site. The approved biologist would investigate all areas that could be used by the special-status amphibians and reptiles for feeding, breeding, sheltering, movement, and other essential behaviors. This survey will be likewise conducted immediately prior to commencement of project-related work that may impact special-status amphibians and reptiles. If any adults, sub adults, juveniles, tadpoles, or eggs are found, the approved biologist would contact the appropriate agencies to determine next steps.

8.4 Biological Impact 3: Monterey Dusky-footed Woodrats [less Than Significant with Mitigation]

Several woodrat nests were observed on the project site during the September 2017 site investigation; these woodrat nests occur entirely within the footprint of the northern staging area and cannot be feasibly avoided. As such, implementation of the proposed project has the potential to result in adverse impacts to Monterey dusky-footed woodrat (MDFW). Impacts to this California Species of Concern would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.4.1 Mitigation Measure 3: Monterey Dusky-footed Woodrats

Within 30 days prior to project-related activities that could impact MDFW, an approved biologist will conduct a preconstruction survey to locate and map the locations of all existing MDFW nests. As all of the MDFW nests on the project site are in areas that cannot be avoided by project-related activities, they will be relocated according to standard woodrat nest relocation procedures.

Active nests will be sufficiently disturbed to cause individual woodrats to leave the nest and seek refuge elsewhere. After nests have been thus disturbed, they will be dismantled and reassembled outside of the project site at a sufficient distance to proposed impact areas to remain undisturbed by project-related activities. Due to work-window constraints imposed on the project by hydrologic and federal-listed species concerns, nest dismantling will take place during the breeding season. If during nest dismantling a litter of young is observed or suspected, the removed nest material will be replaced, and the nest will be left alone for 2-3 weeks to allow for further maturation of young. After the 2-3 week period, the nest will be rechecked to determine if the young are capable of survival on their own, before proceeding with nest dismantling and relocation.

8.5 BIOLOGICAL IMPACT 4: SMITH'S BLUE BUTTERFLY [LESS THAN SIGNIFICANT WITH MITIGATION]

The coastal scrub habitat on the project site provides potentially suitable habitat for Smith's blue butterfly (SBB) and its obligate host plants (seacliff buckwheat and seaside buckwheat). While no buckwheat species of any kind were observed on the project site during the September 2017 site investigation, those surveys were not sufficiently thorough to be considered adequate to rule out presence of SBB host plants. In the absence of thorough botanical surveys, the presence of SBB host plants and the presence of SBB cannot be ruled out. Impacts to SBB would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.5.1 MITIGATION MEASURE 4: SMITH'S BLUE BUTTERFLY

During protocol-level rare plant surveys conducted on the project site, a qualified botanist will also search for SBB host plant species. If no SBB host plants are observed on the project site, SBB will be surveyed for during preconstruction surveys and the biological monitor will stop any work that may result in take of SBB. If SBB host plants are observed on the project site, unavoidable impacts to those host plants will be mitigated by 1) hand-removal and onsite preservation of individual plants and the soils/duff beneath them, and 2) replanting of preserved SBB host plants, and 3) inclusion of SBB host plants in the revegetation plan in the disturbed areas wherein SBB host plants had occurred (with SBB host plants planted at a 2:1 ratio [mitigation:impacts]).

8.6 BIOLOGICAL IMPACT 5: SCCC STEELHEAD [LESS THAN SIGNIFICANT WITH MITIGATION]

The Carmel River Lagoon is known to support SCCC steelhead. As such, the implementation of the in-stream portion of the proposed project could result in adverse impacts to SCCC steelhead. Impacts to the federally listed SCCC steelhead would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.6.1 MITIGATION MEASURE 5: SCCC STEELHEAD

In order to avoid auditory impacts to SCCC steelhead, all sheet piles will be installed using only a vibratory hammer; no impact hammer will be used. Prior to installation of cofferdam sheet piles, the area shall be cleared of all potential fish species. This operation will be overseen by an approved fisheries biologist. The approved fisheries biologist will likewise be present during dewatering of the cofferdam to ensure fish are not entrapped within the work area. Any fish observed will be removed by the fisheries biologist and placed in the Carmel Lagoon, upstream of the work area.

8.7 BIOLOGICAL IMPACT 6: NESTING BIRDS [LESS THAN SIGNIFICANT WITH MITIGATION]

The trees on the project site provide suitable nesting habitat for nesting birds and raptors protected pursuant to the Migratory Bird Treaty Act and California Fish and Game Code, Sections 3503, 3503.5, and 3511. Impacts to nesting birds and raptors would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.7.1 Mitigation Measure 6: Nesting Birds

If tree removal or ground disturbance are scheduled to occur between February 15 and August 31, a preconstruction nesting bird survey of all suitable nesting habitat on the project site will be conducted by a qualified biologist within 14 days prior to commencement of tree removal or ground disturbance. If no nesting birds are observed during the survey, the tree removal and/or ground disturbance may commence as planned. If nesting birds are observed during the survey, a non-disturbance buffer of 50 feet for passerine birds and 250 feet for raptors will be established. This buffer will remain in place until such a time as the young have been determined (by a qualified biologist) to have fledged.

8.8 Biological Impact 7: Aquatic Resources [less Than Significant with Mitigation]

The implementation of the proposed project would result in temporary impacts to a total of approximately 0.29 acre of waters of the U.S./State. Temporary impacts will be incurred to 0.02 acre of seasonal wetland, 0.21 acre of perennial wetland, 0.0003 acre of drainages, and 0.06 acre of navigable waters. These impacts would consist of temporary wetland fill to facilitate construction access, grading wetlands to create staging areas, and trenching/dewatering for pipeline installation. Adverse impacts to waters of the U.S./State would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.8.1 Mitigation Measure 7: Aquatic Resources

All impacts to waters of the U.S. will be temporary and result in no net loss. In locations where wetlands would be temporarily impacted to facilitate construction access and staging, appropriate BMPs (e.g., filter fabric and gravel) would be placed over the wetland. Following construction activities, all temporary fill would be removed, and all trenched and graded areas would be returned to pre-construction grades. All temporary impacted waters would be re-planted with appropriate native vegetation.

8.9 Biological Impact 8: Protected Trees [less Than Significant with Mitigation]

As the dominant habitat type on the project site is riparian woodland, it is assumed that implementation of the proposed project would result in unavoidable impacts to trees protected either by the County's tree ordinance or CDFW policy. Impacts to protected trees would be considered a significant adverse impact, pursuant to the CEQA. The mitigation measures presented below would reduce these impacts to a level considered less than significant pursuant to the CEQA.

8.9.1 Mitigation Measure 8: Protected Trees

A County-approved arborist will conduct a tree survey of the project site to document all existing trees and to determine impacts to trees that are protected by the County's tree ordinance as well as those that are protected due to their location within the riparian canopy (CDFW jurisdiction). Information regarding protected oak trees will be compiled in a tree survey report and submitted to the County. Information regarding riparian canopy impacts will be provided to CDFW. It is likely that tree replacement will be required to mitigate impacts from the removal of protected trees; this replacement ratio will be determined in coordination with the County and CDFW. In addition, all

trees not scheduled for removal or trimming will be protected from damage by the installation of exclusion fencing around the trees' dripline.

SECTION 9. REFERENCES

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LIST OF APPENDICES

APPENDIX A

Figures

Figure 1. Project Site Map

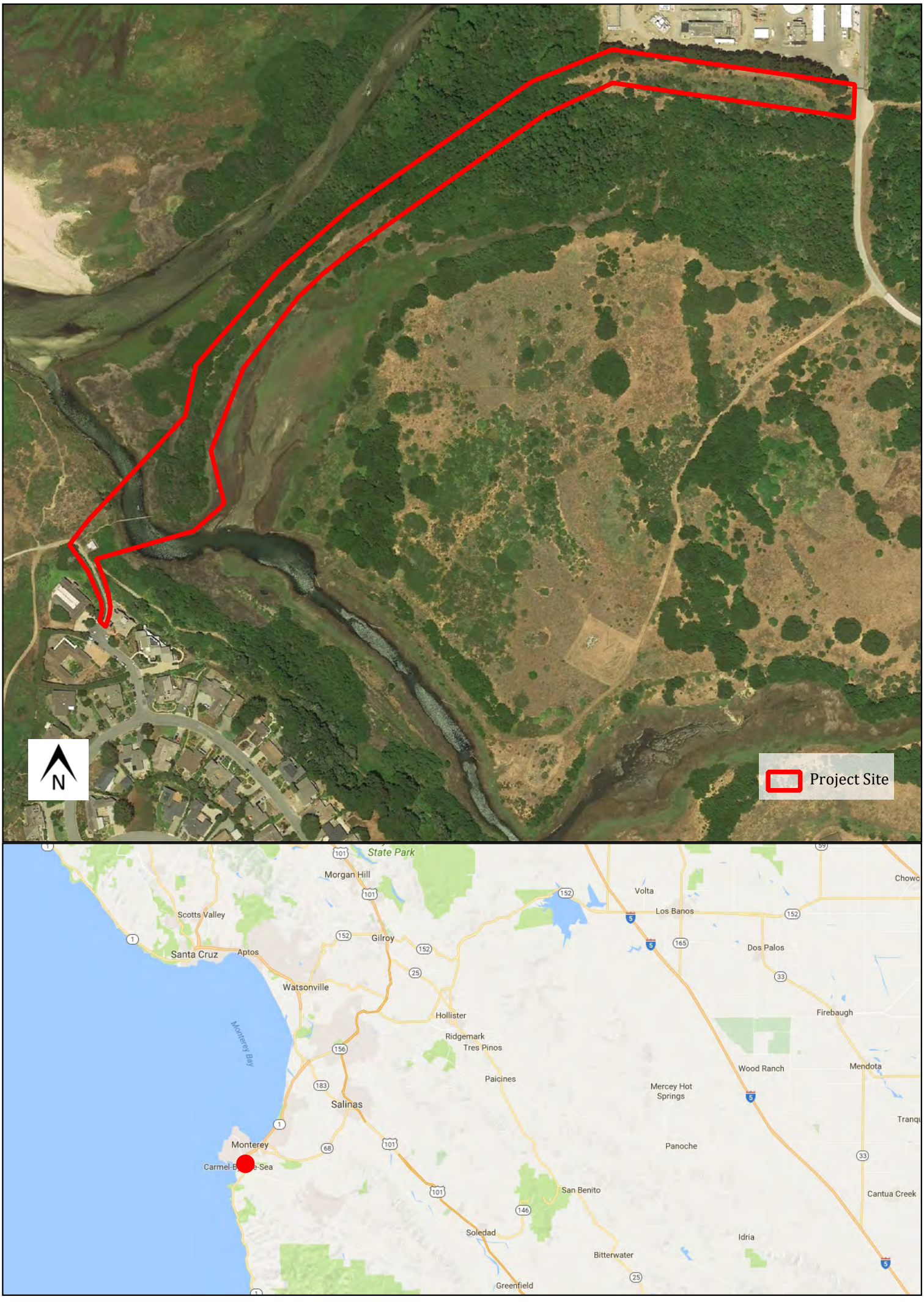
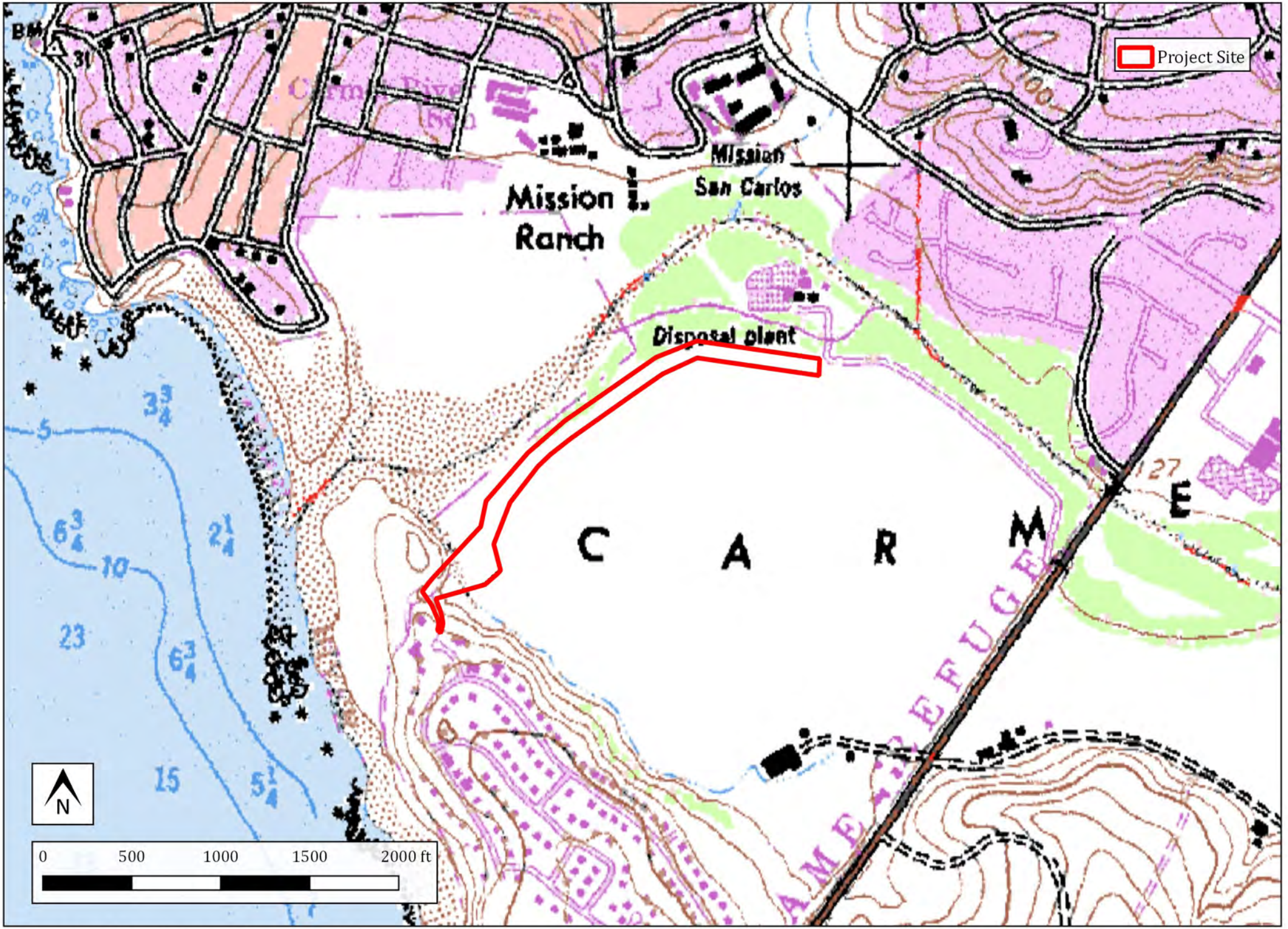


Figure 2. Project Site and Surrounding Area Aerial Map

Prepared by Johnson Marigot Consulting, LLC

January 8, 2018

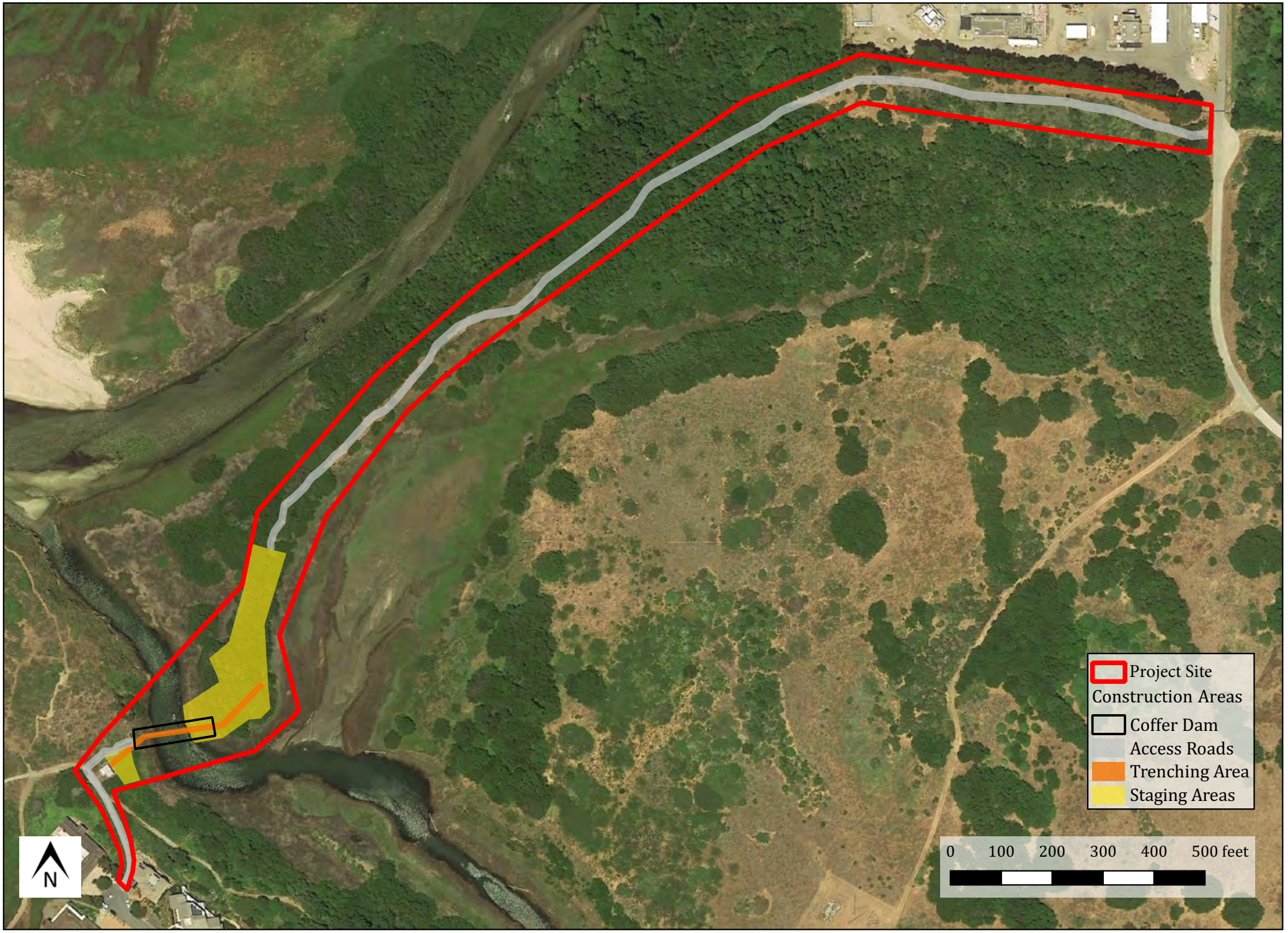
Figure 3. Historic Topographic Map of the Project Site and Surrounding Area



Prepared by Johnson Marigot Consulting, LLC

November 8, 2017

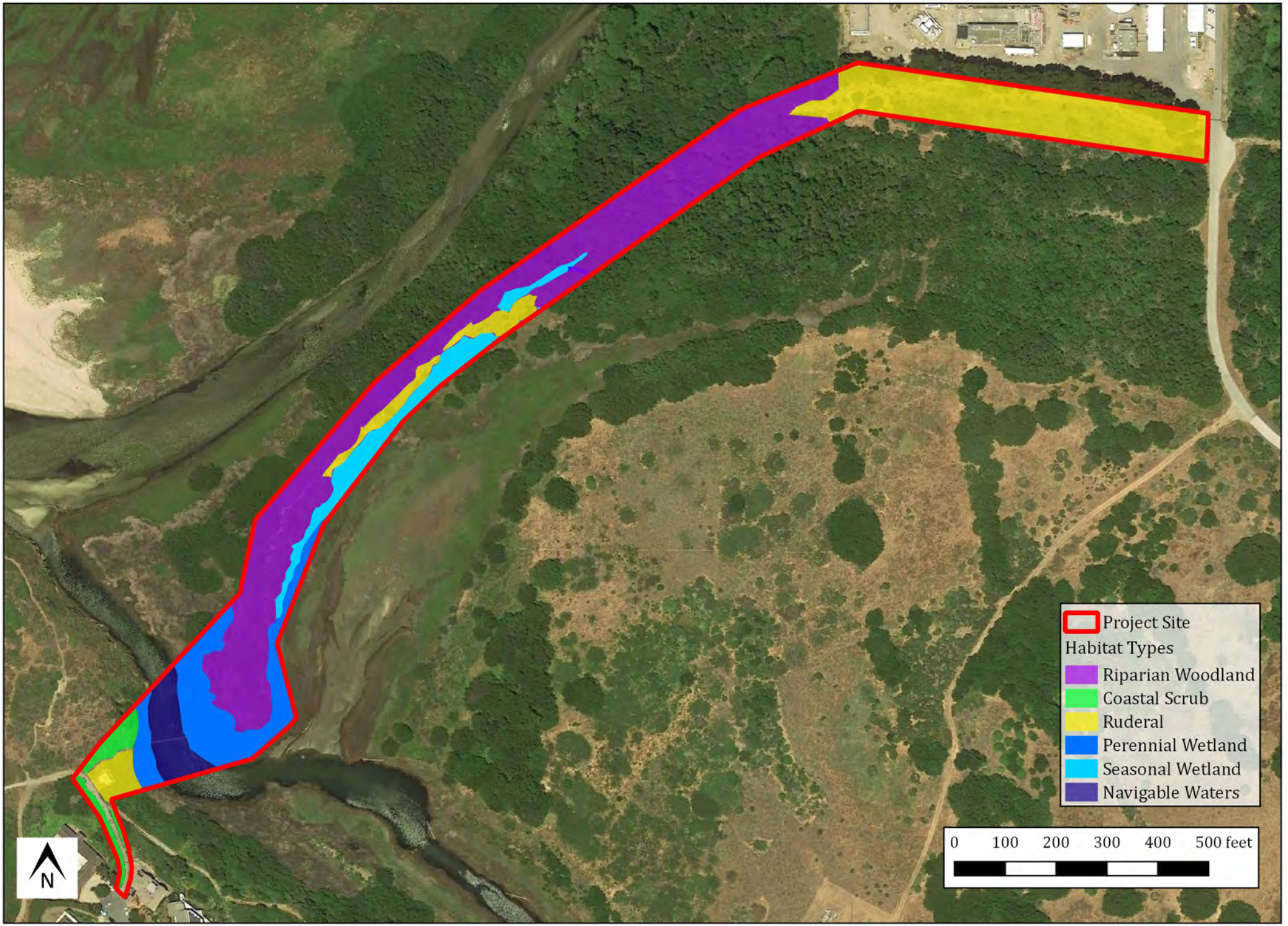
Figure 4. Proposed Locations of Work Areas



Prepared by Johnson Marigot Consulting, LLC

January 8, 2017

Figure 5. Project Site Habitat Map



Prepared by Johnson Marigot Consulting, LLC

January 8, 2018

APPENDIX B

Tables

Table 1. Special-Status Plant Species Known to Occur in the Vicinity of the Project Site

Scientific Name	Common Name	Status	Habitat Type/Components	Occurrence Information	Probably of Occurring on the Project Site
Allium hickmanii	**Hickman's Onion**	CNPS: Rank 1B.2	Closed-cone coniferous forest, maritime chaparral, coastal prairie, coastal scrub, and valley and foothill grassland	The closest record for this species occurs approximately 0.7 mile northeast of the project site (CNDDB Occurrence No. 5).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Arctostaphylos hookeri* ssp. *hookeri	**Hooker's Manzanita**	CNPS: Rank 1B.2	Sandy soils in closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub	The closest record for this species occurs approximately 1.2 miles south of the project site (CNDDB Occurrence No. 15).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Arctostaphylos montereyensis	**Toro manzanita**	CNPS: Rank 1B.2	Sandy soils in maritime chaparral, cismontane woodland, and coastal scrub	An historic record (1950) for this species occurs approximately 0.9 mile north of the project site (CNDDB Occurrence No. 25). This record is presumed extirpated.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Arctostaphylos pumila	**Sandmat Manzanita**	CNPS: Rank 1B.2	Sandy openings in closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub	An historic record (early 1900s) for this species occurs in the vicinity of the project site (CNDDB Occurrence No. 12). Exact location unknown. This record is presumed possibly extirpated.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Astragalus tener* var. *titi	**Coastal Dunes Milk-Vetch**	Federal: Endangered California: Endangered CNPS: Rank 1B.1	Sandy soils in coastal bluff scrub, coastal dunes, and mesic coastal prairie (often vernally mesic)	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Castilleja ambigua* ssp. *insalutata	**Pink Johnny-Nip**	CNPS: Rank 1B.1	Coastal prairie and coastal scrub	An historic record for this species occurs approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 6).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Chorizanthe pungens* var. *pungens	**Monterey Spineflower**	Federal: Threatened CNPS: Rank 1B.2	Sandy soils in cismontane woodland, maritime chaparral, coastal dunes, coastal scrub, and alley and foothill grassland	The closest record for this species occurs approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 45).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Clarkia jolonensis	**Jolon Clarkia**	CNPS: Rank 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland	An historic record (1903) for this species occurs in the vicinity of the project site (CNDDB Occurrence No. 15). Exact location unknown.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.

Collinsia multicolor	**San Francisco Collinsia**	CNPS: Rank 1B.2	Closed-cone coniferous forest and coastal scrub. Sometimes serpentinite	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Cordylanthus rigidus* ssp. *littoralis	**Seaside Bird's-Beak**	California: Endangered CNPS: Rank 1B.1	Sandy soils in closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub. Often at disturbed sites	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Delphinium hutchinsoniae	**Hutchinson's Larkspur**	CNPS: Rank 1B.1	Broadleafed upland forest, chaparral, coastal prairie, and coastal scrub	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Delphinium umbraculorum	**Umbrella Larkspur**	CNPS: Rank 1B.3	Chaparral and cismontane woodland	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Ericameria fasciculata	**Eastwood's Goldenbush**	CNPS: Rank 1B.1	Sandy openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub	Multiple historic records (1889-1913) for this species occur in the vicinity of the project site (CNDDB Occurrence No. 8). Exact location unknown.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Eriogonum nortonii	**Pinnacles Buckwheat**	CNPS: Rank 1B.3	Sandy soils in chaparral and valley and foothill grassland. Often at recently burned sites	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Erysimum menziesii	**Menzie's Wallflower**	Federal: Endangered California: Endangered CNPS: Rank 1B.1	Coastal dunes	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Fritillaria liliacea	**Fragrant Fritillary**	CNPS: Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. Often serpentinite	An historic record (1940) for this species occurs in the vicinity of the project site (CNDDB Occurrence No. 5). Exact location unknown.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Gilia tenuiflora* ssp. *arenaria	**Monterey Gilia**	Federal: Endangered California: Threatened CNPS: Rank 1B.2	Sandy openings in chaparral (maritime), cismontane woodland, coastal dunes, and coastal scrub	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.

Hesperocyparis goveniana (formerly *Cupressus goveniana*)	**Gowen Cypress**	Federal: Threatened CNPS: Rank 1B.2	Closed-cone coniferous forest and maritime chaparral	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Hesperocyparis macrocarpa	**Monterey Cypress**	CNPS: Rank 1B.2	Closed-cone coniferous forest	The closest record for this species occurs approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 1).	**None.** No suitable habitat occurs on or adjacent to the project site.
Horkelia cuneata* ssp. *sericea	**Kellogg's Horkelia**	CNPS: Rank 1B.1	Sandy or gravelly openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub	An historic record (1896) for this species occurs in the vicinity of the project site (CNDDB Occurrence No. 15). Exact location unknown.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Layia carnosa	**Beach Layia**	Federal: Endangered California: Endangered CNPS: Rank 1B.1	Coastal dunes and sandy coastal scrub	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Lupinus tidestromii	**Tidestrom's Lupine**	Federal: Endangered California: Endangered CNPS: Rank 1B.1	Coastal dunes	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Malacothamnus palmeri* var. *involucratus	**Carmel Valley Bush-Mallow**	CNPS: Rank 1B.2	Chaparral (rocky) and coastal scrub	An historic record (1955) for this species occurs approximately 2.6 miles east of the project site (CNDDB Occurrence No. 30). Exact location is unknown.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Malacothrix saxatilis* var. *arachnoidea	**Carmel Valley Malacothrix**	CNPS: Rank 1B.2	Rocky chaparral and coastal scrub	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Meconella oregana	**Oregon Meconella**	CNPS: Rank 1B.1	Coastal prairie and coastal scrub	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.

Microseris paludosa	**Marsh Microseris**	CNPS: Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland	An historic (1901) record for this species occurs in the vicinity of the project site (CNDDB Occurrence No. 4). Exact location unknown.	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Monardella sinuata ssp. ***nigrescens***	**Northern Curly-Leaved Monardella**	CNPS: Rank 1B.2	Sandy soils in coastal dunes, coastal scrub, chaparral (in Santa Cruz Co.), and lower montane coniferous forest (in the ponderosa pine sandhills in Santa Cruz Co.)	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Monolopia gracilens	**Woodland Woolythreads**	CNPS: Rank 1B.2	Serpentine soils in openings in broadleafed upland forest, chaparral, and North Coast coniferous forest. Also in cismontane woodland and valley and foothill grassland	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Pinus radiata	**Monterey Pine**	CNPS: Rank 1B.1	Closed-cone coniferous forest and cismontane woodland	The best estimate of the historic range of the species includes the area immediately surrounding the project site (CNDDB Occurrence No. 3).	**None.** No suitable habitat occurs on or adjacent to the project site.
Piperia yadonii	**Yadon's Rein Orchid**	Federal: Endangered CNPS: Rank 1B.1	Sandy soils in coastal bluff scrub, closed-cone coniferous forest, and maritime chaparral	The closest record for this species occurs approximately 0.7 mile northeast of the project site (CNDDB Occurrence No. 24).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Plagiobothrys uncinatus	**Hooked Popcornflower**	CNPS: Rank 1B.2	Sandy chaparral, cismontane woodland, and valley and foothill grassland	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.
Potentilla hickmanii	**Hickman's Cinquefoil**	Federal: Endangered California: Endangered CNPS: Rank 1B.1	Coastal bluff scrub, closed-cone coniferous forest, vernally mesic meadows and seeps, and freshwater marshes and swamps	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The southwestern portion of the project site comprised of coastal scrub habitat.
Rosa pinetorum	**Pine Rose**	CNPS: Rank 1B.2	Closed-cone coniferous forest and cismontane woodland	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.

Trifolium hydrophilum	**Saline Clover**	CNPS: Rank 1B.2	Marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The project provides suitable habitat, however, no clover species of any kind were observed during site surveys.
Trifolium polyodon	**Pacific Grove Clover**	California: Rare CNPS: Rank 1B.1	Mesic soils in closed-cone coniferous forest, coastal prairie, meadows and seeps, and valley and foothill grassland	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**Low.** The project provides marginal habitat, however, no clover species of any kind were observed during site surveys.
Trifolium trichocalyx	**Monterey Clover**	Federal: Endangered California: Endangered CNPS: Rank 1B.1	Sandy openings and burned areas in closed-cone coniferous forest	This species has been recorded on the same quad as the project site (CNPS 1-Quad Search - Monterey Quad).	**None.** No suitable habitat occurs on or adjacent to the project site.

Table 2. Special-Status Wildlife Species Known to Occur in the Vicinity of the Project Site

Common Name	Scientific Name	Status	Habitat Type/Components	Occurrence Information	Probably of Occurring on the Project Site
Black Legless Lizard	***Anniella pulchra* ssp. *nigra***	State: Species of Special Concern	Loose (sandy) soils, especially dunes, but including oak woodlands, chaparral, and along wooded stream edges	The closest record for this species occurs in the immediate vicinity of the project site (CNDDB Occurrence No. 22). Exact location is suppressed by CNDDB and is unavailable for public viewing.	**Moderate.** The project site provides suitable habitat for this species that is known to occur in close proximity.
Black Swift	***Cypseloides niger***	State: Species of Special Concern	Builds nests on steep, rocky, often moist, cliffs.	The closest record for this species occurs approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 16) at Point Lobos State Reserve.	**None.** No suitable habitat occurs on or adjacent to the project site.
California Brown Pelican	***Pelecanus occidentalis* ssp. *californicus***	State: Fully Protected	Nest in colonies on offshore islands that are free of mammalian predators and human disturbance.	The closest nest record for this species occurs approximately 2.1 miles southwest of the project site (CNDDB Occurrence No. 12) on a small island south of Point Lobos State Reserve.	**None.** No suitable habitat occurs on or adjacent to the project site.
California Red-Legged Frog	***Rana draytonii***	Federal: Threatened State: Species of Special Concern	Grassland and riparian habitats, with creeks/streams with plunge pools, or wetlands/ponds	This species has been observed on the project site (CNDDB Occurrence No. 472).	**High.** Records for this species occur on and adjacent to the project site.
California Tiger Salamander	***Ambystoma californiense***	Federal: Threatened State: Threatened	Grasslands adjacent to sufficiently deep freshwater seasonal wetlands and ponds	The closest record for this species occurs approximately 1.5 miles southwest of the project site (CNDDB Occurrence No. 16).	**None.** No suitable habitat occurs on or adjacent to the project site.
Coast Range Newt	***Taricha torosa* ssp. *torosa***	State: Species of Special Concern	Grasslands, woodlands, and forests adjacent to ponds, reservoirs, and streams	The closest record for this species occurs approximately 2.4 miles southeast of the project site (CNDDB Occurrence No. 70).	**Moderate.** The project site provides suitable habitat for this species.
Monarch (Overwintering Population)	***Danaus plexippus* ssp. *plexippus***	Federal: Candidate	Generally overwinter in stands of exotic eucalyptus (*Eucalyptus* sp.), Monterey cypress (*Hesperocyparis macrocarpa*), Monterey pine (*Pinus radiata*), and western sycamore trees (*Platanus racemosa*).	There are multiple recorded overwintering sites for this species within 3 miles of the project site.	**None.** No suitable habitat occurs on or adjacent to the project site.

Monterey Dusky-Footed Woodrat	***Neotoma macrotis* ssp. *luciana***	State: Species of Special Concern	Generally overwinter in stands of exotic eucalyptus (*Eucalyptus* sp.), Monterey cypress (*Hesperocyparis macrocarpa*), Monterey pine (*Pinus radiata*), and western sycamore trees (*Platanus racemosa*).	This species is presumed to occur on the project site.	**High.** Woodrat nests were observed on the project site during site surveys.
Smith's Blue Butterfly	***Euphilotes enoptes* ssp. *smithi***	Federal: Endangered	Coastal sand dunes and cliff/chaparral; feeds solely on seacliff buckwheat (*Eriogonum parvifolium*)	The closest record for this species occurs approximately 1.3 miles southeast of the project site (CNDDB Occurrence No. 57).	**None.** No suitable habitat occurs on or adjacent to the project site.
Steelhead (South-Central California Coast DPS)	***Oncorhynchus mykiss* ssp. *irideus***	Federal: Threatened	South-Central California coastal rivers, permanent coastal streams, and/or lagoons from the Pajaro River (Santa Cruz Co) to the Santa Maria River (San Luis Obispo Co)	This species is known to occur in the Carmel River and the Carmel River Lagoon (CNDDB Occurrence No. 24).	**High.** Records for this species occur on and adjacent to the project site.
Western Pond Turtle	***Emys marmorata***	State: Species of Special Concern	Calm waters including streams and pools, with vegetated banks and log or rock basking sites	This species has been observed on the project site (CNDDB Occurrence No. 1108).	**High.** Records for this species occur on and adjacent to the project site.
White-tailed Kite	***Elanus leucurus***	California Fully Protected	Forages in grasslands, nests in proximally located trees with dense canopy	This species was observed on the project site during site surveys.	**High.** This species has been observed on the project site.

APPENDIX C

Calle la Cruz Pipeline Replacement Project Draft Site Plan

CALLE LA CRUZ FORCE MAIN REPLACEMENT PROJECT

CARMEL AREA WASTEWATER DISTRICT
CARMEL, CALIFORNIA

REGIONAL MAP

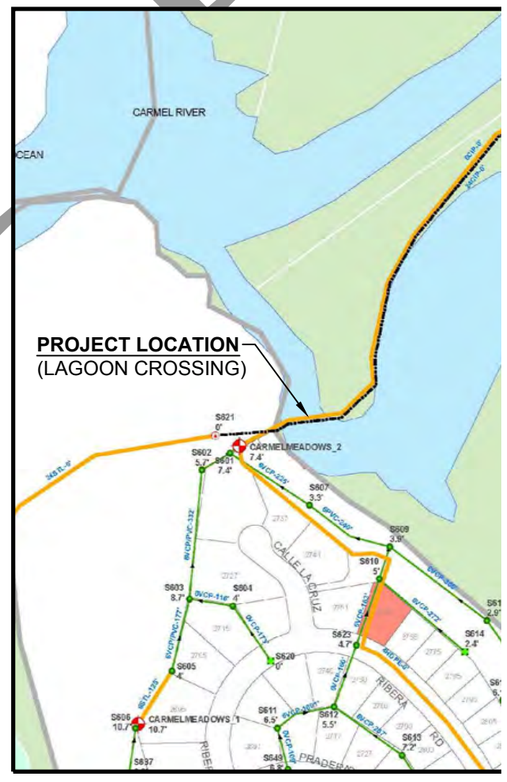
DRAWING INDEX

GENERAL SHEETS

G01	REGIONAL MAP, VICINITY MAP, DRAWING INDEX
G02	DEMOLITION PLAN AND PROFILE

CIVIL SHEETS

C01	PLAN AND PROFILE
C02	SECTIONS AND DETAILS



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NO.	REVISION	DATE	BY

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IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

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CARMEL AREA WASTEWATER DISTRICT
CARMEL, CALIFORNIA

Kennedy/Jenks Consultants
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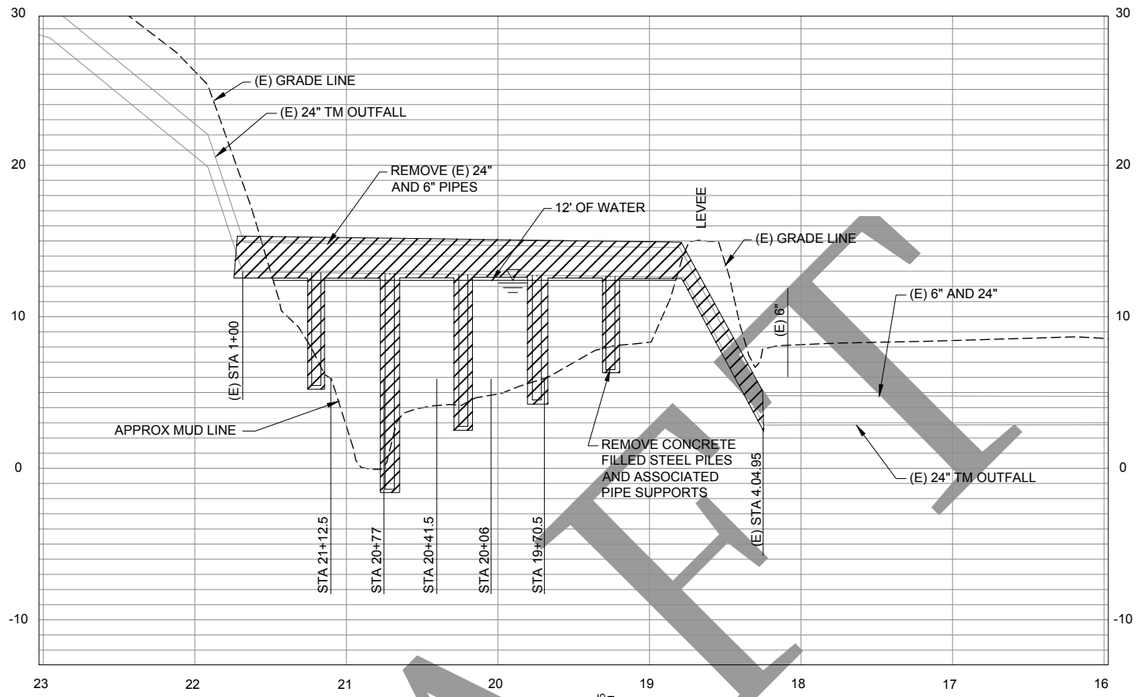

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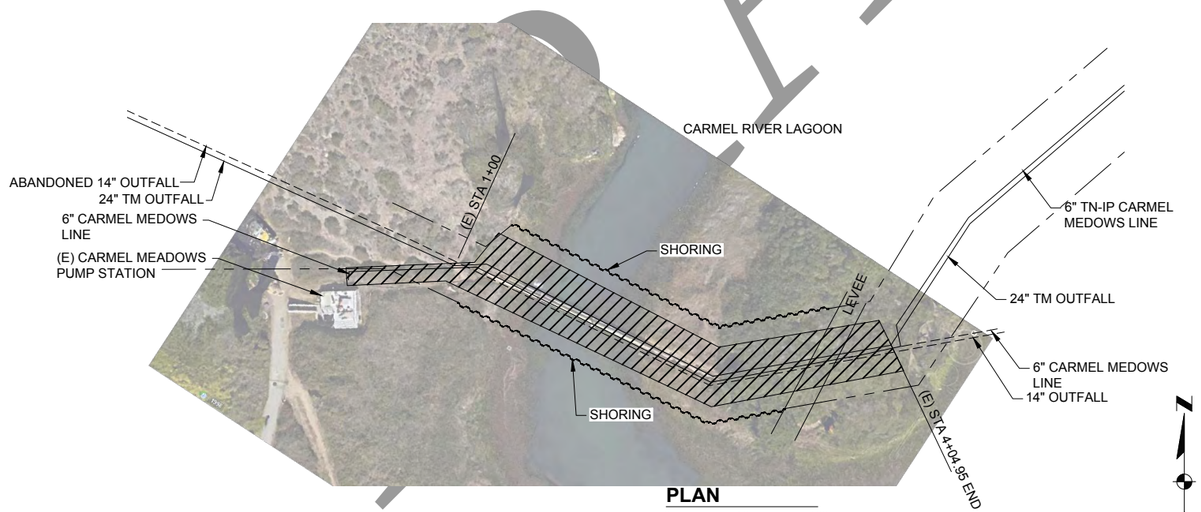

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CARMEL, CALIFORNIA

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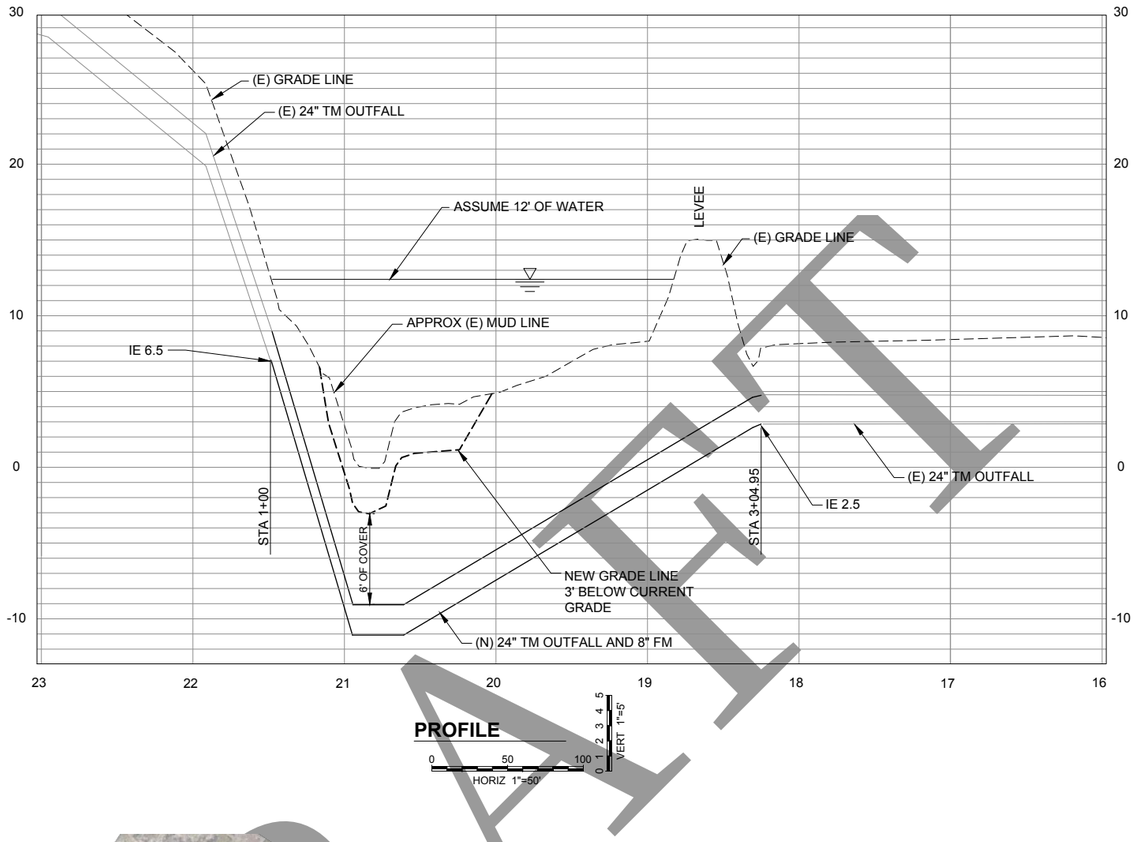

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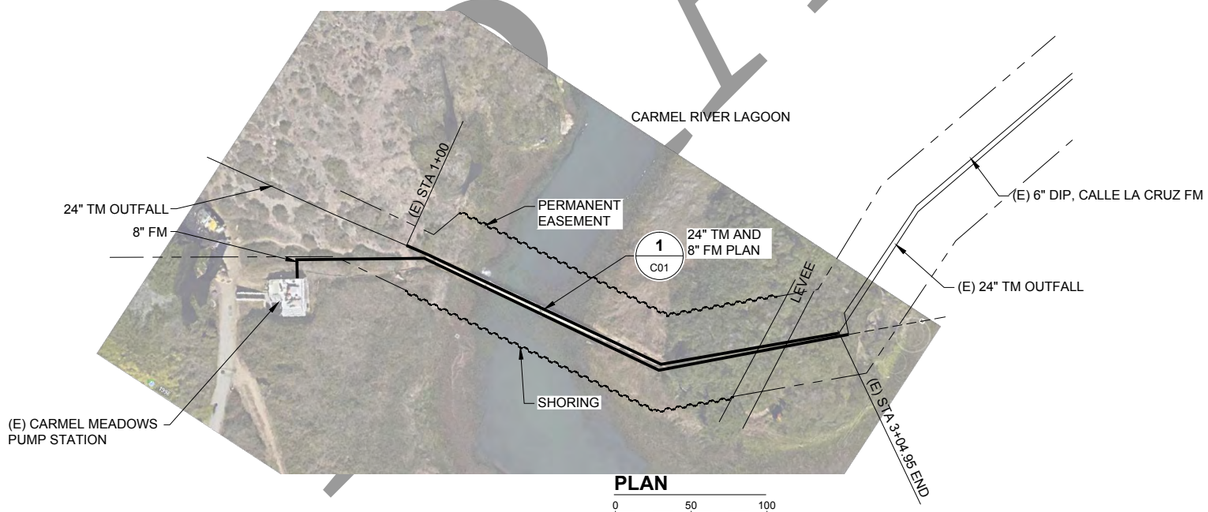

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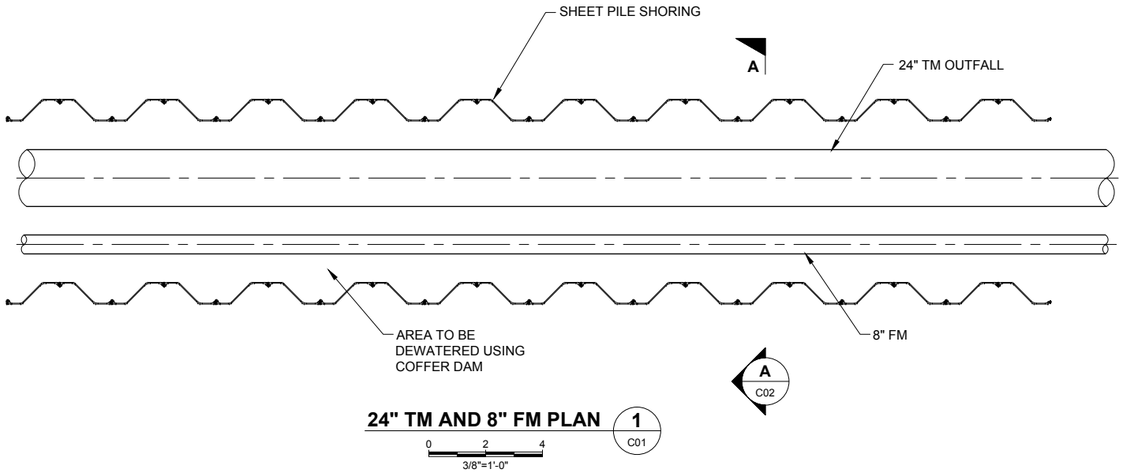

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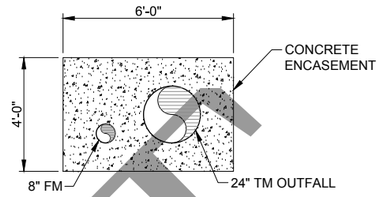

SECTION A C02

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STAGING AREA PLAN

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APPENDIX D

Plant Species Observed on the Project Site

Common Name	Species Name
Acacia	*Acacia* spp.
Pinegrass	*Calamagrostis rubescens*
California sagebrush	*Artemisia californica*
Slender wild oats	*Avena barbata*
Coyote brush	*Baccharis pilularis*
Black mustard	*Brassica nigra*
Ripgut brome	*Bromus diandrus*
Italian thistle	*Carduus pycnocephalus*
Santa Barbara Sedge	*Carex barbarae*
Buckbrush	*Ceanothus cuneatus*
Poison hemlock	*Conium maculatum*
Dogwood	*Cornus sericea*
Bermudagrass	*Cynodon dactylon*
Tall flatsedge	*Cyperus eragrostis*
Salt grass	*Distichlis spicata*
Horseweed	*Erigeron canadensis*
Seaside golden yarrow	*Eriophyllum staechadifolium*
Blue gum	*Eucalyptus globulus*
Italian ryegrass	*Festuca perennis*
Fennel	*Foeniculum vulgare*
California coffeeberry	*Frangula californica*
Marsh gumplant	*Grindelia stricta* var. *angustifolia*
Rosilla	*Helenium puberulum*
Bristly ox-tongue	*Helminthotheca echioides*
Toyon	*Heteromeles arbutifolia*
Short-podded mustard	*Hirschfeldia incana*
Seaside barley	*Hordeum marinum*
Fleshy jaumea	*Jaumea carnosa*
Brown-headed rush	*Juncus phaeocephalus*
Bird's foot trefoil	*Lotus corniculatus*
Spotted ladysthumb	*Persicaria maculosa*
Dotted smartweed	*Persicaria punctata*
Cut-leaf plantain	*Plantago coronopus*
Narrow-leaved plantain	*Plantago lanceolata*
Fremont cottonwood	*Populus fremontii*
Silverweed	*Potentilla anserina* ssp. *pacifica*

Coast live oak	*Quercus agrifolia*
Current	*Ribes* sp.
California blackberry	*Rubus ursinus*
Curly dock	*Rumex crispus*
Ditchgrass	*Ruppia maritima*
Sandbar willow	*Salix exigua*
Arroyo willow	*Salix lasiolepis*
Elderberry	*Sambucus nigra*
Hardstem bulrush	*Schoenoplectus acutus*
Poison oak	*Toxicodendron diversilobum*

Appendix C: Hydrology and Water Quality Study

CALLE LA CRUZ FORCE MAIN PROJECT
CARMEL-BY-THE-SEA, CALIFORNIA

TECHNICAL SUMMARY OF HYDROLOGY AND WATER QUALITY IMPACTS AND MITIGATION MEASURES

SUBMITTED TO
Ms. Lauren Bingham
Johnson-Marigot Consulting, LLC.
88 North Hill Drive, Suite C
Brisbane, CA 94005

PREPARED BY
ENGEO Incorporated

January 17, 2018

PROJECT NO.
14271.000.000

ENGEO
Expect Excellence

Project No.
14271.000.000

January 17, 2018

Ms. Lauren Bingham
Johnson-Marigot Consulting, LLC
88 North Hill Drive
Brisbane, CA 94005

Subject: Calle La Cruz Force Main Project
Carmel by the Sea, California

TECHNICAL SUMMARY OF HYDROLOGY AND WATER QUALITY IMPACTS AND MITIGATION MEASURES

Dear Ms. Bingham:

At your request, we are pleased to submit this technical summary of hydrologic and water quality issues associated with the proposed Calle La Cruz Force Main project in Carmel-by-the-Sea, California. The objectives of this study are to outline minimization and mitigation measures to protect water quality and erosion hazards during construction and to outline long-term impacts to water quality and hydrology.

If you have any questions regarding this report, please do not hesitate to contact us.

Sincerely,

ENGEO Incorporated

Jonathan D. Buck, GE
jdb/rps/bvv

Paul C. Guerin, GE

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1.0 INTRODUCTION AND PROJECT DESCRIPTION

The Carmel Area Wastewater District (CAWD) proposes to replace a section of an existing aboveground, pile-supported 24-inch by 204-foot-long treated wastewater outfall, and a temporary 6-inch by 204-foot-long sewage force main that both span the south arm of the Carmel Lagoon ("the Lagoon"). The project area is located adjacent to the Carmel River where the river meets the sea immediately south of the town of Carmel-by-the-Sea, California (Figure 1). The pipelines are undergrounded on either side of the south arm of the Lagoon, and are located above ground over the Lagoon. The undergrounded portion of the pipelines have been determined to be in serviceable good condition and do not require replacement, while the portion of the pipelines spanning the Lagoon are damaged and need to be replaced.

The portions of the pipelines spanning the lagoon would be replaced with a below-ground (below the lagoon) 24-inch wastewater outfall pipe and an 8-inch sewage force main pipe. In order to install the new pipes under the bed of the Lagoon, construction would necessitate trenching and installation of a cofferdam across the south arm of the Carmel Lagoon, resulting in temporary impacts to both navigable waters and perennial wetlands bordering the south arm of the Lagoon (Figure 2).

The CAWD owns a 10-foot easement along the length of the pipelines. In order to access the pipeline for construction equipment, improvements would be necessary to existing access roads to the north and south of the lagoon. Improvements include clearing and grubbing of vegetation to widen the access roads to 15 feet across, placement of temporary fill in a seasonal wetland, and drainage. Staging areas would also be cleared and graded to the north and south of the lagoon for construction access, staging and operation of construction equipment, and soil stockpiles. The perennial wetland at the western edge of the northern staging area would be temporarily filled to accommodate a crane pad.

The objectives of this study are:

1. To summarize the hydrology, geomorphology and fluvial hydraulics of the Carmel Lagoon in the area where the project is proposed.

2. To outline mitigation countermeasures that will reduce impacts of the proposed project associated with hydrology and water quality of the Carmel Lagoon and surrounding areas to less than significant levels.

2.0 HYDROLOGIC SETTING

The Carmel River Watershed is located within the California Coast Ranges Geomorphic Province. The entire drainage area of the watershed is located on the western slopes of the Sierra De Salinas. The northwesterly flowing Carmel River originates approximately 35 miles upstream from Carmel Bay at an elevation of 3,500 feet above sea level. Streamflow in the Carmel River is directly attributed to rainfall. According to the National Weather Service, average annual precipitation is estimated between 18 to 20 inches. Like many other watersheds along the Central California Coast, the Carmel River watershed has a typical coastal California wet-dry seasonal pattern that can vary significantly. More than 90 percent of the annual rainfall typically occurs over the watershed during the six month period between November and April.

Before entering the Pacific Ocean, the Carmel River enters a Lagoon, located at the bottom of the watershed. The Lagoon and associated wetlands, which are located immediately south of the City of Carmel-by-the-Sea, cover an area of approximately 100 acres. The Lagoon is generally not connected to the ocean during times of very low or zero streamflow, when ocean waves build a barrier beach (sandbar) across the mouth of the Lagoon and close the outflow channel.

Therefore, the lagoon is subject to seasonal fluctuations depending on how connected it is to the ocean. When river inflow is relatively low and the Lagoon is not open to the ocean, a dynamic equilibrium is reached between streamflow and groundwater inflows, outflow through the barrier beach, evapotranspiration, and ocean wave overtopping. In summer, this leads to lower water surface elevations. In the fall, prior to opening, potentially abrupt increases in water surface elevations can occur due to overtopping as rainfall begins.

As streamflow increases in the fall and early winter, Lagoon water surface elevations can rise to flood stage depending on precipitation patterns. When flooding does occur, infrastructure along the northern edge of the Lagoon and within the Lagoon floodplain are threatened with flooding before the sandbar would typically open naturally. This dynamism results in seasonal changes in turbidity and salinity in the lagoon in terms of water quality, as well as seasonal fluctuation of surface water elevations.

The Central Coast Regional Water Quality Control Board (RWQCB) in their Basin Plan (RWQCB, 2016) has designated beneficial uses of the Carmel River as the following: municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); groundwater recharge (GWR); freshwater replenishment (FRESH); water contact recreation (REC1); non-contact water recreation (REC2); commercial and sport fishing (COMM); warm fresh water habitat (WARM); cold water habitat (COLD); wildlife habitat (WILD); preservation of biological habitats of special significance (BIOL); rare, threatened, or endangered species (RARE); migration of aquatic organisms (MIGR); and spawning, reproduction, and/or early development (SPWN). Beneficial uses of the surface water from the Carmel River Estuary include the following: GWR; REC1; REC 2; COMM; WILD; COLD; MIGR; SPWN; BIOL; RARE; and estuarine habitat (EST)(RWQCB, 2016). General water quality objectives exist for each of the beneficial uses identified. Surface water quality objectives have also been identified for the Carmel River for Total Dissolved Solids, Chlorine, Sulfate, Boron and Sodium.

In terms of baseline hydrologic data related to the south arm of the Lagoon, The Central Coast Watershed Studies Team (CCoWS) monitored water quality in the Lagoon between 2004 and 2007. Salinity, dissolved oxygen, and temperature in the Lagoon vary seasonally and with depth. The CCoWS noted that the topography and lack of mixing in the Lagoon creates a layer of isolated saltwater in the bottom of the south arm of the Lagoon where the project is proposed. Although the south arm of the Lagoon does not directly connect to the Carmel River in low to moderate flow events, it can receive river flows in extreme rainfall events when overtopping of the banks occurs upstream. Schaaf and Wheeler estimated 100-year recurrence interval velocities in the south arm of the Lagoon near the project site as between 2.4 and 4.5 feet per second.

According to a geotechnical report prepared by GTO Inc., surficial slopes upslope of the proposed crossing consist of artificial fill, as well as colluvium and floodplain deposits. Soils consists generally of loose sands intermixed with clay and silt material and should be considered to be potentially fast raveling during rainstorm events. Groundwater elevations are generally between 3 to 8 feet below ground surface upslope of the Lagoon. Groundwater conditions are expected to

vary depending on factors such as weather conditions, time of year, and water surface levels in the Lagoon.

The proposed project includes construction through the Lagoon, which will require temporary dewatering, trenching of new utilities, and removal of existing structures within the wetted perimeter of the Lagoon. The project will also require temporary access on relatively steep slopes located on either side of the Lagoon to stage equipment and perform the work.

3.0 REGULATORY SETTING

3.1 FEDERAL REGULATIONS

3.1.1 FEMA and the National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from, and mitigating against disasters. FEMA is responsible for determining flood elevations and floodplain boundaries based on USACE and approved agencies' studies; for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters; and for providing disaster assistance to states, communities and individuals. FEMA prepares and distributes the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program. These maps identify the locations of special flood hazard areas, including the 100-year flood zone.

The Flood Insurance and Mitigation Administration (FIMA), a component of FEMA, manages the National Flood Insurance Program (NFIP). The NFIP consist of three components: flood insurance; floodplain management; and flood hazard mapping. Nearly 20,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary. In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP also identifies and maps the nation's floodplains.

3.1.2 Section 404 Clean Water Act (CWA)

Section 404 of the Clean Water Act (CWA), administered by the USACE, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Per Section 404, a permit is required prior to discharge of fill material into waters of the United States, unless the activity is exempt from Section 404 regulation.

Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands. Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. 328.3(b), 51 F.R. 41250, November 13, 1986]. Wetlands can be perennial or intermittent, and isolated or adjacent to other waters.

Other waters are non-tidal, perennial, and intermittent watercourses and tributaries to such watercourses [33 C.F.R. 328.3(a), 51 F.R. 41250, November 13, 1986].

3.1.3 Rivers and Harbors Act (RHA) of 1899

The RHA, also administered by the USACE, prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the U.S. Administration of section 9 has been delegated to the Coast Guard ((33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat. 1151).

3.1.4 Water Pollution Control and Storm Water Management

The National Pollutant Discharge Elimination System (NPDES) Permit Program, also authorized by the CWA, controls water pollution by regulating point sources (discrete conveyances such as pipes or constructed ditches) that discharge pollutants into waters of the United States. The implementation of this federal program has been charged to the State of California for implementation through the State Water Resource Control Board (SWRCB) and RWQCBs. In California, NPDES permits are also referred to as waste discharge requirements (WDRs) that regulate discharges to waters of the United States.

3.1.5 National Pollution Discharge Elimination System Construction General Permit

Construction activities on one acre or more or that disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Construction Permit (SWRCB Order No. 2009-09-DWQ; Modified 2010-0014-DWQ). The State Board established the General Construction Permit program to reduce surface water impacts from construction activities. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation.

The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The Construction General Permit requires the preparation and implementation of a SWPPP for construction activities. The SWPPP must be prepared before the construction begins. The SWPPP must include specifications for best management practices (BMPs) that would need to be implemented during construction. BMPs are measures that are undertaken to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. Additionally, the SWPPP must describe measures to prevent or control runoff after construction is complete and identify the procedures for inspecting and maintaining facilities and other project elements. The required elements of a SWPPP include:

- Site description addressing the elements and characteristics specific to the site;
- Descriptions of BMPs for erosion and sediment controls;
- BMPs for construction waste handling and disposal;
- Implementation of approved local plans;
- Proposed post-construction controls; and
- Non-stormwater management.

Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing, and fueling. The RWQCB has identified BMPs in the California Stormwater Best

Management Practice Handbook (California Stormwater Quality Association, 2003) to effectively reduce degradation of surface waters to an acceptable level.

3.2 STATE REGULATIONS

3.2.1 Section 401 Clean Water Act

The State Water Resources Control Board (SWRCB) and its nine regional water boards (Regional Water Quality Control Boards) have been charged with the protection and enhancement of water quality in the state of California. Pursuant to Section 401 of the CWA and the Porter Cologne Water Quality Control Act (Porter Cologne), the Regional Water Quality Control Board (RWQCB) has authority to regulate discharges of fill and dredged material into Waters of the State. Pursuant to Porter Cologne, waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." This is generally taken to include all waters of the U.S., all surface waters not considered to be waters of the U.S. (non-jurisdictional wetlands), groundwater, and territorial seas (with territorial boundaries extending 3.0 nautical miles beyond outermost islands, reefs, and rocks and includes all waters between the islands and the coast).

3.3 MONTEREY COUNTY CODE

Chapter 16.08 of the Monterey County Code identifies rules and regulations to control all grading, including excavations, fills and embankments, and establishes the procedures for the issuances of grading permits. Chapter 16.08 is intended to minimize erosion as a result of ground disturbing activities.

Chapter 16.12 (Erosion Control) of the Monterey County Code sets forth required provisions for project planning, preparation of erosion control plans, runoff control, land clearing, and winter operations; and establishes procedures for administering those provisions. The code requires that specific design considerations be incorporated into projects to reduce the potential for erosion and that an erosion control plan be approved by the County prior to initiation of grading activities.

Chapter 16.16 of the Monterey County Code identifies rules and regulations to control development within the floodplain. Chapter 16.16 is intended to promote public health, safety, and general welfare, and to minimize public and private losses due to flood conditions. Chapter 16.16 consists of regulations to: 1) restrict and/or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities; 2) require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; 3) control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters; 4) control filling, grading, dredging, and other development which may increase flood damage; and 5) prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

4.0 IMPACTS ANALYSIS AND MITIGATION MEASURES

Implementation of the project in the construction and operations phase could have significant impacts to the water quality and hydrology of the estuary. This hydrology and water quality analysis evaluates whether the proposed project construction activities would have the potential to degrade existing water quality, increase erosion, modify existing drainage patterns, exceed

capacities of existing drainage facilities, deplete groundwater supplies, or interfere with recharge, based on whether the project would violate any water quality standards or waste discharge requirement. In general, water quality impacts would be significant if a water quality standard were to be exceeded or a beneficial use were to be impacted due to changes in water quality or hydrology caused by implementation of the project.

In terms of this analysis, the majority of potential water quality impacts would be created during the construction phase. The project intends to replace an existing pipe system transmitting sanitary sewer flows over the south arm of the Lagoon with an underground system. After completion, the project should decrease potential impacts to the water quality of the Lagoon if a breach of the pipe system were to occur since the new pipe will be underground instead of over the Lagoon. The project also proposes to remove existing pier obstructions in the channel, which should increase potential mixing of estuarine waters and ultimately improve water quality in the south arm of the Lagoon. Lastly, by removing the above ground pipe, the ultimate imperviousness of the site would be slightly decreased.

Regulatory measures are referenced that will be incorporated into the project planning documents where potential significant impacts to hydrology and water quality may occur.

4.1 DEGRADE EXISTING WATER QUALITY

Implementation of the project during construction and in the operations phase could degrade the existing water quality of the estuary. During the construction phase of the project, the project would remove existing concrete-filled steel piles which support the existing pipe structure over the Lagoon, and whose foundations are in the bottom estuary below the mudline. Due to geotechnical constraints, the project would use trenching methods to install the two new pipelines below the mudline of the estuary. Both of these activities could temporarily increase turbidity of the estuary and potentially impact other indicators of water quality. The trenching activities will also require dewatering of a portion of the Lagoon, which could affect water quality in the upstream portion of the south arm of the Lagoon. Construction activities at all sites could also result in the accidental release of hazardous construction chemicals, such as adhesives, solvents, lubricants, and fuels. If not managed appropriately, these chemicals could adhere to soil particles, become mobilized by rain or runoff, and flow to downstream water bodies, including Carmel Bay/Pacific Ocean, degrading water quality.

Lastly, if a breach were to occur after the project is finished, wastewater could potentially enter the estuary or groundwater below the estuary through the proposed force main or outfall lines, which could potentially impact and degrade the water quality of the estuary system.

4.1.1 Regulatory Measure 1 – Implementation of Storm Water Pollution Prevention Plan

Prior to construction of the proposed project, the applicant would demonstrate compliance with the State Water Resources Control Board Construction General Permit, including implementation of erosion and stormwater quality control measures set forth in a Stormwater Pollution Prevention Plan (SWPPP) that would prevent substantial adverse effects on water quality during construction. Requirements for SWPPP are discussed in the regulatory section above. The SWPPP would be prepared by a Qualified SWPPP Developer (QSD).

Measures included in the SWPPP would reduce construction-related potential impacts associated with the construction phase of the project to a less-than-significant level. In addition, there would

be a less-than-significant impact based on the compliance with regulatory requirements that insure that there would be a lack of substantial pollutants released or disposed at the sites, and the low amount of flow that would carry any pollutants such that contamination of groundwater resources are not expected. The proposed project would have a less-than-significant impact on water quality associated with increased inadvertent releases of toxic chemicals during general construction activities. No additional mitigation measures for general construction practices would be required.

4.1.2 Regulatory Measure 2 – Implementation of Construction Diversion and Dewatering Plan

Because of the nature of the dewatering operation associated with the proposed project, the applicant would also separately demonstrate that the implementation of a temporary dewatering operation would not adversely impact Lagoon water quality, nor adversely impact biological resources in the south of the Lagoon. We understand that the applicant intends to discharge any excess construction water from the dewatering operation into the force main sanitary sewer system. The excess water will then be subsequently delivered to their treatment plant, processed and discharged under their existing NPDES permit to operate the facility. Additional information would be set forth in a Construction Diversion and Dewatering Plan (DDP) approved by the Central Coast Regional Water Quality Control Board as well as other Federal and State agencies that regulate biological resources associated with the Lagoon. The Construction DDP would be prepared by a licensed Civil Engineer in the State of California and include the following:

- Limits of dewatering operation
- Height and length of cofferdams based on estimated Lagoon water surface elevations during time of operation.
- Measures to reduce turbidity during installation of temporary cofferdams.
- General pumping and connection diagrams.
- Estimates of quantities to be discharged.
- Capacity and percentage of capacity used for dewatering estimates.
- Contingency plans for overtopping and pumping failure.
- Additional connectivity measures as required to reduce water quality impacts in the upper portion of the south arm of the Lagoon.

Measures included in the DDP would reduce construction related potential impacts associated with the construction dewatering phase of the project to a less-than-significant level.

4.1.3 Regulatory Measure 3 – Section 401 and 404 Clean Water Act

Due to the proposed project's permanent impacts in the Lagoon, a regulated water of the State, under state and Federal law the project will also demonstrate compliance with CWA Sections 404 and 401, and other waste discharge requirements of the Porter-Cologne Water Quality Control Act. This will take place upon consultation with the USACE and RWQCBs during the project permitting phase in order to receive a federal and state level clearance prior to performing the project. These applications will specifically evaluate the permanent proposed alignment, type and thickness of pipe casing, and any potential long term monitoring measures required for the project to conform to state and Federal Law.

Measures included 401 and 404 permitting process would reduce permanent potential impacts associated with the implementation and operational phases of the project to a less-than-significant level.

4.2 INCREASE EROSION

Implementation of the project during construction could increase erosion in overland areas caused by earthmoving activities during construction. In general, water quality impacts would be significant if a water quality standard were to be exceeded or a beneficial use were to be impacted due to changes in water quality caused by erosion and/or siltation.

Earthmoving activities associated with proposed project construction would temporarily alter existing drainage patterns to some degree. Exposed soil from excavated areas, stockpiles, and other areas where ground cover would be removed could be inadvertently transported off-site by wind or water. If not properly managed, this could increase sediment loads in surface water bodies, some of which are located on-site (e.g., the Lagoon), and adversely impact the surface water quality, thereby adversely affecting water quality and designated beneficial uses.

4.2.1 Regulatory Measure 4 – Grading Permit

In addition to SWPPP measures outlined in Regulatory Measure 1, prior to construction of the project, the applicant would also receive a grading permit from Monterey County. The grading permit will require that the applicant submit an erosion and sediment control plan specifically describing construction BMPs that will be implemented to reduce water quality impacts associated with grading and stockpiling activities to less-than-significant levels.

4.3 MODIFY EXISTING DRAINAGE PATTERNS

Implementation of the project could modify existing drainage patterns to some degree if finished project grades were altered during construction. However, the project does not intend to alter finished grades in areas where temporary construction areas are proposed to any significant degree. Therefore impacts related to modification of existing drainage patterns are considered to be insignificant.

4.4 EXCEED CAPACITIES OF EXISTING DRAINAGE FACILITIES

Implementation of the project could exceed capacity of existing drainage facilities if post-project imperviousness was increased as a result of the project leading to greater rainfall runoff, which could potentially raise site water surface elevations during rainstorm events. However, the project does not intend to increase imperviousness of the site after implementation. Rather, the undergrounding of the pipeline system will result in a slight reduction of site imperviousness. Also by removing the piles that support the existing transmission structure in the south arm of the Lagoon, the capacity of that portion of the Lagoon to transmit flood flows will also increase. Pier removal would also slightly lower water surface elevations in the Lagoon as well by removing obstructions. Therefore, impacts related to modification of existing drainage patterns or flooding are considered to be insignificant.

4.5 DEPLETE GROUNDWATER SUPPLIES

Implementation of the project could significantly deplete groundwater supplies if long-term groundwater use would occur as a result of implementation of the project. Construction of the proposed project would result in a limited, temporary dewatering operation on either side of the proposed pipe undergrounding in the south arm of the Lagoon. It is anticipated that the minimal amount of water that will be pumped from the excavation while the cofferdam system is in place will originate from groundwater seepage from areas adjacent to where dewatering is being performed. However, the amount of groundwater intrusion is anticipated to be minor in order for the dewatering operation to be successful. No groundwater use is associated with operation of the proposed project. Therefore, impacts related to depletion of groundwater supplies are considered to be insignificant.

4.6 INTERFERE WITH GROUNDWATER RECHARGE

Implementation of the project could substantially interfere with groundwater recharge if post-project conditions significantly modified areas on site where existing surface/groundwater exchanges take place. In the operational phase of the project, the undergrounding of the pipe system would create a potential barrier underneath and on the sides of the Lagoon where some groundwater recharge is likely occurring. However, the size of the permanent trench would be approximately 6 feet wide, which would be insignificant as compared to the entire south arm of the Lagoon where groundwater/surface water interactions are occurring. Therefore, impacts related to interference with existing groundwater recharge patterns are considered to be insignificant.

5.0 CONCLUSION

In closing, we recommend several mitigation measures be incorporated into project implementation to address hydrology and water quality considerations related to requirements from the State Water Resources Control Board, the Central Coast Regional Water Quality Control Board, and Monterey County.

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this report to developers, contractors, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this report are solely professional opinions.

The professional staff of ENGEO Incorporated strives to perform its services in a proper and professional manner with reasonable care and competence but is not infallible. There are risks of earth movement and property damages inherent in land development. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our work.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's work. This document must not be subject to unauthorized reuse, that is, reuse without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to

evaluate the document's applicability given new circumstances, not the least of which is passage of time. Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's work. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include onsite construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims, including, but not limited to claims arising from or resulting from the performance of such services by other persons or entities, and any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

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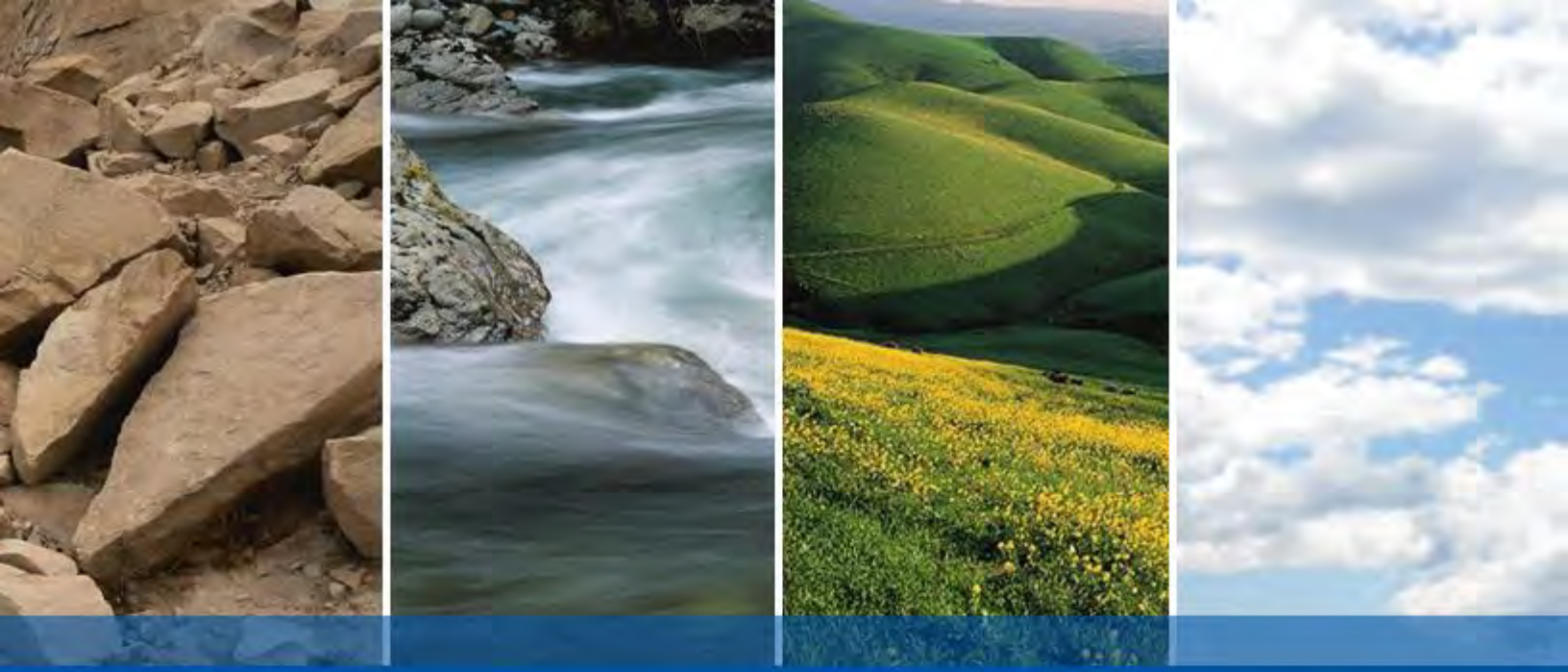

FIGURES

N

0 FEET 2000

0 METERS 1000

BASE MAP SOURCE: GOOGLE EARTH MAPPING SERVICE

ENGEO Expect Excellence

VICINITY MAP

CALLE LA CRUZ PROJECT

CARMEL BY THE SEA, CALIFORNIA

PROJECT NO.: 14271.000.000		FIGURE NO. 1
SCALE: AS SHOWN		
DRAWN BY: SRP	CHECKED BY: JJT	

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ORIGINAL FIGURE PRINTED IN COLOR

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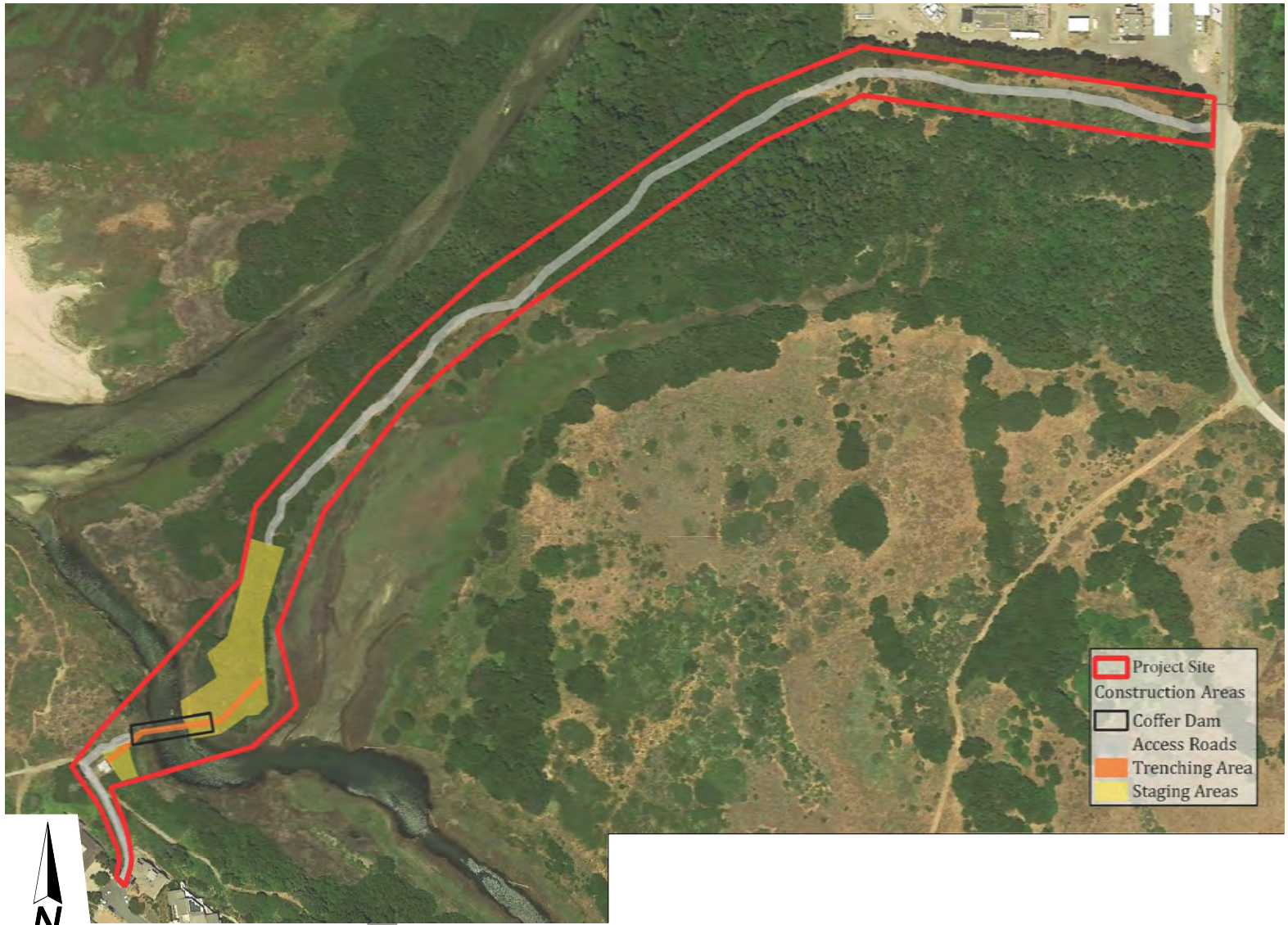

0 FEET 300
0 METERS 150

BASE MAP SOURCE: JOHNSON MARIGOT CONSULTING, LLC

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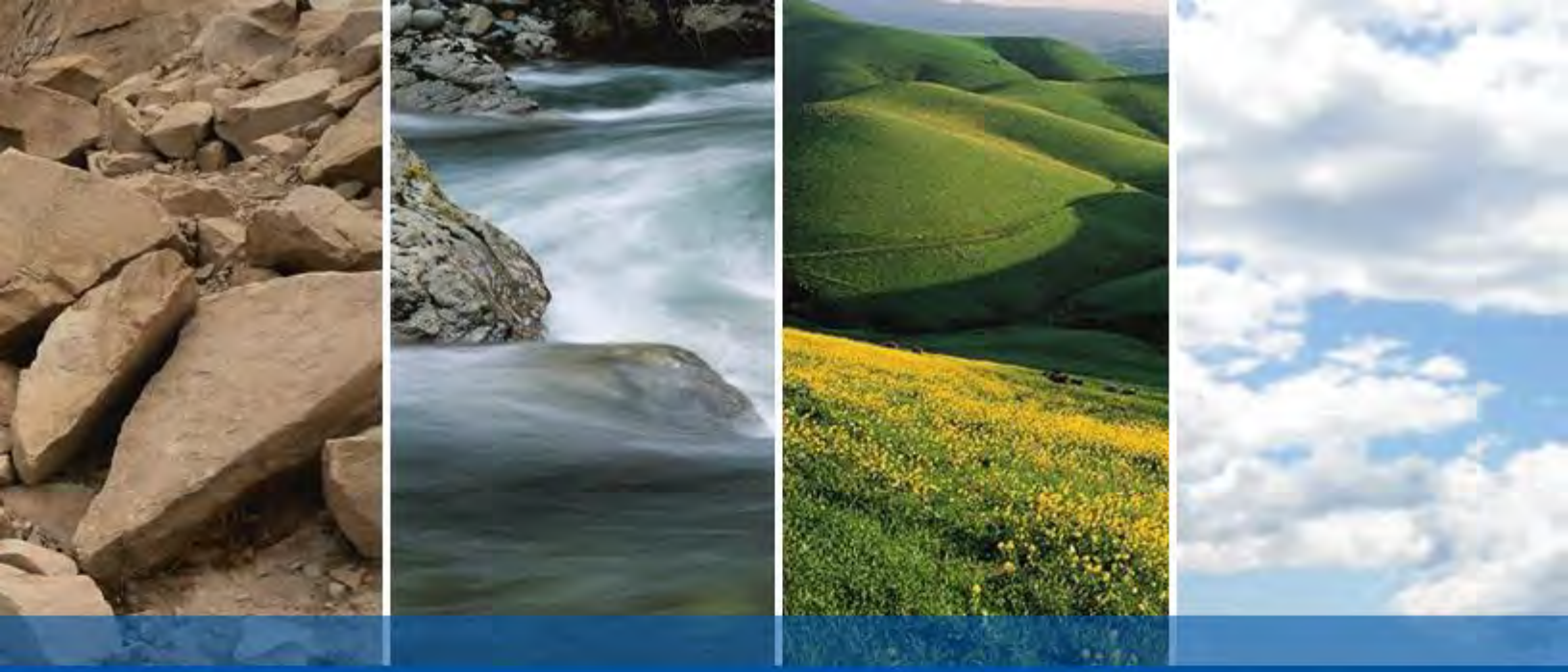
PROPOSED LOCATION OF WORK AREAS
CALLE LA CRUZ PROJECT
CARMEL BY THE SEA, CALIFORNIA

PROJECT NO.: 14271.000.000
SCALE: AS SHOWN
DRAWN BY: SRP
CHECKED BY: JJT

FIGURE NO. 2

ORIGINAL FIGURE PRINTED IN COLOR



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SAN FRANCISCO

SAN JOSE

OAKLAND

LATHROP

RENO

ROCKLIN

SANTA CLARITA

IRVINE

CHRISTCHURCH

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Appendix D: Noise Calculations

Carmel Area Wastewater District
Calle La Cruz Project

Noise Appendix

Technical Information

Noise Measurement Locations Figure

RCH GROUP
11060 WHITE ROCK ROAD, SUITE 150-A RANCHO CORDOVA, CA 95670 (916)782-4427

Noise Technical Information

Noise Descriptors

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; day–night 24-hour average sound level (Ldn)[2] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[3], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Table 1 identifies decibel levels for common sounds heard in the environment.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Sensitive Receptors

Noise sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes and recreation areas.

Temporary Construction Noise

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction. **Table 2** shows typical noise levels from construction equipment.

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[1]The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[2]Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

[3]CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

Table 1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

Groundborne Vibration

Construction operations have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. The ground vibration levels associated with various types of construction equipment are summarized in **Table 3**. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels.

At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. For most structures, a peak particle velocity (PPV) threshold of 0.5 inches per second (in/sec) or less is sufficient to avoid structural damage. The Federal Transit Administration recommends a PPV threshold of 0.5 in/sec for residential and commercial structures, 0.25 in/sec for historic buildings and archaeological sites, and 0.2 in/sec for non-engineered timber and masonry buildings (FTA 2006).

Table 2: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Air Compressor	78
Backhoe	78
Concrete Mixer Truck	79
Concrete Pump Truck	81
Crane	81
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Grader	85
Jackhammer	89
Loader	79
Paver	77
Pickup Truck	75
Vibratory Hammer	82 – 96*

Source: Federal Highway Administration, Roadway Construction Noise Model User's Guide, 2006

*Source: Jim Laughlin, Washington State Department of Transportation, Airborne Noise Measurements during Vibratory Pile Installation – Technical Memorandum, 2010

Table 3: Representative Vibration Source Levels for Construction Equipment

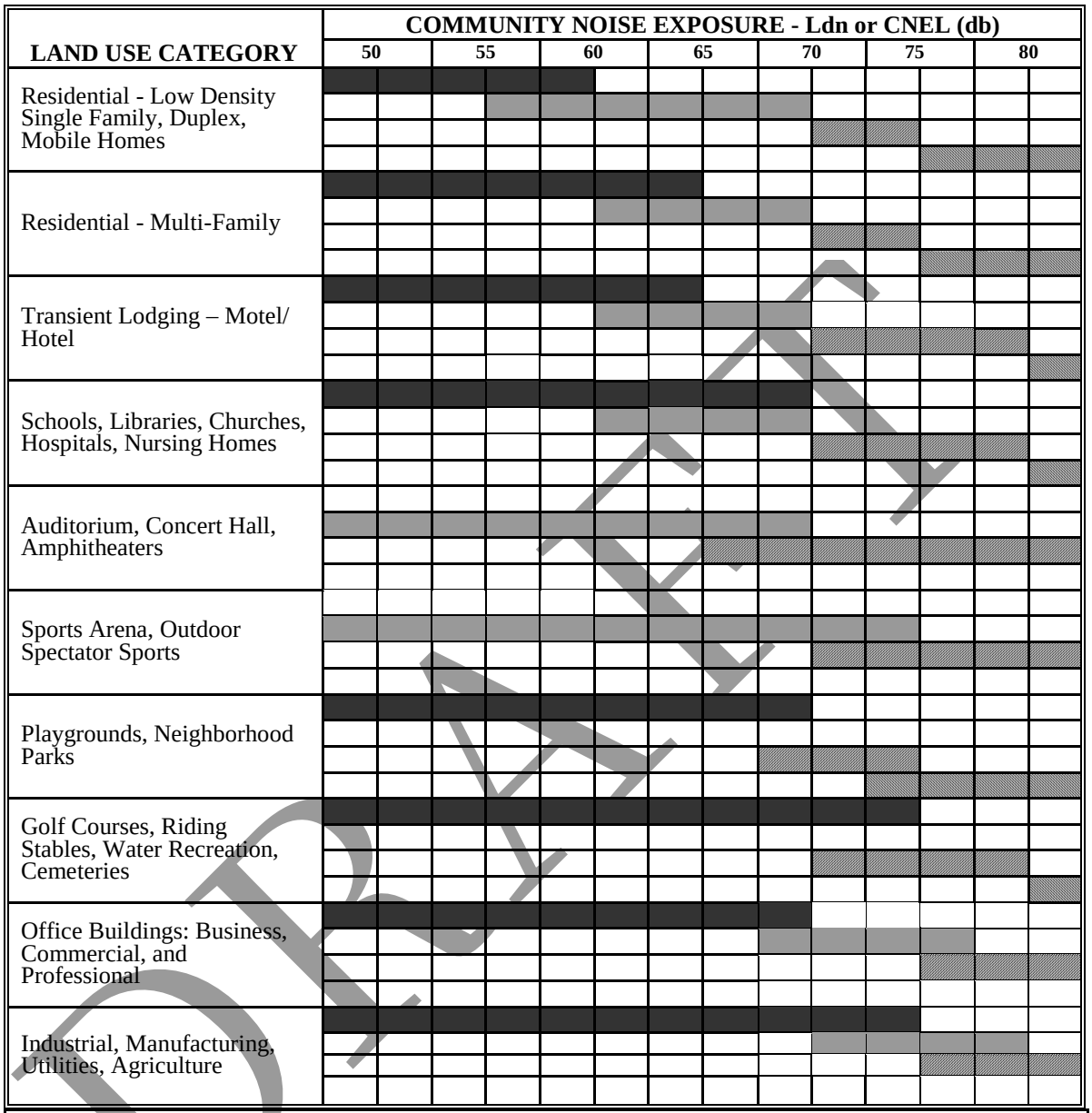
Equipment		Peak Particle Velocity at 25 Feet (in/sec)
Pile Driver (impact)	upper range	1.518
	typical	0.644
Pile Driver (sonic)	upper range	0.734
	typical	0.170
Vibratory Roller		0.210
Large Bulldozer		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozer		0.003

Source: Federal Transit Administration, 2006.

State Guidelines

State Land Use Compatibility standards for Community Noise (**Table 4**) are provided in the State of California General Plan Guidelines.

Table 4: Land Use Compatibility for Community Noise Environment



Source: State of California General Plan Guidelines, Office of Planning and Research, November 1998, Appendix A: Noise Element Guidelines.

References

California Department of Transportation (Caltrans), 1998. *Technical Noise Supplement*.

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Governor's Office of Planning and Research (OPR), 2003. *State of California General Plan Guidelines*.

Laughlin, J., 2010. Washington State Department of Transportation. *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation – Technical Memorandum*. June 21, 2010.

SOURCE: Google Earth and RCH Group 2017

Carmel Area Wastewater District Pipelines
Calle La Cruz Project
Figure N-1
Noise Measurement Locations

Appendix E. Mitigation Monitoring and Reporting Program
(to be added in Final IS/MND)