St. Mary's Double Roundabouts Project
Town of Moraga, Contra Costa County, California

Biological Resource Study

Prepared for:

Prepared by:

August 2019

EXECUTIVE SUMMARY

The Town of Moraga (Town) proposes to implement the St. Mary's Double Roundabouts Project (Project) in the Town of Moraga, Contra Costa County, California.

The purpose of the proposed Project is to provide congestion relief at the St. Mary's Road and Rheem Boulevard intersection and to improve stopping sight distance and visibility at the Rheem Boulevard and Bollinger Canyon Road intersections with St. Mary's Road. The Project is proposed to alleviate the current congestion, reduce intersection delays and queues, improve multimodal safety, and to better accommodate pedestrian and bicycle traffic safety. The proposed Project is needed, because the roadway presently experiences inadequate intersection level of service (LOS) under cumulative build-out conditions with traffic queue lengths exceeding existing intersection geometry. Improvements at this intersection are also needed to accommodate projected growth of the St. Mary's College campus and to address safety issues at the intersections.

To determine the extent to which the Project may affect biological resources, a Biological Study Area (BSA) was established to encompass the Project limits along with a 100-foot buffer zone to determine potential direct and indirect impacts to biological resources, including special-status plant and wildlife species, and aquatic resources. The following information summarizes potential impacts to these resources.

No special-status plants or wildlife were observed within the BSA during botanical/biological surveys conducted on March 31, May 25, and July 5, 2017. However, approximately 0.024 ac of potentially jurisdictional other waters of the U.S. under Section 404 of the Clean Water Act (CWA) was delineated within the BSA. The Project will result in permanent impacts totaling 0.005 ac and 0.020 temporary impacts to other waters of the U.S. Permanent impacts include filing of slopes from pavement widening, as well as the extension of a culvert. Compensatory mitigation will be required for permanent and temporary impacts.

The following table lists California Native Plant Society (CNPS) listed plant species that have the potential to occur in the BSA.

Table ES-1. Special-Status Plant Species with Potential to Occur within the BSA

Common Name	*Scientific Name*	Status	Occurrence Potential
Diablo helianthella	*Helianthella castanea*	1B.2	Low
Northern California Black Walnut	*Juglans hindsii*	1B.1	High

The following table lists state- and federally-listed wildlife species that have the potential to occur in the BSA.

Table ES-2. Special-Status Wildlife Species with Potential to Occur within the BSA

Common Name	Scientific Name	Status	Occurrence Potential
Western pond turtle	*Emys marmorata*	SSC	Low
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	High
Foothill yellow-legged frog	*Rana boylii*	SSC	Low
California red-legged frog	*Rana draytonii*	FT, SSC	Moderate
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	SSC	Present

Acronyms: Federal Status: FT – Federally Threatened
State Status: SSC – Species of Special Concern

The Project will require the following permits:

- United States Army Corps of Engineers Section 404 of the Clean Water Act
- San Francisco Bay Regional Water Quality Control Board (RWQCB) Section 401 of the Clean Water Act
- California Department of Fish and Wildlife (CDFW) 1602 Lake and Streambed Alteration Agreement
- CDFW Incidental Take Permit for Alameda whipsnake
- United States Fish and Wildlife Service Section 7 consultation and Letter of Concurrence or Biological Opinion for Alameda whipsnake and California red-legged frog.

The following measures will be taken to protect biological resources:

- Pre-construction surveys will be conducted for plant and wildlife species listed in Table ES-1 and ES-2. If any of these species are found, consultation will occur with the resource agency responsible for enforcing protection of that species.
- Pre-construction surveys will be conducted for nesting birds and roosting bats. If nesting birds are found, a protective buffer will be installed around the nest and will remain in place until a qualified biologist has determined that the nest is no longer active. If roosting bats are found, protective buffers will be established.
- The Town of Moraga Municipal Code includes a tree ordinance (12.12.030) which requires a permit for removal of native trees, orchard tree or trees, or a tree of historic significance, located either on public or private property. Consultation with the Town will be required for any trees that are included in the ordinance's definition of a protected tree that will require removal or significant trimming. In addition, tree removed from the riparian corridor will require, at minimum, 3 to 1 replacement by both CDFW and the RWQCB.

Compensatory mitigation will be required for permanent impacts to:

- Waters of the U.S. and State;

- Alameda Whipsnake habitat; and,
- California red-legged frog habitat.

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Acronyms

AMM	avoidance and minimization measure
BRS	Biological Resource Study
BSA	biological study area
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CIP	Capital Improvement Project
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships System
CY	cubic yards
DBH	diameter-at-breast height
EFH	essential fish habitat
ESA	environmentally sensitive area
ºF	degrees Fahrenheit
ft	foot/feet
FESA	Federal Endangered Species Act
F.G.C.	Fish and Game Code
GPS	Global Positioning System
in	inches
IS/MND	Initial Study/Mitigated Negative Declaration
LOS	level of service
MBTA	Migratory Bird Treaty Act
MMRP	Mitigation and Monitoring Reporting Program
MSL	mean sea level
NCCP	Natural Community Conservation Planning
NOAA	National Oceanic and Atmospheric Administration
OHWM	ordinary high water mark
Project	St. Mary's Double Roundabouts Project
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SSSC	side-street stop controlled
Town	Town of Moraga
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VegCAMP	Vegetation Classification and Mapping Program

1 INTRODUCTION AND PROJECT DESCRIPTION

The Town of Moraga (Town) proposes to provide improvements to a single-lane roundabout corridor at the intersections of St. Mary's Road/Rheem Boulevard and St. Mary's Road/Bollinger Canyon Road. The St. Mary's Double Roundabouts Project (Project) would improve traffic operations and pedestrian and bicycle access and safety. The Project would construct two roundabouts on St. Mary's Road at the Rheem Boulevard and Bollinger Canyon Road intersections, install green infrastructure, and create safer pedestrian and bicycle crossings.

The proposed Project is located in the Town of Moraga, Contra Costa County, California. Figure 1 and Figure 2 shows the Project location and vicinity, respectively. The Town is the lead agency under the California Environmental Quality Act (CEQA).

The Project is included in the Town of Moraga Capital Improvement Project (CIP). The design concept and scope of the Project is consistent with CIP and is intended to meet the traffic needs in the area based on local land use plans. The Project is partially funded through Measure J 2013 Strategic Plan: Major Streets category.

The purpose of this Biological Resource Study (BRS) is to provide technical information and to determine the extent to which the Project may affect biological resources that occur or have the potential to occur within the vicinity of the Project.

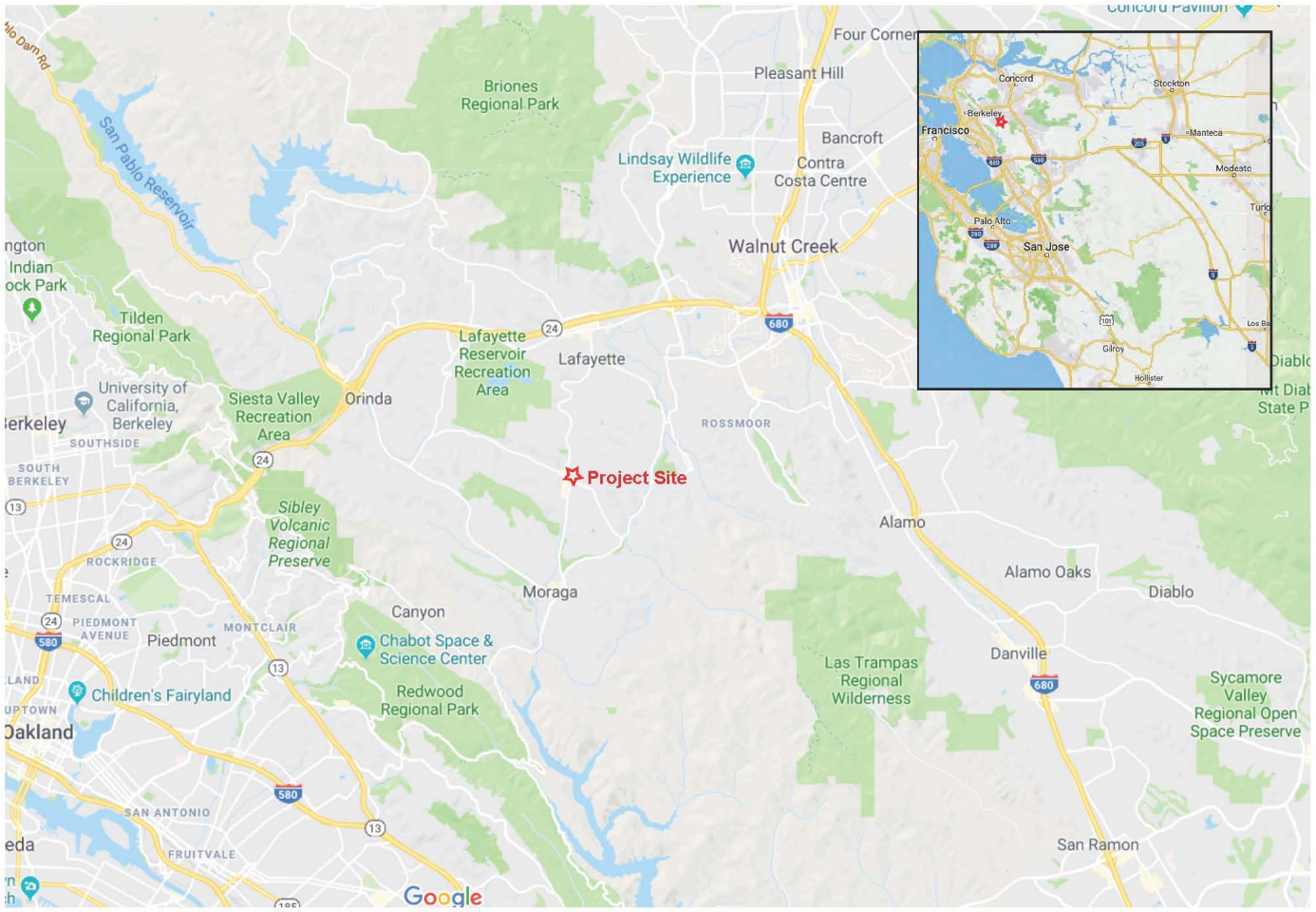


Figure 1. Regional Project Location

Source: ESRI World Imagery, 2019.

Figure 1: Vicinity Map
St Mary's Double Roundabouts Project

Kimley»Horn

Figure 2. Project Vicinity

1.1 Project Purpose

The purpose of the Project is to provide congestion relief at the St. Mary's Road and Rheem Boulevard intersection and improve stopping sight distance and visibility at the Rheem Boulevard and Bollinger Canyon Road intersections. The Project is proposed to alleviate the current congestion, reduce intersection delays and queues, improve safety, and to better accommodate pedestrian and bicycle traffic.

1.2 Project Need

The Project is needed because the roadway presently experiences inadequate intersection level of service (LOS) under cumulative build-out conditions with traffic queue lengths exceeding existing intersection geometry. Improvements at this intersection are also needed to accommodate projected growth of the St. Mary's College campus and to address safety issues at the intersection. Additionally, the roadway geometry and topography at this closely spaced intersection has insufficient stopping sight distance with visibility issues at the approach to the Rheem Boulevard and Bollinger Canyon Road intersections, which result in high accident rates and decreased safety.

Traffic collision data from 2010 through 2015 for the Rheem Boulevard and Bollinger Canyon Road intersections were provided by the Town of Moraga Police Department. Eight traffic-related incidents were reported involving minor injuries and property damage. A majority of reported accidents occurred at the St. Mary's Road/Rheem Boulevard stop-controlled intersection with rear end and side impact collisions between motor vehicles due to limited visibility and sight distance. Two collisions involving bicyclists were also reported, one resulting in an injury. There was also a report of an overturned truck on the curve in between the intersections in 2012.

In December 2008, Fehr & Peers prepared a report titled *St. Mary's Road Improvement Evaluation at Rheem Boulevard and Bollinger Canyon Road*, which evaluated the physical and operation characteristics of the St. Mary's intersections at Rheem Boulevard and Bollinger Canyon Road to recommend near-term and long-term improvements. In May 2015, Omni-Means prepared the *St. Mary's Road Roundabout Feasibility Study*, which analyzes the design features and safety assessment of a proposed single-lane roundabout corridor at the intersections of St. Mary's Road/Rheem Boulevard and St. Mary's Road/Bollinger Canyon Road in the Town.

In addition to vehicle traffic, the Project site contains pedestrian and bicycle traffic. The Lafayette/Moraga Regional Trail runs parallel to St. Mary's Boulevard and crosses the intersection of St. Mary's Road/Rheem Boulevard via an at-grade cross walk. The crossing is marked with white striping and does not have any lighting or sign features. Currently, there are gaps in the pedestrian network with limited sidewalks along most of the Project corridor. This results in unsafe pedestrian movements through the Project site.

1.3 Build Alternative (Proposed Project)

The Project would accommodate anticipated multimodal transportation increases by improving capacity for all travel modes, provide designated facilities separated from the vehicular traffic for

pedestrians and bicycles, improve intersection capacity, and reduce overall delays and improve safety.

Roadway Facilities

The Project would widen St. Mary's Road, Rheem Boulevard, and Bollinger Canyon Road to accommodate two new roundabouts and the approaches to the roundabouts. The existing two-lane roadways would remain as two-lane roadways. The roundabout geometry will be designed in a way to decrease approaching speeds at these intersections and improve visibility, subsequently improving traffic operations and safety. These improvements would require the roadway to be relocated, partially outside the existing right-of-way. The amount of potential cut and fill is included in the ranges of excavation provided for the various project components described below.

As show in Figures 3a, 3b, and 3c, *Proposed Roadway Design*, the vehicle travel lanes would be 12 feet (ft) wide. The proposed roundabouts would have single-lane entries on all intersection approaches, and the central islands would be circular in shape with a symmetric diameter. The St. Mary's Road/Rheem Boulevard roundabout would be approximately 120 ft in diameter with landscaping in the center. The St. Mary's Road/Bollinger Canyon roundabout would be a mini-roundabout, approximately 80 ft in diameter. The existing roadway would be excavated from between 4 to 16 inches where pavement would be replaced. The new relocated segments of roadway would require excavation of depths up to 2 ft. The two directions of traffic would be separated by road striping and medians approaching the roundabouts. The medians would be excavated to a maximum depth of 6 feet, measured from existing roadway surface, to provide room for import soil and roadway signs.

To accommodate the roadway widening, existing slopes would need to be excavated and laid back. This may result in a vertical difference between the existing slope surface and the new slope surface. Retaining walls would be needed at the north and south sides of the St. Mary's Road/Bollinger Canyon Road intersection to avoid impacts to the creek. Retaining walls would range in height up to a maximum of 8 ft. Retaining walls would require excavation up to 10 ft from existing surface.

Native material from the Project site would be used to construct the proposed roadway embankment. Up to 480 cubic yards (CY) of native materials would need to be exported from the site during construction.

As shown in Figure 4a and 4b, *Proposed Roundabout Sections,* the existing intersections of St. Mary's Road/Rheem Boulevard and St. Mary's Road/Bollinger Canyon Road would be converted to roundabouts. The existing side-street stop controlled (SSSC) intersections of St. Mary's Road/Rheem and St. Mary's Road/Bollinger Canyon Road would be converted to 'yield' approaches. New yield sign pole foundations may be necessary at both intersections, requiring excavation of up to 6 ft deep.

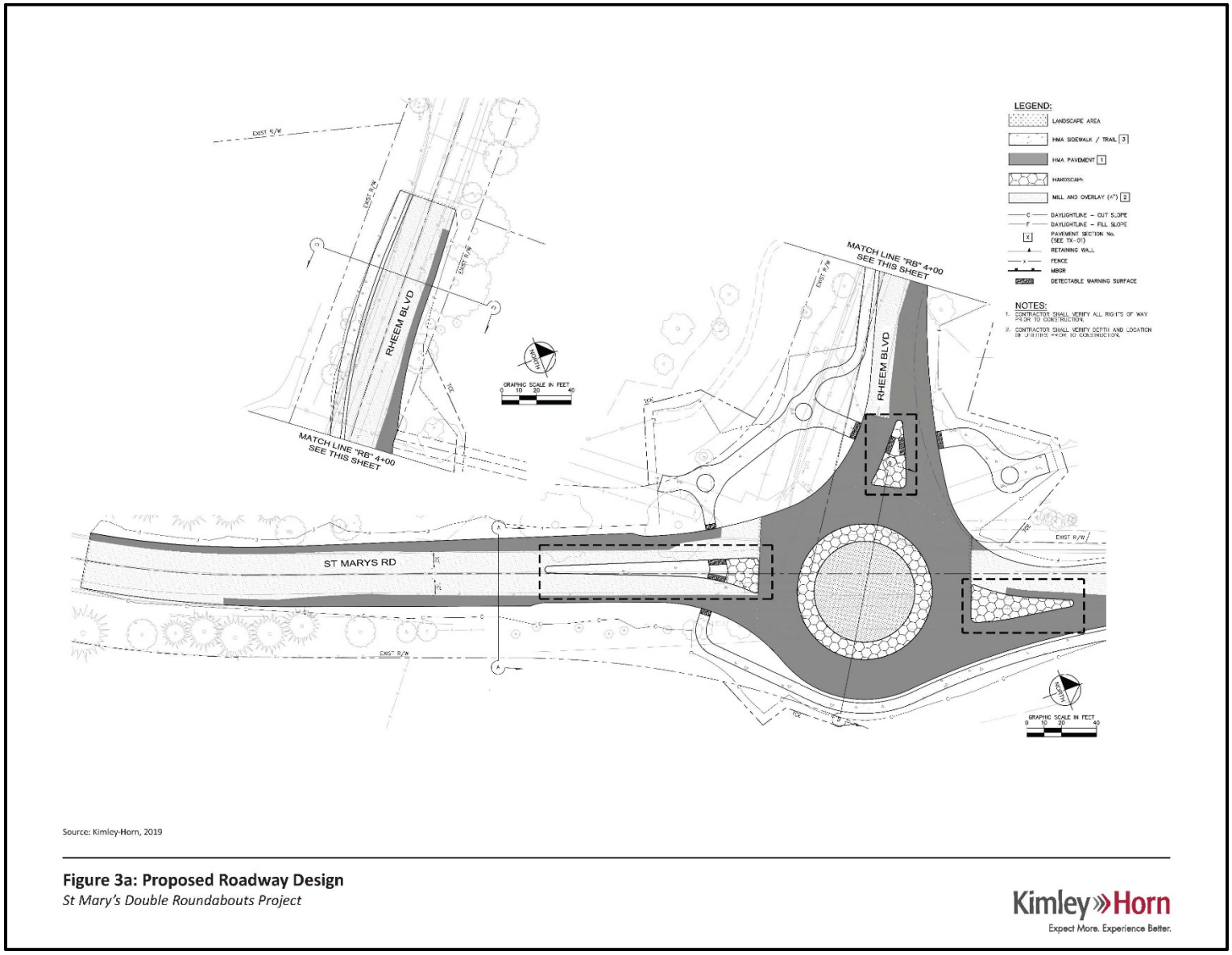
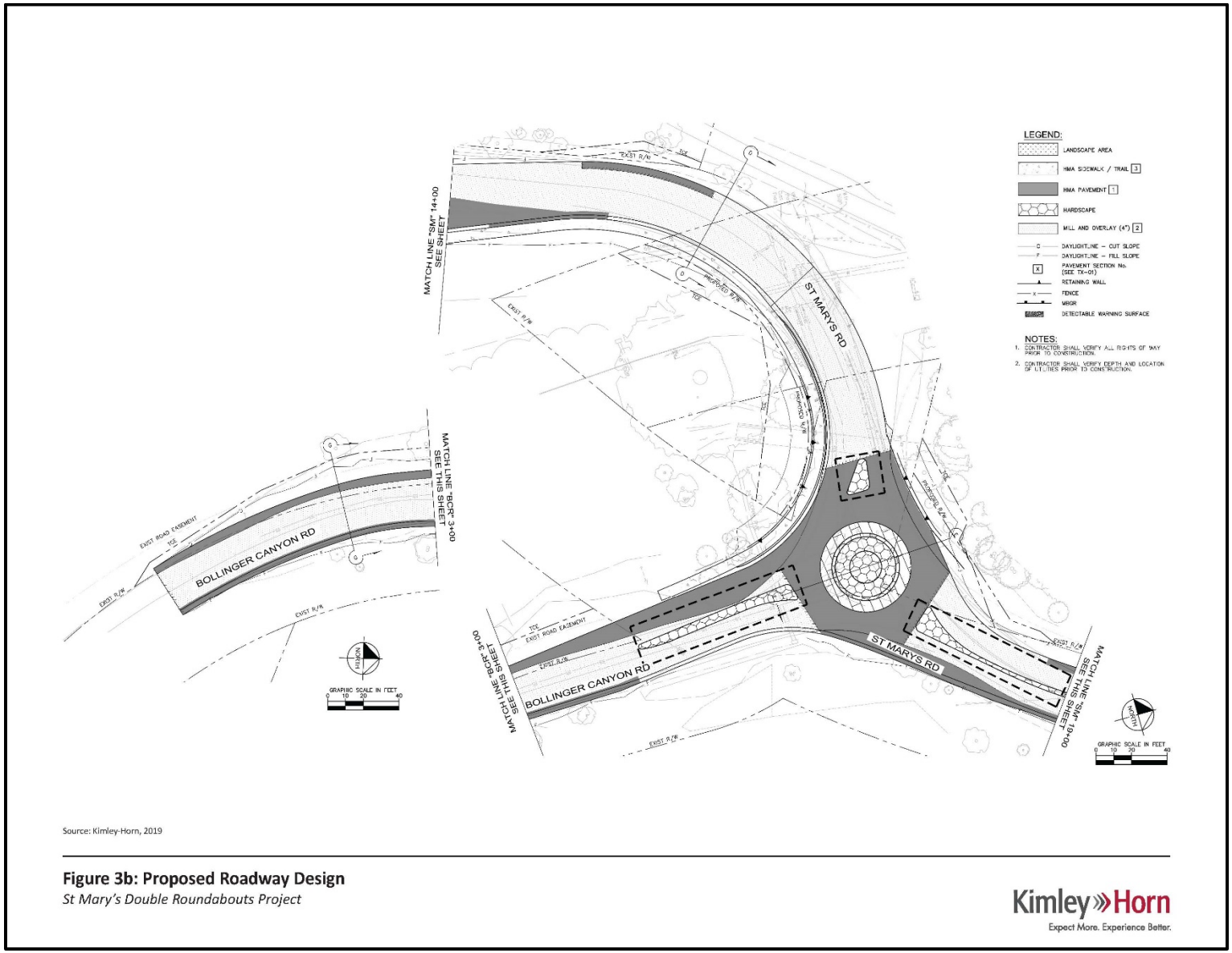


Figure 3a. Proposed Roadway Design



Source: Kimley-Horn, 2019

Figure 3b: Proposed Roadway Design
St Mary's Double Roundabouts Project

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Figure 3b. Proposed Roadway Design

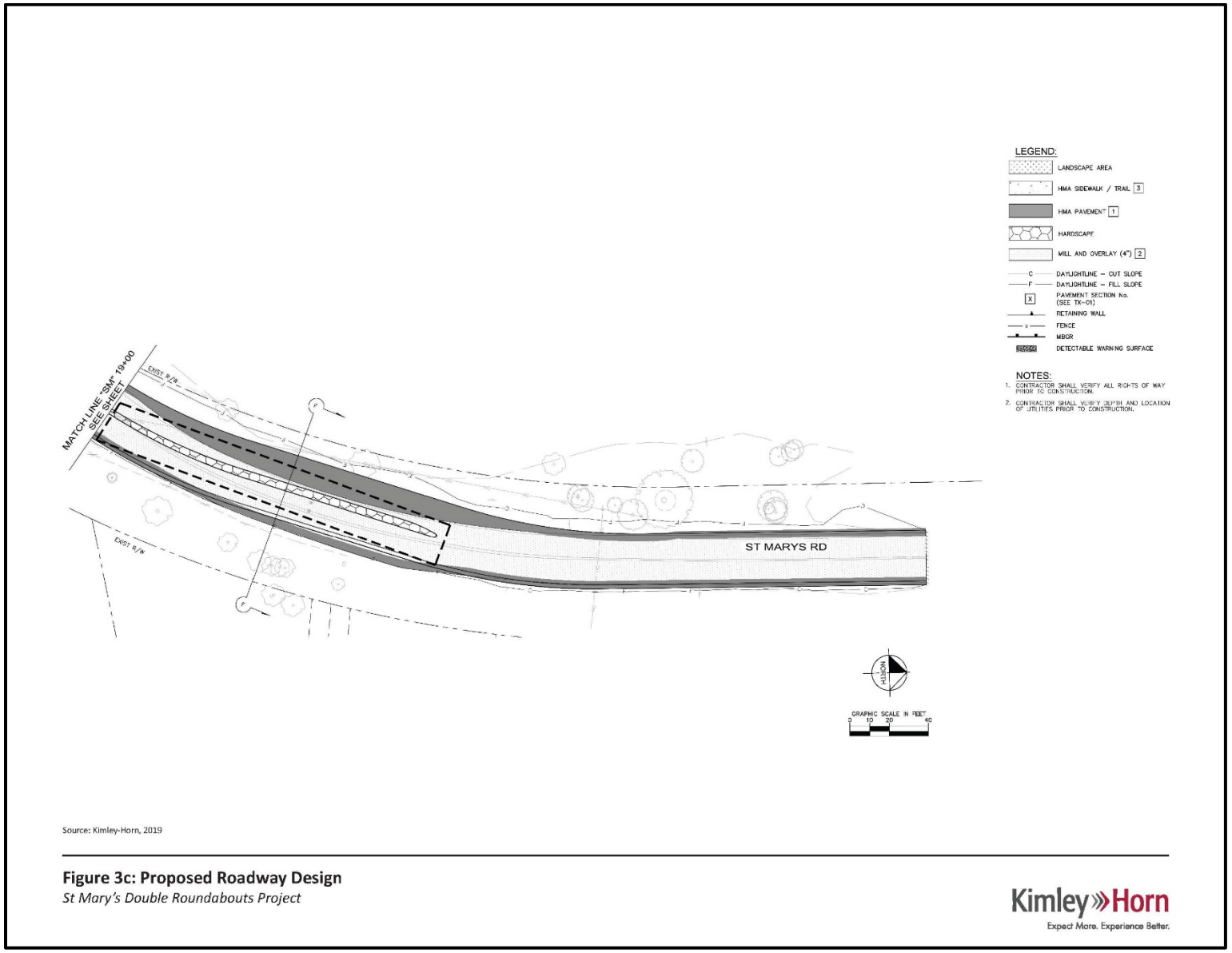

Figure 3c. Proposed Roadway Design

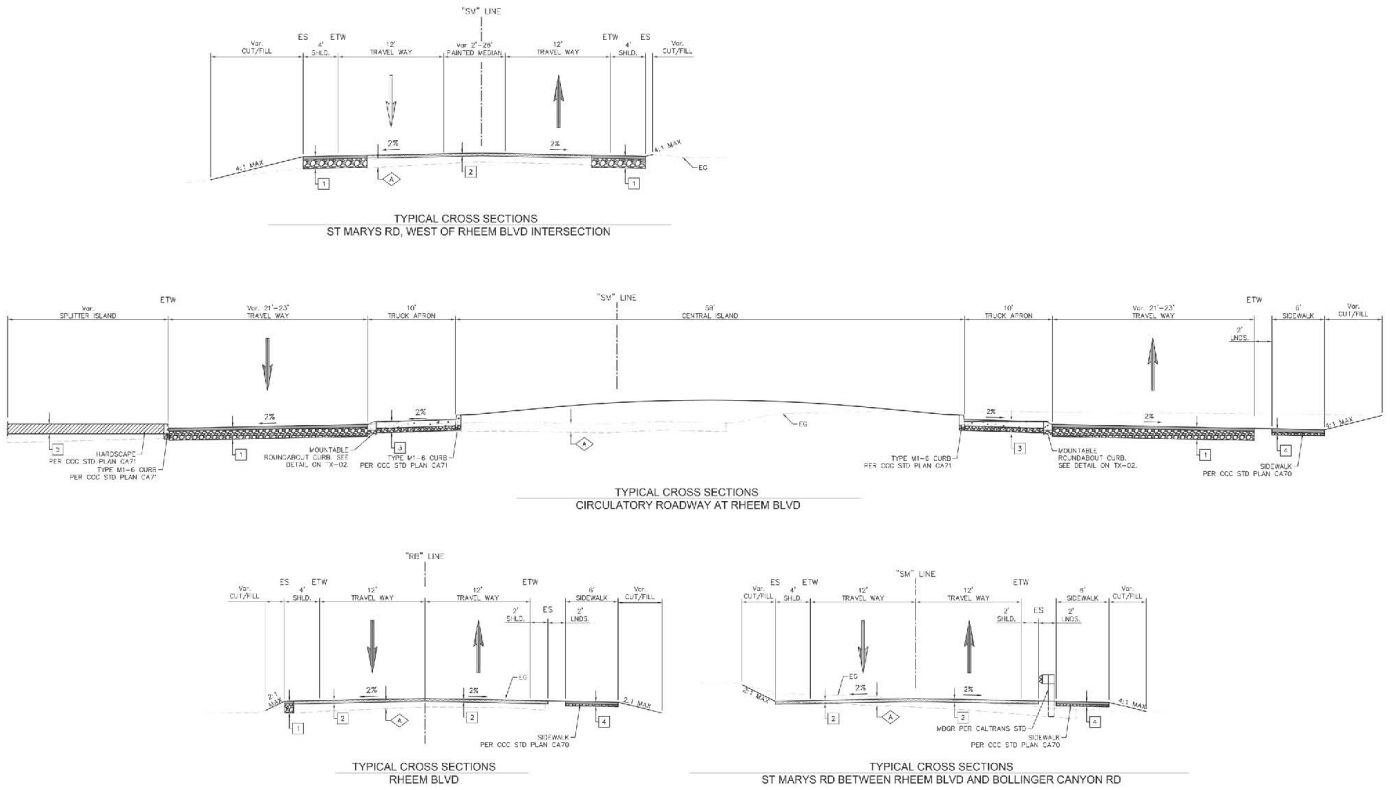

Figure 4a. Proposed Roundabout Sections

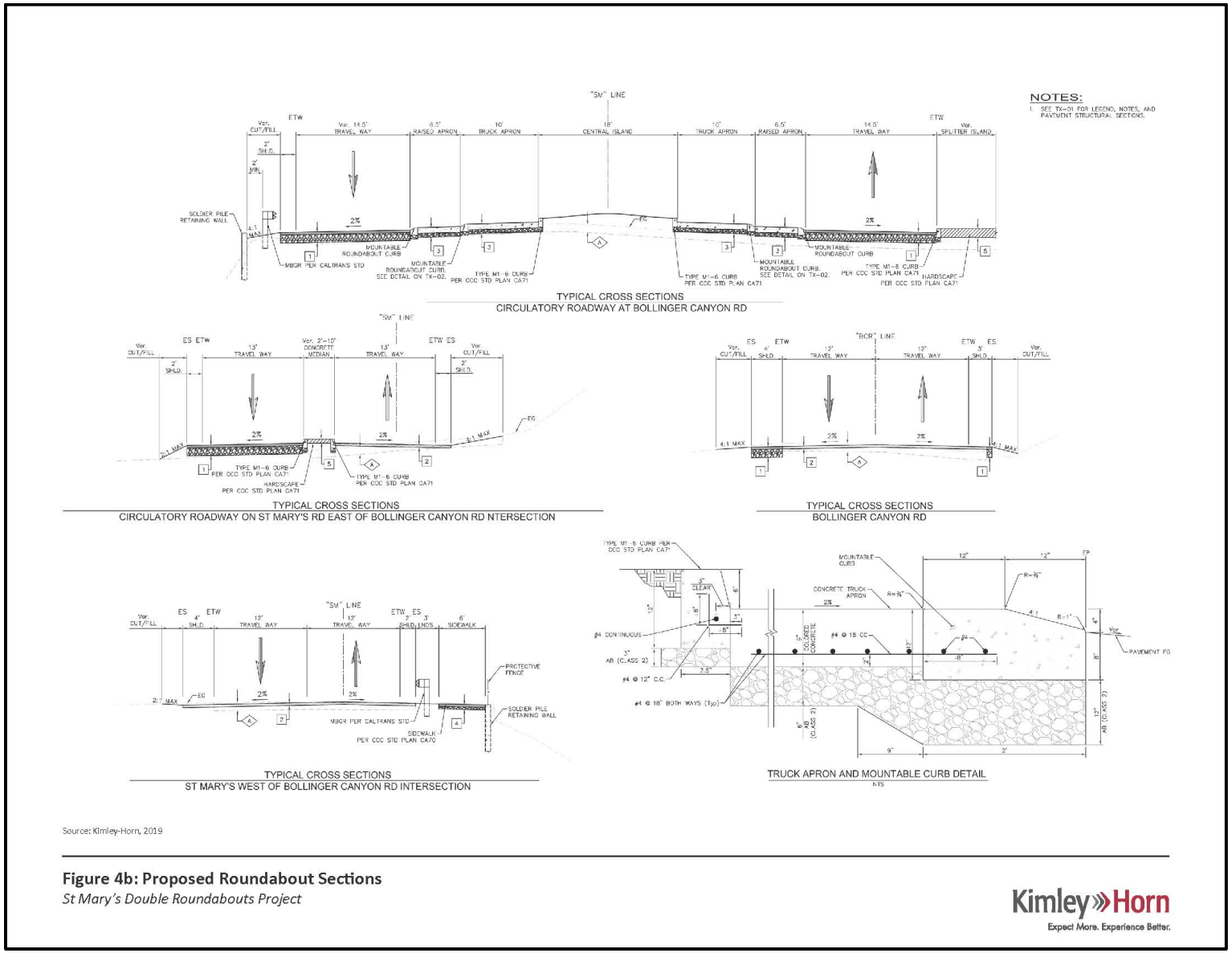

Figure 4b: Proposed Roundabout Sections
St Mary's Double Roundabouts Project

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Figure 4b. Proposed Roundabout Sections

Bicycle and Pedestrian Facilities

The Lafayette/Moraga Regional Trail runs parallel and west of St. Mary's Road, crossing Rheem Boulevard via a crosswalk in front of the SSSC intersection. A new trail crossing at Rheem Boulevard would realign the trail crossing to be located approximately 40 ft west of the existing trail crossing. The new trail crossing would connect to the existing trail. The new trail crossing would allow for safe pedestrian and bicycle crossings west of the proposed roundabout by improving visibility and decreasing approaching vehicular speed.

The roundabouts accommodate bicyclists by allowing users to choose their path of travel. Cyclists who have experience and confidence riding on the roadway can travel through the facility as a vehicle by merging with other vehicular traffic and occupying the lane within the roundabout itself. Other cyclists that may not feel comfortable riding within the travel lane can access the shared-use pathway with bike ramps and travel through the roundabout and cross as a pedestrian.

A new sidewalk is proposed along the east side of St. Mary's Road, starting near the Bollinger Canyon Road intersection and would connect to the regional trail on the south side of the proposed roundabout at the Rheem Boulevard intersection. The new sidewalk installation would allow for safe pedestrian crossings for the users on Bollinger Canyon Road.

Utilities

There are existing street lights within the Project area along the St. Mary's Road that would be relocated. A new streetlight would be constructed outside of the proposed roadway pavement area. These would require excavation up to 6 ft in depth.

Existing telephone and electrical poles and boxes are located along St. Mary's Road. These telephone and electrical poles and boxes would be relocated outside of the proposed roadway. These would require excavation up to 6 ft in depth.

Several sanitary sewer manholes exist along St. Mary's Road, and one, located at the St. Mary's Road/Bollinger Canyon Road intersection, would require relocation. The new sanitary sewer manhole will require excavation with maximum depths of 10 ft.

There are existing water lines with proposed Project limits. It is intended that the water valves be adjusted to the proposed grade. An existing culvert crosses Rheem Boulevard, just north of the St. Mary's Road/Rheem Boulevard intersection. The Project would realign a portion of the culvert, requiring excavation up to 2 ft in depth.

Construction Activities

Construction of the proposed Project is anticipated to take 12 months. St. Mary's Road would remain open during construction; however, there may be temporary lane closures on St. Mary's Road, Rheem Boulevard, and Bollinger Canyon Road during non-commute times, and there may be one-way traffic control at night during stage construction switchovers. Access to adjacent and adjoining properties would be maintained during the duration of construction activities. Bus access would also be maintained. Construction methods would include excavator trenching, pipe, valve and fitting installation, backfill, and compaction of backfill.

Construction limits are the limits of the proposed Project. A staging area would be located on the east side of St. Mary's Road, between Rheem Boulevard and Bollinger Canyon Road intersections.

1.4 Surrounding Land Use and Environmental Setting

Project Location and Setting

St. Mary's Road and Rheem Boulevard are two of the major arterials in the Town, providing access to the St. Mary's College and connection to the surrounding cities of Orinda and Lafayette. St. Mary's Road is currently a two-lane divided roadway with stop-signaled intersections at Rheem Boulevard and Bollinger Canyon Road.

The Project area is undeveloped, apart from the roadways, and is characterized by roadside vegetation. The Lafayette/Moraga Regional Trail runs parallel and approximately 30 ft northwest of St. Mary's Road. There is a gravel pull-out immediately west of the Bollinger Canyon Road/St. Mary's Road intersection, with gate access to the Lafayette/Moraga Regional Trail and a private, gated residential road that provides access to two single-family dwellings.

Single-family residential dwellings are located immediately northwest of the Rheem Boulevard/St. Mary's Road intersection on Rheem Boulevard. The St. Mary's College is located approximately 0.25 miles southwest of the Rheem Boulevard/St. Mary's Road intersection with access along St. Mary's Road.

The Project site is bordered by properties with the following land use designations in the Town of Moraga General Plan: Community Facilities, Residential (1 dwelling unit (du)/acre), Residential (2 du/acre), and MOSO Open Space.

Existing Facility and Operations

St. Mary's Road is currently a two-lane undivided roadway with stop-signalized intersections at Rheem Boulevard and Bollinger Canyon Road. Table 1 provides the existing conditions at the intersections on Rheem Boulevard and Bollinger Canyon Road.

Table 1. Existing (2017) Conditions - Intersection Level of Service

ID	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	St. Mary's Road / Rheem Boulevard	SSSC	3.6	A	3.9	A
	Worst Approach		18.5	C	20.4	C
2	St. Mary's Road / Bollinger Canyon Road	SSSC	1.5	A	0.9	A
	Worst Approach		16.5	C	16.2	B

According to the Town of Moraga's *General Plan* (2002), the Town endeavors to maintain a target level of service no worse than LOS C for all intersections. Therefore, LOS C or better for the study intersections on St. Mary's Road is considered acceptable.

1.5 Discretionary Approvals

The Project Initial Study and proposed Mitigated Negative Declaration (IS/MND) are intended to serve as the primary environmental document for all actions associated with the Project and all discretionary approvals requested or required to implement the Project. In addition, this is the primary reference document for the formulation and implementation of the Project Mitigation Monitoring and Reporting Program (MMRP). This document is also intended to provide sufficient information to allow permitting agencies to evaluate the potential impacts from construction and operation of the Project. Anticipated discretionary approvals including the approving agencies are identified below.

Town of Moraga

- Adoption of the Initial Study/Mitigated Negative Declaration
- Approval of Roadway Design

California Department of Fish and Wildlife

- Incidental Take Permit for Alameda Whipsnake
- 1602 Lake and Streambed Alteration Agreement

U.S. Fish and Wildlife Service

- Section 7 consultation and Biological Opinion for Alameda whipsnake and California red-legged frog.

USACE

- Section 404 of the Clean Water Act (CWA)

San Francisco Bay Regional Water Quality Control Board

- Section 401 of the CWA

2 STUDY METHODS

A biological study area (BSA) was established that encompassed the Project limits and surrounding areas that could be affected directly or indirectly by the Project. A BSA is defined as the area (land or water) that may be directly, indirectly, temporarily, or permanently impacted by construction or construction-related activities. Figure 5 shows the Project BSA.

In order to comply with the provisions of various state and federal environmental statutes and regulations, natural resources within the BSA were investigated and documented. Field surveys of the BSA were conducted to 1) assess existing natural habitat types; 2) identify and map potential aquatic resources; 3) identify special-status species or their habitat that may be present; and 4) inventory and establish baseline conditions of biological resources.

2.1 Database and Literature Searches

Information about special-status species and habitat types that could occur in the BSA was obtained from the following sources:

- California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW], 2019)
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS, 2019)
- U.S. Fish and Wildlife Services (USFWS) online database for federally threatened and endangered species (USFWS, 2019)
- National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) online database for federally threatened and endangered species (NOAA, 2019)
- Existing literature as cited in the text.

The CNDDB and CNPS database searches included a search of the U.S. Geological Survey (USGS) 7.5-minute quadrangles within a 5-mile radius of the BSA. The USGS quadrangles included were the Las Trampas Ridge, Oakland East, Briones Valley, and Walnut Creek.

ArcGIS was used to conduct spatial analyses on species, habitat, and biological resources. These results informed the preliminary technical studies regarding special-status species in the BSA.

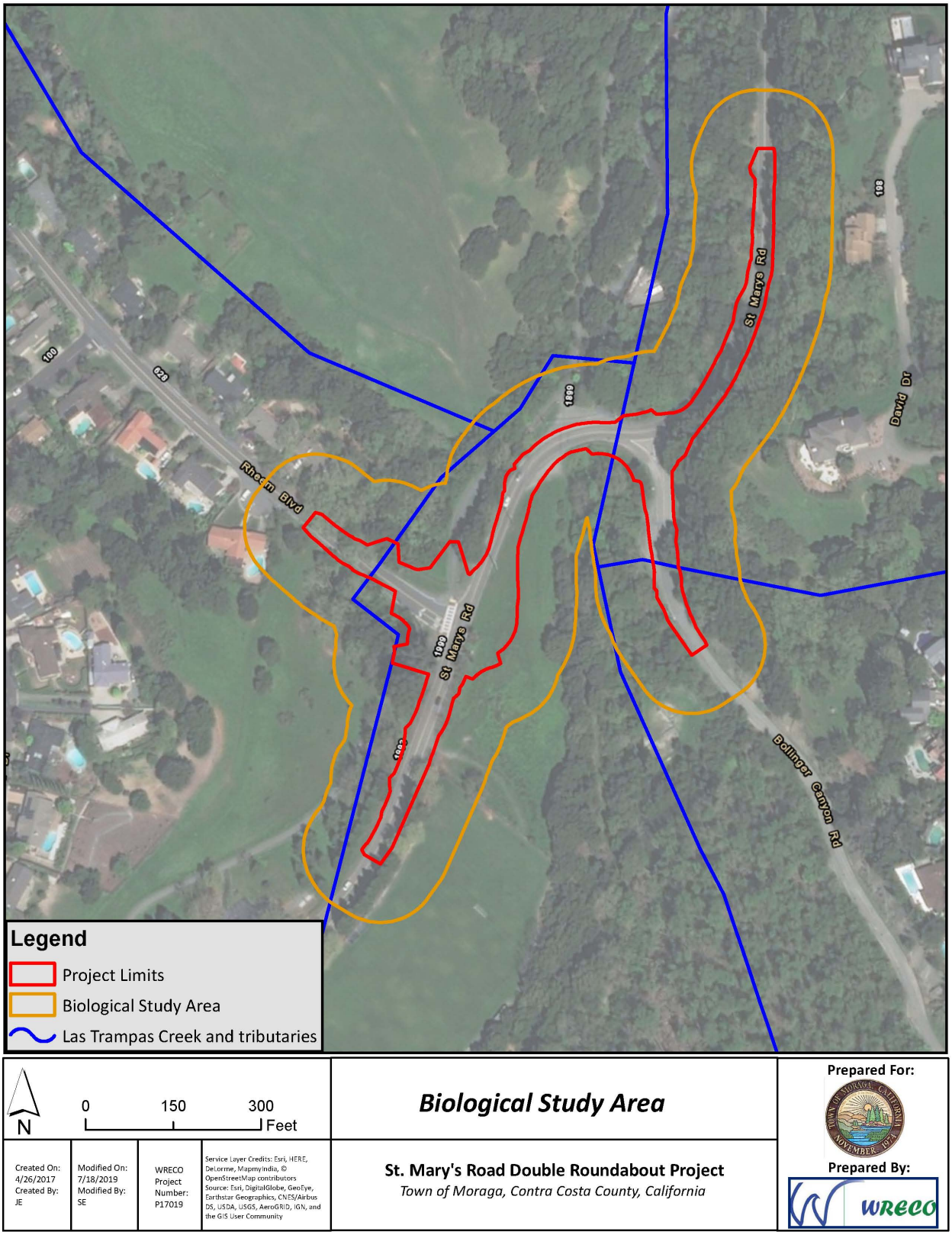

Figure 5. Biological Study Area

2.2 Field Surveys

Biological field surveys were conducted to determine the presence or absence of sensitive biological resources such as aquatic resources and special-status plants and wildlife. The surveys included the identification of potential habitat for special-status species protected under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA). The BSA was surveyed by walking the entire Project limits and photo-documenting existing habitat conditions as well as identifying the potential for special-status species habitat. General notes were collected, including observed plants and wildlife. Representative site photos are shown in Appendix A, and observed species lists are provided in Appendix B.

The credentials for survey personnel are:

- Sandra Etchell, B.A., Biology; M.S., Environmental Management; 23 years of experience
- Jared Elia, B.S., Environmental Science; 10 years of experience
- Scott Elder, B.S., Environmental Geography; 5 years of experience
- Kathryn Stelljes, B.S., Environmental Science; 25 years of experience
- Emily Matthews, B.S., Environmental Science; 2 years of experience

Table 2 summarizes the survey types, dates, and Project personnel involved with biological surveys conducted to date within the BSA.

Table 2. Biological Field Surveys in the BSA

Survey Type	Date	Area Surveyed	Personnel
Reconnaissance Survey	March 7, 2017	Entire BSA	J. Elia, S. Elder
Wetland Delineation/ Botanical Survey	March 31, 2017	Entire BSA	J. Elia, S. Elder
Botanical Survey	May 25, 2017	Entire BSA	S. Etchell, K. Stelljes
Biological/Botanical Survey	July 5, 2017	Entire BSA	J. Elia, S. Elder
Wetland Delineation	June 18, 2019	Entire BSA	S. Elder, E. Matthews

The methodology utilized for each type of survey is described below. Appendix C (Summary of Applicable Regulations) provides a brief description of the jurisdictions and regulations specific to the biological resources covered in this document.

2.2.1 Wetlands and Waters of the U.S.

Wetlands were delineated using the *Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (USACE, 2008). For project areas greater than 5 acres, samples must be collected in each ecological community, and for each positive wetland determination, document-paired sampling must be conducted. The three parameters used to delineate wetlands in the BSA were the presence of hydrophytic vegetation, wetland hydrology, and hydric soils. According to the USACE Manual, there must be evidence of at least one positive wetland indicator from each parameter under typical or atypical situations.

Potential wetlands and waters of the United States were visually inspected for approximate locations of distinct upland/wetland boundaries. Paired sample points were taken to verify the exact locations of upland/wetland boundaries. Each sample point was marked with a Trimble Model Geo7X sub-meter Global Positioning System (GPS) unit. Paired sample points (consisting of two locations), one in a suspected wetland area and another in a suspected upland area, where the three wetland parameters are evaluated for presence or absence. If the wetland point displays indicators of each of the three wetland parameters and the upland point does not meet the three-parameter criteria, the wetland-upland boundary is located between the paired sample points. Additional sample points were utilized to verify the location of the upland/wetland boundary in the BSA, as needed. After completing the paired sample points, the wetland-upland boundary was delineated with the same sub-meter GPS unit. All potential jurisdictional wetlands identified within the BSA were delineated in their entirety, even if portions of the aquatic resource extended beyond the limits of the BSA. The acreage of each feature was calculated using the ArcGIS program.

The methodology is described in detail in the Aquatic Resources Delineation Report (WRECO, 2019) provided in Appendix D.

2.2.2 Waters of the State

Locations of all drainages or surface water bodies protected under the CWA Section 401 Water Quality Certification program were evaluated to determine if they qualified as waters of the State of California based upon the following criteria:

- All federally jurisdiction wetlands and other waters
- Jurisdiction at streams, lakes, and ponds considered as other waters of the United States extends beyond the ordinary high water mark (OHWM) to the top of bank or to the greatest lateral extent of riparian vegetation, whichever is greater
- Jurisdiction includes isolated, non-navigable, intrastate wetlands that do not qualify as waters of the United States

2.2.3 Vegetation Communities and Botanical Surveys

A list of special-status plants generated from the CNDDB, CNPS, and USFWS online databases was compiled along with the bloom season and habitat type for each species. If the BSA lacked suitable habitat for certain plants, they were eliminated from the list. The list was analyzed to determine which months botanical surveys would cover the bloom period of all species with suitable habitat present. Field botanical surveys were conducted between April and July 2017 following the floristic survey protocol recommended by the CNPS (2001). Plants that were not easily identifiable were keyed to genus and species by botanists utilizing the plant keys available on the Jepson eFlora (2019).

Field surveys were conducted to determine and map the vegetative communities in the BSA and to compile an inventory of plant species present. Vegetation communities were recorded in the field on aerial photographs of the BSA, which were later digitized and transferred to a GIS database.

2.2.4 Wildlife and Wildlife Habitat Surveys

The BSA was surveyed for wildlife and suitable habitat for special-status species known to occur in the region. Utilizing the visual encounter methodology and high-powered binoculars, all wildlife observed was documented. If special-status species or their habitat (host plants, vernal pools, wetlands, etc.) were observed, their location was recorded in the field with the use of a GPS device and later transferred to a GIS database.

3 RESULTS: ENVIRONMENTAL SETTING

3.1 Location and Topography

The Project is located in the Las Trampas USGS 7.5 Minute quadrangle in the Town of Moraga. The study area is bound by the Las Trampas Ridge to the east, the Gudde Ridge to the west, the City of Moraga to the south, and the City of Lafayette to the north. Residential housing developments with a mixture of grassland and oak woodlands surround the entire Project, with Las Trampas Creek crossing beneath St. Mary's Road via a box culvert, flowing south to north.

The study area is located along St. Mary's Road with Las Trampas Creek located approximately 30 ft below the road. Elevations within the BSA range from approximately 523 ft to 586 ft above mean sea level (MSL).

3.2 Climate and Precipitation

According to the Köeppen climate classification system, the Project area has a Mediterranean climate, characterized by hot, dry summers and mild, moist winters (George, 2017). The Project area generally experiences precipitation between mid-October and mid-April. A climate summary for the nearest NOAA weather station with similar elevation and topography to the Project reports the following precipitation and temperature information (Western Regional Climate Center, 2017):

Saint Mary's College Station 047661 (1942-1981)

- Average annual rainfall for Moraga is 27.48 inches (in.)
- Average temperatures range seasonally from 44.4 to 68.4 degrees Fahrenheit (ºF)

The maximum average temperature reported for the Moraga area was 81.9ºF in July, and the lowest average temperature is 53.1ºF in January. The wettest month of the year is January with an average rainfall of 6.12 in., and the driest month is July with an average of 0.05 in. Winter storms are usually of moderate duration and intensity (Western Regional Climate Center, 2017).

3.3 Soils

The Natural Resources Conservation Service's "Web Soil Survey" (U.S. Department of Agriculture, 2019) was utilized to identify the soil units that occur within and adjacent to the BSA. The majority of soils consist of Clear Lake clay, 0 to 15 percent slopes, MLRA 15: This soil type is the only Clear Lake soil mapped in the Contra Costa County. Its drainage has been improved by natural stream cutting, and the water table is below a depth of 6 inches in most places. Runoff is very slow, and there is no hazard of erosion where the soil is tilled and exposed. The soil is subject to flooding once every 7 to 10 years unless surface drainage is provided. This soil is used for dryland small grain and volunteer hay and for homesites (USDA, 1977).

Cropley clay, 2 to 5 percent slopes: This soil type is typically found on gently sloping terrain, in small upland valleys. Runoff for this soil type is slow, and the hazard of erosion is slight where

the soil is tilled and exposed. This soil is sued for dryland grain and range and for homesites (USDA, 1977). See Figure 6 for map of soil types within and surrounding the BSA.

3.4 Hydrology

The Project is located within the Las Trampas watershed. It originates from the hills southeast of the Town along Las Trampas Ridge. The watershed drains on a northerly course to the City of Walnut Creek, where it drains into Walnut Creek. The creek flows primarily in an open natural channel, with some flows through underground culverts and concrete open channels through the City of Walnut Creek until it reaches Suisun Bay, approximately 17 miles north of the Project.

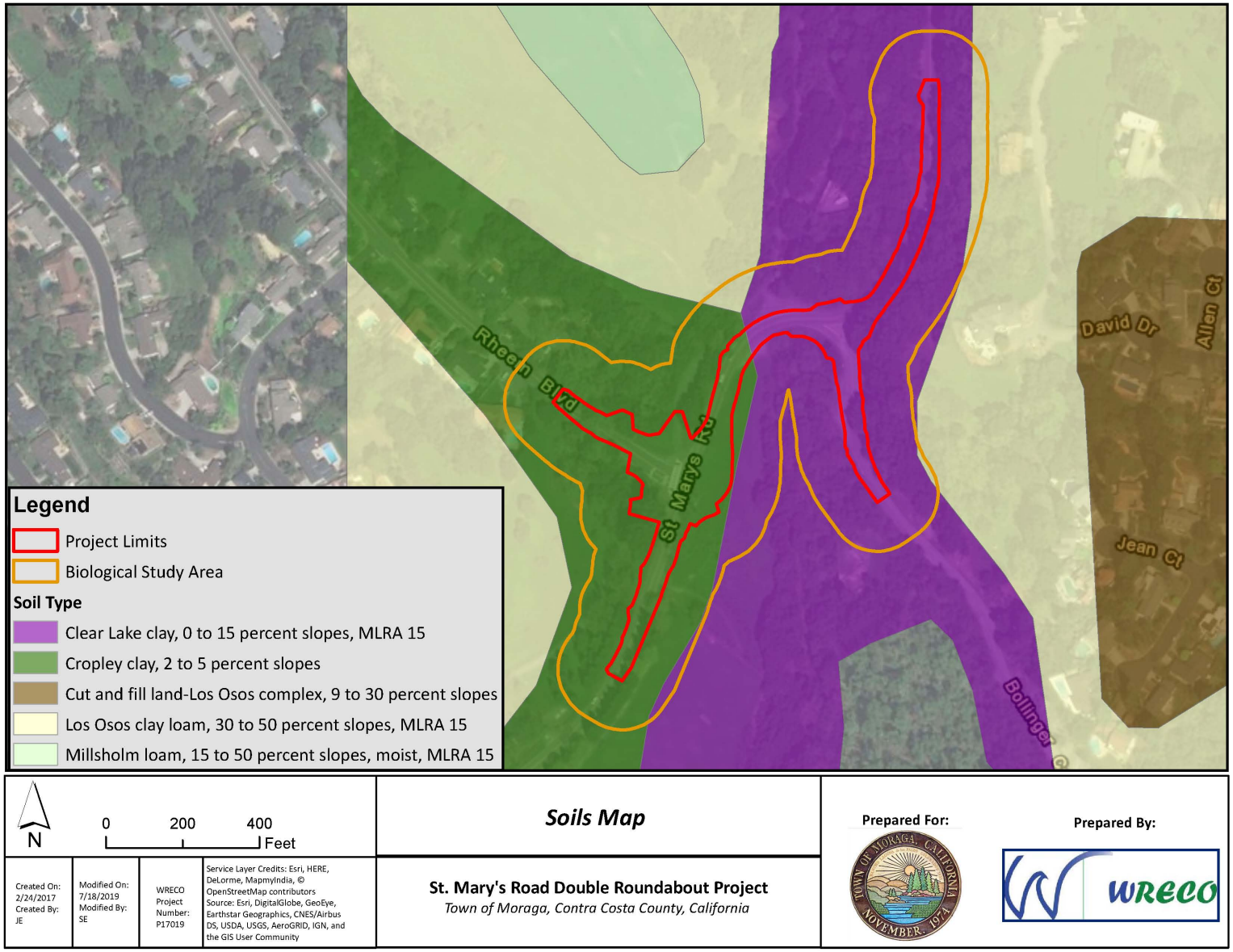

Figure 6. Soils Map

3.5 Vegetation Communities and Wildlife Habitat Associations

The plant community descriptions and nomenclature conventions within this analysis use the CDFW's California Wildlife Habitat Relationships System (CWHR). This classification system is based on the 59 wildlife habitats described in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) and may be used as a model to predict which wildlife species may inhabit specific plant communities. Supplemental information was obtained from *California Vegetation* (Holland and Keil, 1995).

There are five vegetation communities within the BSA: valley oak woodland, valley foothill riparian, riverine, annual grassland, and urban. See Figure 7 for a map of vegetation communities.

Valley Oak Woodland

Oak woodlands grow across valleys and foothills in California at elevations ranging from about 30 to 5,000 ft. More than 20 native oak species characterize widely varying habitats, ranging from widely spaced trees with grassland understory to dense forests (University of California 2015). Oak can be the primary overstory species, or occur alongside mixed evergreen species such as California bay laurel and madrone (Holland and Keil, 1995). Valley oak takes over as the dominant tree in oak woodlands adjacent to major lowland valleys.

Oak woodland is the dominant habitat is present within the BSA. This habitat can be found within all portions of the BSA, including portions of the Project limits. The dominant tree species in the Project vicinity was coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), California bay (*Umbellularia californica*), and California buckeye (*Aesculus californica*) were also present in smaller numbers.

The understory was very sparse due to the thick canopy cover providing very little sunlight. Native plants observed in the herbaceous layer primarily included California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), wood fern (*Dryopteris arguta*), California wild rose (*Rosa californica*) and stinging nettle (*Urtica dioica*). Non-native species included bur clover (*Medicago polymorpha*), purple vetch (*Vicia benghalensis*), black nightshade (*Solanum nigrum*), periwinkle (*Vinca major*), and several other species.

Special-status plants that could occur within oak woodland include bent-flowered fiddleneck (*Amsinckia lunaris*), big-scale balsamroot (*Balsamorhiza macrolepis*), round-leaved filaree (*California macrophylla*), Mt. Diablo fairy-lantern (*Calochortus pulchellus*), robust spineflower (*Chorizanthe robusta* var. *robusta*), western leatherwood (*Dirca occidentalis*), fragrant fritillary (*Fritillaria liliacea*), Diablo helianthella (*Helianthella castanea*), Loma Prieta hoita (*Hoita strobilina*), Contra Costa goldfields (*Lasthenia conjugens*), San Antonio Hills monardella (*Monardella antonina* ssp. *Antonina*), woodland woolythreads (*Monolopia gracilens*), Most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*), and oval-leaved viburnum (*Viburnum ellipticum*).

Special-status wildlife species that could occur in the oak woodland habitat are Alameda whipsnake (*Masticophis lateralis euryxanthus*), San Francisco dusky-footed woodrat (*Neotoma*

fuscipes annectens), and American badger (*Taxidea taxus*). Tall trees within the Project limits could provide suitable roosting habitat for special-status bats including pallid bat (*Antrozous pallidus*) and hoary bat (*Lasiurus cinereus*). There is an abundance of suitable nesting habitat for special-status birds; although, there are no CNDDB records for species that nest in oak riparian habitat within a 5-mile radius of the Project vicinity. Birds protected by the Migratory Bird Treaty Act (MBTA) that could nest within the BSA include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), oak titmouse (*Baeolophus inornatus*), Anna's hummingbird (*Calypte anna*), Bewick's wren (*Thryomanes bewickii*), lesser goldfinch (*Spinus psaltria*), and Steller's jay (*Cyanocitta stelleri*).

Valley Foothill Riaprian
Riparian habitat occupies areas between the low- and high-water points along the banks of rivers, streams, lakes, springs, and floodplains (Holland and Keil, 1995; EPA, 2005). Riparian areas generally contain nutrient-rich alluvial soils, have high water tables, and are subject to periodic flooding. One or more species of deep-rooted deciduous trees, shrubs, and herbs grow in these habitats. The dominant tree species in the Project vicinity was coast live oak. California bay, big leaf maple (*Acer macrophyllum*), alder (*Alnus* spp.), California buckeye, and arroyo willow (*Salix lasiolepis*) were also present in smaller numbers.

The understory also contained a mix of native herbaceous species. Native plants included California blackberry, poison oak, coyote brush (*Baccharis pilularis*), snowberry (*Symphoricarpos albus*), wood fern, stinging nettle, and California pipe vine (*Aristolochia californica*). Non-native species included periwinkle, bur clover, purple vetch, black nightshade, and several other species.

Special-status plants that could occur within oak riparian woodland include Mt. Diablo fairy-lantern, western leatherwood, Diablo helianthella, Loma Prieta hoita, and Northern California black walnut (*Juglans hindsii*). However, given the abundance of invasive, non-native species, which outcompete native plants for water, space, and nutrients, it is highly unlikely that they could occur within the Project limits.

Special-status wildlife species that could occur in the oak riparian woodland habitat are California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (Rana boylii), western pond turtle (*Emys marmorata*), Alameda whipsnake, and San Francisco dusky-footed woodrat. There is an abundance of suitable nesting habitat for special-status birds, although there are no CNDDB records for species that nest in oak riparian habitat within a 5-mile radius of the Project vicinity. Birds protected by the MBTA that could occur within the BSA included black phoebe (*Sayornis nigricans*), oak titmouse, Bewick's wren, and Steller's jay. Tall trees within the Project limits could provide suitable roosting habitat for hoary bat.

Riverine
Riverine habitat occurs where channels are shaped by flowing water, such as rivers, creeks, and streams. These channels exist in association with a variety of terrestrial habitats and are frequently contiguous to lakes and fresh emergent wetland habitats (Grenfell, 2008). Rivers and streams often support riparian vegetation. Flow in this habitat is variable, ranging from high volume, continuous flows in rivers to seasonally dry streams. The riverine waters in Las Trampas

Creek are perennial, and the water level ranges from high and fast-flowing in the winter to low and slow moving in the summer. Riverine waters provide food for birds such as waterfowl and herons. They provide breeding and foraging habitat for fish, amphibians, and other aquatic species.

There were several inches of flowing water present during the March, May, and July 2017, and June 2019 surveys, but no aquatic plant or wildlife species were observed in the riverine habitat. A black phoebe nest was observed within the Las Trampas Creek box culvert, located near the downstream outlet towards the top of the concrete wall.

Special-status wildlife that could occur in the riverine habitat include California red-legged frog, foothill yellow-legged frog, and western pond turtle. Salmonid species, including steelhead (*Oncorhynchus mykiss*) and Chinook salmon (*Oncorhynchus tshawytscha*) have no potential to occur due to two fish barriers between Suisun Bay and the BSA. These barriers include Bancroft Road Drop Structure (located in Walnut Creek) and Walnut Creek City Drop Structure (located upstream of the Las Trampas Creek and San Ramon Creek confluence). These barriers completely block all fish passage for anadromous fish species to move upstream to the Study Area. However, the Project is within NOAA Fisheries designated essential fish habitat (EFH) for Chinook salmon.

Annual Grassland

Non-native or naturalized annual grasses and forbs have largely replaced pre-colonial grasslands on rolling hills and flat plains in California. Although a rich variety of native species may be present, grasses such as wild oats and barley, brome species, and soft chess dominate (Kie, 2005). The species composition varies widely depending on weather and grazing patterns, but the habitat generally has a water deficit for four to eight months annually (Barbour et al., 2007). Grasses germinate in the fall but do not grow vigorously until temperatures increase. By the summer, fields typically contain a large amount of dead plant material. Spring grazing can promote a greater abundance of summer-annual forbs (Kie, 2005). Many annual grass species grow alongside other habitats, such as oak woodland, perennial grassland, and vernal pools.

Grassland habitat is present throughout the BSA, with a significant portion of the southeast section of the BSA consisting of annual grassland. This area was observed as an open field adjacent to a soccer facility for St. Mary's College.

Common wild oat (*Avena fatua*) and Italian rye grass (*Festuca perennis*) were the most common species identified in grassland habitat within the BSA. Other species observed here included ripgut brome (*Bromus diandrus*), wild radish (*Raphanus sativus*), cut leaved geranium (*Geranium dissectum*), purple vetch, soft chess (*Bromus hordeaceus*), black mustard (*Brassica nigra*), poison hemlock (*Conium maculatum*), bristly ox-tongue (*Helminthotheca echioides*), Italian thistle (*Carduus pycnocephalus*), and artichoke thistle (*Cynara cardunculus*).

Annual grassland provides foraging, breeding, and resting areas for a wide variety of birds, mammals, and reptiles. Several grassland-associated wildlife species were observed during field surveys, including California towhee (*Pipilo crissalis*), American crow (*Corvus*

brachyrhynchos), black phoebe, chestnut backed chickadee (*Poecile rufescens*), and Bewick's wren.

Urban

The CWHR System classifies urban vegetation into five areas: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Urban areas typically have a small diversity of trees, shrubs, and grasses, but greater productivity than natural grasslands due to abundant water and fertilizer (McBride and Reid, 1988). Examples include residential landscapes, golf courses, parks, and school grounds. Non-native landscape species and invasive weeds are common.

The urban habitat within the BSA consists primarily of roadways and a small portion of a recreational soccer field associated with St. Mary's College. Urban environments are unlikely to provide suitable habitat for special-status plants due to disturbed soil conditions and the predominance of exotic landscape species that successfully out-compete native vegetation for resources such as space, nutrients, and water.

According to the CWHR, urban habitats can offer wildlife a good source of supplemental food or cover.

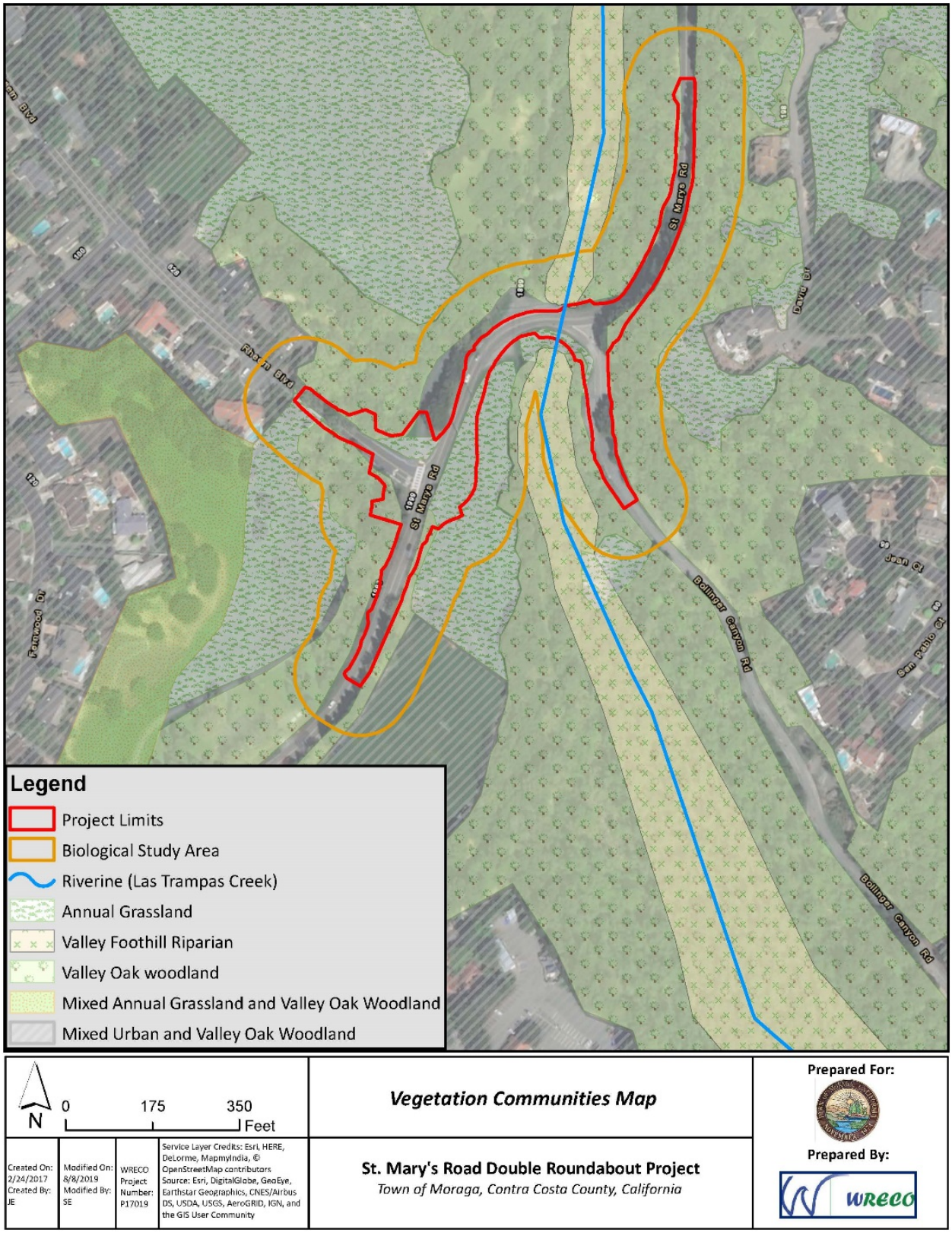

Figure 7. Vegetation Communities/Habitat Map

3.6 Special-Status Plant Species

Special-status plants are those listed by the USFWS as endangered or threatened, and/or listed as endangered, threatened, a Species of Special Concern (SSC), or rare by the state or CDFW. The CNDDB also provides information regarding the locations where special-status species have been observed. The CNPS has an inventory of rare and endangered plants and has a ranking system to categorize the degrees of concern for each plant in its inventory. In summary, plants are ranked as follows:

- Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.
- Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- Rank 2A: Plants presumed extirpated in California but common elsewhere.
- Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.

The CDFW validates the CNPS ranking system and includes most plants from the inventory in the CNDDB database. CDFW also encourages protection of these plants by projects subject to review under the CEQA.

Combined, the CNDDB, CNPS, and USFWS databases list a total of 50 special-status plants (including federally-listed, state-listed, and/or CNPS-ranked plants) that have occurrence records within a five-mile radius of the BSA. Table 3 lists the special-status plants generated from the databases searches and provides descriptions for their potential presence or absence, listed status, required habitats; and their likelihood of occurrence in the BSA.

The results from all database queries are presented in Appendix E. See Figure 8 for CNDDB special-status plant species that have occurrences within a 5-mile radius of the BSA.

Table 3. Potential for Special-Status Plants to Occur within the St Mary's Roundabout BSA

Scientific Name Common Name	Status Fed	State	CNPS	Blooming Period	Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)	Potential to Occur in Project Area
Amsinckia lunaris Bent-flowered fiddleneck	--	--	1B.2	Mar-Jun	**Cismontane woodland**, **valley and foothill grassland**. Elev. 10-1640 feet	**None** Species not observed during the March, May or June 2017 botanical surveys.
Androsace elongata ssp. *acuta* California androsace	--	--	4.2	Mar-Jun	Chaparral, **cismontane woodland**, coastal scrub, meadows and seeps, pinyon and juniper woodland, **valley and foothill grassland**. Elev. 492-4280 ft	**None**. No CNDDB occurrence records within a 5-mile radius of the Project. This species was not observed during botanical surveys.
Anomobryum julaceum Slender sliver moss	--	--	4.2	n/a	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest on damp rock and soil on outcrops, usually on roadcuts. Elev. 33-3280 ft	**None**. No suitable habitat present within the BSA.
Arctostaphylos pallida Pallid manzanita	FT	SE	1B.1	Dec-Mar	Broadleafed upland forest, closed-cone coniferous forest, chaparral, **cismontane woodland**, coastal scrub in siliceous shale, sandy, or gravelly soils. Elev. 607-1525 ft	**None**. No manzanita were identified in the BSA during botanical surveys.
Astragalus tener var. *tener* Alkali milk-vetch	--	--	1B.2	Mar-Jun	**Valley and foothill grassland** in adobe clay soil; playas and vernal pools with alkaline soil. Elev. 3-197 ft	**None**. This species was not found during botanical surveys.

Scientific Name **Common Name**	**Status** Fed	State	CNPS	**Blooming Period**	**Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)**	**Potential to Occur in Project Area**
Balsamorhiza macrolepis Big-scale balsamroot	--	--	1B.2	Mar-Jun	Chaparral, **cismontane woodland**, **valley and foothill grassland** sometimes in serpentinite soil. Elev. 295-5100 ft	**None**. This species was not found during botanical surveys.
Blepharizonia plumosa Big tarplant	--	--	1B.1	July-Oct	**Valley and foothill grassland**, usually clay soil. Elev. 98-1656 ft	**None**. This species was not found during botanical surveys.
Calochortus pulchellus Mt. Diablo fairy-lantern	--	--	1B.2	Apr-Jun	Chaparral**, cismontane woodland, riparian woodland, valley and foothill grassland.** Occurs on wood and brush slopes. Elev. 98-2755 ft	**None**. This species was not found during botanical surveys.
Calochortus umbellatus Oakland star-tulip	--	--	4.2	Mar-May	Broadleafed upland forest, chaparral, **cismontane woodland**, lower montane coniferous forest, **valley and foothill grassland**, often in serpentinite soil. Elev. 328- 2296 ft	**None**. This species was not found during botanical surveys.
Castilleja ambigua var. *insalutata* Pink Johnny-nip	--	--	1B.1	May-Aug	Coastal prairie, coastal scrub. Elev. 0-328 ft	**None**. No prairie or scrub habitat present within the BSA.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	--	--	1B.1	May-Nov	**Valley foothill grassland** in alkaline soil. Elev. 0-754 ft	**None**. This species was not found during botanical surveys.
Chloropyron maritimum ssp. *palustre* Point Reyes salty bird's-beak	--	--	1B.2	Jun-Oct	Coastal salt marshes and swamps. Elev. 0-33 ft	**None**. No marsh or swamp habitat present within the BSA.

Scientific Name Common Name	Status Fed	State	CNPS	Blooming Period	Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)	Potential to Occur in Project Area
Chorizanthe robusta var. *robusta* Robust spineflower	FE	--	1B.1	Apr-Sep	Chaparral (maritime), openings in **cismontane woodland**, coastal dunes, coastal scrub in sandy or gravelly soil. Elev. 10-984 ft	**None.** This species was not found during botanical surveys.
Cicuta maculata var. *bolanderi* Bolander's water-hemlock	--	--	2B.1	Jul-Sep	Coastal fresh or brackish water marshes and swamps. Elev. 0-656 ft	**None**. No marsh or swamp habitat present within the BSA.
Cirsium andrewsii Franciscan thistle	--	--	1B.2	Mar-Jul	**Broadleafed upland forest**, coastal bluff scrub, coastal prairie, coastal scrub, in mesic, sometimes serpentinite conditions. Elev. 0-492 ft	**None**. This species was not found during botanical surveys.
Clarkia concinna ssp. *automixa* Santa Clara red ribbons	--	--	4.3	Apr-Jun	Chaparral, **cismontane woodland**. Elev. 295-4920 ft	**None.** This species was not found during botanical surveys.
Clarkia franciscana Presidio clarkia	FE	SE	1B.1	May-Jul	Coastal scrub, **valley and foothill grassland** in serpentinite soil. Elev. 82-1099 ft	**None**. This species was not found during botanical surveys.
Dirca occidentalis Western leatherwood	--	--	1B.2	Jan-Apr	Broadleafed upland forest, closed-cone coniferous forest, chaparral, **cismontane woodland**, North Coast coniferous forest, riparian forest, **riparian woodland** in mesic areas. Elev. 82-1394 ft	**None.** This species was not found during botanical surveys.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	--	--	1B.2	May-Sep	Chaparral, **cismontane woodland**, coastal prairie, valley and foothill grassland in sandy to gravelly serpentinite soil.	**None**. This species was not found during botanical surveys.

Scientific Name Common Name	Status Fed	State	CNPS	Blooming Period	Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)	Potential to Occur in Project Area
					Elev. 0-2296 ft	
Eryngium jepsonii Jepson's coyote thistle			1B.2	Apr-Aug	**Valley and foothill grassland**, vernal pools in clay soil. Elev. 10-984 ft	**None.** No Eryngium species found during botanical surveys.
Extriplex joaquinana San Joaquin spearscale	--	--	1B.2	Apr-Oct	Chenopod scrub, meadows and seeps, playas, and **valley and foothill grassland** in alkaline soil. Elev. 3-2739 ft	**None**. This species was not found during botanical surveys.
Fissidens pauperculus Minute pocket moss	--	--	1B.2	n/a	North Coast coniferous forest in damp coastal soil. Elev. 33-3359 ft	**None**. No coniferous forest habitat present within the BSA.
Fritillaria liliacea Fragrant fritillary	--	--	1B.2	Feb-Apr	**Cismontane woodland**, coastal prairie, coastal scrub, valley and foothill grassland often in serpentinite soil. Elev. 10-1345 ft	**None**. This species was not found during botanical surveys.
Gilia millefoliata Dark-eyed gilia	--	--	1B.2	Apr-Jul	Coastal dunes. Elev. 7-98 ft	**None**. No dune habitat present within the BSA.
Helianthella castanea Diablo helianthella	--	--	1B.2	Mar-Jun	**Broadleafed upland forest**, chaparral, **cismontane woodland**, coastal scrub, **riparian woodland**, and **valley and foothill grassland**. Usually in rocky axonal soil, often in partial shade. Elev. 197-4264 ft	**Low**. There are 15 CNDDB records in the 5-mile radius of the Project. The two nearest are for Occurrence #99 which was 11 plants observed in 2009 approximately 3,660 ft. southeast of the Project area near St. Mary's College. The second record

Scientific Name Common Name	Status Fed	State	CNPS	Blooming Period	Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)	Potential to Occur in Project Area
						is for Occurrence #75 which was 6 plants observed in 2003 approximately 3,680 ft. northwest of the Project area east of Rheem Valley, about 1 mile north of St. Mary's College. Species not observed during the March or May 2017 botanical surveys.
Hoita strobilina Loma Prieta hoita	--	--	1B.1	May-Oct	Chaparral, **cismontane woodland**, mesic **riparian woodland**, usually in serpentine soil. Elev. 98-2821 ft	**None**. This species was not found during botanical surveys.
Holocarpha macradenia Santa Cruz tarplant	FT	SE	1B.1	Jun-Oct	Coastal prairie, coastal scrub, **valley and foothill grassland**. Elev. 33-722 ft	**None**. This species was not found during botanical surveys.
Horkelia cuneata var. *sericea* Kellogg's horkelia	--	--	1B.1	Apr-Sep	Openings in closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub in sandy or gravelly soil. Elev. 33-656 ft	**None.** No coniferous forest, chaparral, dune or scrub habitat present within the BSA.
Iris longipetala Coast iris	--	--	4.2	Mar-May	Coastal prairie, lower montane coniferous forest, meadows and seeps in mesic areas. Elev. 0-1968 ft	**None**. No prairie, coniferous forest, meadow, or seep habitat present within the BSA.

Scientific Name Common Name	Status Fed	State	CNPS	Blooming Period	Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)	Potential to Occur in Project Area
Isocoma arguta Carquinez goldenbush	--	--	1B.1	Aug-Dec	**Valley and foothill grassland** in alkaline soil. Elev. 3-66 ft	**None**. This species was not found during botanical surveys.
Juglans hindsii Northern California black walnut	--	--	1B.1	Apr-May	Riparian forest, **riparian woodland**. Elev. 0-1443 ft	**Present.** These trees are likely hybridized (not genetically pure *J. hindsii*) but the resource agencies will require 3:1 tree replacement for trees removed.
Lasthenia conjugens Contra Costa goldfields	FE	--	1B.1	Mar-Jun	**Cismontane woodland**, playas in alkaline soil, mesic valley and foothill grassland, vernal pools in mesic areas. Elev. 0-1542 ft	**None**. This species was not found during botanical surveys.
Lathyrus jepsonii var. *jepsonii* Delta tule pea	--	--	1B.2	May-Sep	Freshwater and brackish marshes and swamps. Elev. 0-16 ft	**None**. No marsh or swamp habitat present within the BSA.
Leptosiphon acicularis Bristly leptosiphon	--	--	4.2	Apr-Jul	Chaparral, **cismontane woodland**, coastal prairie, **valley and foothill grassland**. Elev. 180-5002 ft	**None**. This species was not found during botanical surveys.
Malacothamnus hallii Hall's bush-mallow	--	--	1B.2	May-Oct	Chaparral, coastal scrub. Elev. 33-2493 ft	**None**. No chaparral or scrub habitat present within the BSA.
Meconella oregana Oregon meconella	--	--	1B.1	Mar-Apr	Coastal prairie, coastal scrub. Elev. 820-2034 ft	**None.** No prairie or scrub habitat present within the BSA.

Scientific Name Common Name	Status Fed	State	CNPS	Blooming Period	Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)	Potential to Occur in Project Area
Micropus amphibolus Mt. Diablo cottonweed	--	--	3.2	Mar-May	**Broadleafed upland forest**, chaparral, **valley and foothill grassland, cismontane woodland** in rocky soil. Elev. 148-2706 ft	**None**. This species was not found during botanical surveys.
Monardella antonina ssp. *antonina* San Antonio Hills monardella	--	--	3	Jun-Aug	Chaparral, **cismontane woodland**. Elev. 1050-3280 ft	**None**. This species was not found during botanical surveys.
Monolopia gracilens Woodland woolythreads	--	--	1B.2	Feb-Jul	Openings in broadleafed upland forest, chaparral, North Coast coniferous forest; **cismontane woodland**; valley and foothill grassland in serpentine soil. Elev. 328-3936 ft	**None**. This species was not found during botanical surveys.
Navarretia gowenii Lime Ridge navarretia	--	--	1B.1	May-Jun	Chaparral. Elev. 590-1000 ft	**None**. No chaparral habitat present within the BSA.
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose	FE	SE	1B.1	Mar-Sep	Inland dunes. Elev. 0-98 ft	**None**. No dune habitat present within the BSA.
Plagiobothrys diffusus San Francisco popcornflower	--	SE	1B.1	Mar-Jun	Coastal prairie, **valley and foothill grassland**. Elev. 197-1181 ft	**None**. This species was not found during botanical surveys.
Polygonum marinense Marin knotweed	--	--	3.1	Apr-Oct	Coastal salt or brackish marshes and swamps. Elev. 0-33 ft	**None**. No marsh or swamp habitat present within the BSA.
Ranunculus lobbii Lobb's aquatic buttercup	--	--	4.2	Feb-May	**Cismontane woodland**, North Coast coniferous forest, valley and foothill grassland, vernal pools in mesic areas. Elev. 49-1542 ft	**None**. This species was not found during botanical surveys.

Scientific Name **Common Name**	**Status** Fed	State	CNPS	**Blooming Period**	**Habitat Requirements (Description from CNPS: habitats present within BSA are bolded)**	**Potential to Occur in Project Area**
Sanicula maritima Adobe sanicle	--	SR	1B.1	Feb-May	Chaparral, coastal prairie Meadows and seeps, **valley and foothill grassland** in clay or serpentinite soil. Elev. 98-787 ft	**None**. No suitable habitat present within the BSA.
Spergularia macrotheca var. longistyla Long-styled sand-spurrey	--	--	1B.2	Feb-May	Alkaline soils, meadows, seeps, marshes and swamps. Elev. 0- 836 ft	**None**. No suitable habitat present within the BSA.
Streptanthus albidus ssp. *peramoenus* Most beautiful jewelflower	--	--	1B.2	Mar-Oct	Chaparral, cismontane woodland, valley and foothill grassland in serpentinite soil. Elev. 312-3280 ft	**None**. No serpentine soil in the BSA.
Stuckenia filiformis ssp. *alpina* Slender-leaved pondweed	--	--	2B.2	May-Jul	Assorted shallow freshwater marshes and swamps. Elev. 984-7052 ft	**None**. No marsh or swamp habitat present within the BSA.
Trifolium hydrophilum Saline clover	--	--	1B.2	Apr-Jun	Marshes and swamps, valley and foothill grassland (mesic, alkaline) and vernal pools. Elev. 0-984 ft	**None**. No mesic conditions present within the BSA.
Viburnum ellipticum Oval-leaved viburnum	--	--	2B.3	May-Jun	Chaparral, **cismontane woodland**, and lower montane coniferous forest. Elev. 705-4592 ft	**None.** This species was not found during botanical surveys.

Notes:
General Habitat Descriptions are based upon definitions utilized by the CNPS online Inventory of Rare and Endangered Plants (2019). Habitats present within the study area are emphasized with **bold print**.

BSA = Biological Study Area
CNPS = California Native Plant Society

Status Legend
-- = No status, or not applicable
FE = Listed as endangered under the Federal Endangered Species Act (FESA)
FT = Listed as threatened under FESA
SE = Listed as endangered under the California Endangered Species Act (CESA)
SR = Listed as rare under CESA

CNPS Ranking
1B = Rare, threatened, or endangered in California and elsewhere.
2B = Rare, threatened, or endangered in California and but more common elsewhere.
3 = More information needed about this plant (Review List).
4 = Limited distribution (Watch List).

Threat Ranks
0.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat).
0.2 = Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat).
0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

Potential to Occur Definitions
None = No possibility for occurrence.
Low = Suitable habitat present; not likely to occur due to environmental constraints but cannot be ruled as absent.
Moderate = Potential to occur based on habitat suitability and documented records in the study area region.
High = Species has been documented within the study area.

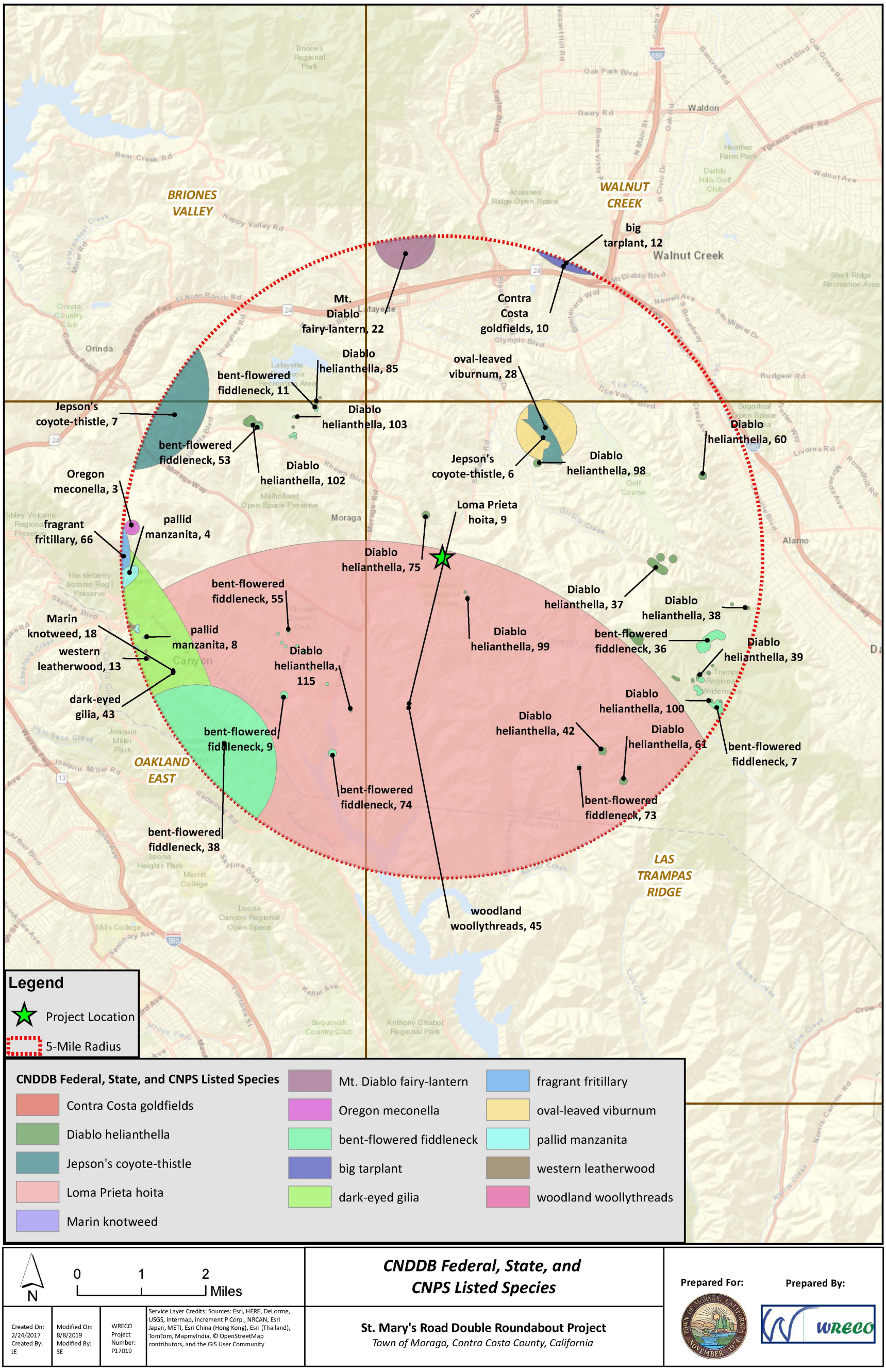

Figure 8. CNDDB Plant Occurrences within a 5-mile Radius

3.7 Special-Status Wildlife

Special-status wildlife are those listed by the USFWS or NOAA Fisheries as endangered or threatened, or wildlife that are listed by the state or CDFW as endangered, threatened, an SSC, or rare. A total of 32 special-status wildlife species with the potential to occur within the BSA was generated from the CNDDB, USFWS, and NOAA Fisheries online databases. Table 4 lists the special-status wildlife generated from the database searches and provides descriptions for their potential presence or absence, listed status, required habitats; and their likelihood of occurrence in the BSA.

The results from all databases queries are presented in Appendix E. See Figure 9 for CNDDB special-status wildlife species that have occurrences within a 5-mile radius of the BSA.

Table 4. Potential for Special-Status Wildlife to Occur within the St Mary's Roundabout BSA

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Invertebrates				
Branchinecta lynchi Vernal Pool fairy shrimp	FT	--	Endemic to the grasslands of the Central Valley, Central Coast and South Coast mountains, in astatic rain-filled pools.	**None**. No suitable habitat present within the BSA.
Callophrys mossii bayensis San Bruno elfin butterfly	FE	--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County.	**None**. Outside the range of the species.
Euphydryas editha bayensis Bay checkerspot butterfly	FT	--	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.	**None**. Outside the range of the species.
Fish				
Eucyclogobius newberryi Tidewater goby	FE	--	Brackish water habitats along the Calif. coast from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water & high oxygen levels. They rarely move into marine or freshwater habitat.	**None**. No brackish water habitat present in BSA.
Archoplites interruptus Sacramento perch	--	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of central valley.	**None**. Outside the range of the species.

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Oncorhynchus tshawytscha Chinook Salmon – Central Valley fall/late fall-run ESU	--	SSC	Populations spawning in the Sacramento and San Joaquin rivers and their tributaries. Habitat includes Sacramento and San Joaquin flowing waters.	**None.** The BSA is within range and essential fish habitat (ESH) for this ESU. As an anadromous fish, chinook salmon occurs in Suisun Bay when migrating to natal spawning streams in the Central Valley. There are two fish barriers between Suisun Bay and the BSA: Bancroft Road Drop Structure and Walnut Creek City Drop Structure[1]. These barriers completely block all fish passage for anadromous fish species.
Oncorhynchus mykiss irideus Steelhead – Central California Coast DPS	FT	--	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins..Habitat includes Sacramento and San Joaquin flowing waters.	**None.** The BSA is within spawning range of this DPS. However, There are two fish barriers between Suisun Bay and the BSA: Bancroft Road Drop Structure and Walnut Creek City Drop Structure. These barriers completely block all fish passage for anadromous fish species.
Hypomesus transpacificus Delta smelt	FT	SE	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	**None**. Outside the range of the species.
Spirinchus thaleichthys Longfin smelt	FC	ST/SSC	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	**None**. Outside the range of the species.

[1] California Department of Wildlife. 2019. Passage Assessment Database (PAD). <https://nrm.dfg.ca.gov/PAD/Default.aspx> (Last accessed: August 2019)

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Reptiles				
Emys marmorata Western pond turtle	--	SSC	A thoroughly aquatic turtle of ponds, marshes, **rivers, streams** and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	**Low**. Las Trampas Creek provides aquatic habitat within the BSA; however, no CNDDB occurrences within a 5-mile radius of the Project have been recorded.
Anniella pulchra Northern California legless lizard	--	SSC	Sandy or loose loamy soils with high moisture content. In chaparral, coastal dunes, and coastal scrub habitats with sparse vegetation.	**None.** Soil conditions are not suitable. Vegetation is abundant.
Masticophis lateralis euryxanthus Alameda whipsnake	FT	ST	Typically found in **chaparral and scrub habitats but will also use adjacent grassland**, oak savanna and **woodland habitats**. Mostly south-facing slopes & ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	**High**. Annual grassland and woodland habitat occur within the BSA, and critical habitat is directly adjacent to the Project area. There are 26 CNDDB occurrences within a 5-mile radius of the Project, 6 of these are within 3 miles. The nearest record was for Occurrence #172 located approximately 1.5 miles southeast of the Project, for a species found dead on the road in 2012.
Amphibians				
Ambystoma californiense California tiger salamander	FT	ST	Central Valley DPS federally listed as threatened. Santa Barbara and Sonoma counties DPS federally listed as endangered. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	**None**. No suitable breeding habitat within the BSA.

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Rana boylii Foothill yellow-legged frog	--	CT, SSC	**Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats**.	**Low.** Suitable upland habitat present. No suitable breeding habitat present. There is 1 CNDDB record approximately 4.3 miles west of the Project limits. The CNDDB occurrence 160 is for a frog observed in 1997 along an intermittent tributary to Moraga Creek, 0.75 mile southeast of Moraga HWY and Glorietta Blvd.
Rana draytonii California red-legged frog	FT	SSC	**Lowlands and foothills in or near-permanent sources of deep water** with dense, shrubby or emergent riparian vegetation.	**Moderate**. Suitable upland habitat present. No suitable breeding habitat present. There is 2 CNDDB records approximately 2 miles north and 1 CNDDB record approximately 1.5 miles north of the Project limits. The nearest CNDDB record (occurrence 120) is for a frog observed in 1994 in Las Trampas Creek, east of St. Mary's Road, 1.3 miles north of Rheem Blvd.
Birds				
Aquila chrysaetos Golden eagle	--	FP	Rolling foothills, mountain areas, sage-juniper flats, & desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**None**. No suitable nesting habitat present.
Haliaeetus leucocephalus Bald eagle	--	SE, FP	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water.	**None**. No suitable nesting habitat present.

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Falco peregrinus anatum American peregrine falcon	--	FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	**None.** No suitable nesting habitat present.
Coturnicops noveboracensis Yellow rail	--	SSC	Summer resident in eastern Sierra Nevada in Mono County. Inhabit freshwater marshlands.	**None.** No suitable nesting or foraging habitat present. Also outside the nesting range of the species.
Laterallus jamaicensis coturniculus California black rail	--	ST, FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**None.** No suitable nesting or foraging habitat present.
Rallus longirostris obsoletus California Ridgway's rail	FE	SE, FP	Salt-marsh and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	**None**. No suitable nesting or foraging habitat present.
Sternula antillarum browni California least tern	FE	SE, FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**None**. No suitable nesting or foraging habitat present.
Athene cunicularia Burrowing owl	--	SSC	**Open, dry annual or perennial grasslands**, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**None**. Annual grassland occurs within the BSA; however, it is routinely managed through mowing and tilling. In addition, no CNDDB records occur within a 5-mile radius of the Project area.
Melospiza melodia maxillaris Suisun song sparrow	--	SSC	Resident of brackish-water marshes surrounding Suisun Bay.	**None**. Outside the range of the species.

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Melospiza melodia pusillula Alameda song sparrow	--	SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**None.** Outside the range of the species.
Mammals				
Scapanus latimanus parvus Alameda Island mole	--	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual & perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	**None.** Outside the range of the species.
Corynorhinus townsendii Townsend's big-eared bat	--	CT, SSC	Roosts in man-made structures such as old buildings and bridge crevices. Roosting sites are limiting because they are extremely sensitive to human disturbance.	**None**. No suitable roosting habitat within the BSA. No CNDDB occurrence records within 5-miles of the Project.
Lasiurus cinereus Hoary bat	--	F.G.C.§2124, §2126	**Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding**. Roosts in dense foliage of medium to large trees and requires water.	**Moderate**. Oak woodland and riparian habitat could provide suitable roosting habitat, with annual grassland habitat available for feeding.
Lasionycteris noctivagans Silver-haired bat	--	F.G.C.§2124, §2126	Primarily a coastal and montane forest dweller. Roosts in hallow trees, beneath exfoliating bark or in abandoned woodpecker holes. Feeds over streams, ponds and open brushy areas.	**None**. No suitable roosting habitat within the BSA. No CNDDB occurrence records within 5-miles of the Project.
Antrozous pallidus Pallid bat	--	SSC	Deserts, **grasslands, shrublands, woodlands & forests**. Most common in open dry habitats with rocky areas for roosting.	**Moderate**. There are 2 CNDDB occurrences within 5-miles of the Project. Occurrence 138 is a historic record from 1931 located approximately 3.4 miles north or the Project. Occurrence 141 is a historic record from 1943 located approximately 3.4 miles southwest

Scientific Name **Common Name**	**Status Federal/State**		**Habitat (CNDDB Description)**	**Potential to Occur in Project Area**
Nyctinomops macrotis Big free-tailed bat	--	SSC	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**None.** No suitable roosting habitat within the BSA. No CNDDB occurrence records within 5-miles of the Project. Also, outside the range of the species.
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	--	SSC	Forest habitats of moderate canopy to dense understory. May prefer chaparral and redwood habitats.	**Present.** There are 2 CNDDB records within 5-miles of the Project. Occurrence 14 is from 2015 located approximately 3 miles west on the southwest side of Moraga way and Ivy Dr. in Orinda. Occurrence 13 is from 2015 located approximately 2.5 miles northeast and was found near Hunsaker Canyon Rd. During the June 18, 2019, survey, three woodrat nests were observed within the BSA.
Taxidea taxus American badger	--	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**None**. No undisturbed grassland habitat within the BSA. No CNDDB occurrence records within 5-miles of the Project.

Notes

1. In this report, evaluation of potential presence is based upon the types of habitat that each listed species occupies, historical records, and on observations made during site surveys.
2. Sources: Unless otherwise noted, technical information was obtained as follows:
    - Nomenclature/Taxonomy – California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) Special Animals List (CDFW 2019). When necessary, additional sources include, in the following order: CDFW Statewide List of Animal Species (CDFW 2019), American Ornithological Society (AOS) checklist of North and Middle American Birds (AOS 2019), and Integrated Taxonomic Information System (ITIS 2019).
    - Status and Habitat Description – CNDDB.

Status Legend

-- = No status, or not applicable
FE = Listed as endangered under the Federal Endangered Species Act (FESA)
FT = Listed as threatened under FESA

FC = Candidate for listing as endangered or threatened under FESA
SE = Listed as endangered under the California Endangered Species Act (CESA)
ST = Listed as threatened under CESA
SSC = Designated as a Species of Special Concern by CDFW under the California Environmental Quality Act (CEQA)
FP = Fully Protected under the California Fish and Game Code (F.G.C.).
CE = Candidate for listing as endangered under CESA
CT = Candidate for listing as threatened under CESA
DL = Delisted
F.G.C. = Protected under nongame mammal provisions in the California Fish and Game Code; in particular, bats

Rationale Definitions
None = No possibility for occurrence.
Low = Suitable habitat present; not likely to occur due to environmental constraints but cannot be ruled as absent.
Moderate = Potential to occur based on habitat suitability and documented records in the BSA region.
High = Species has been documented within the BSA.

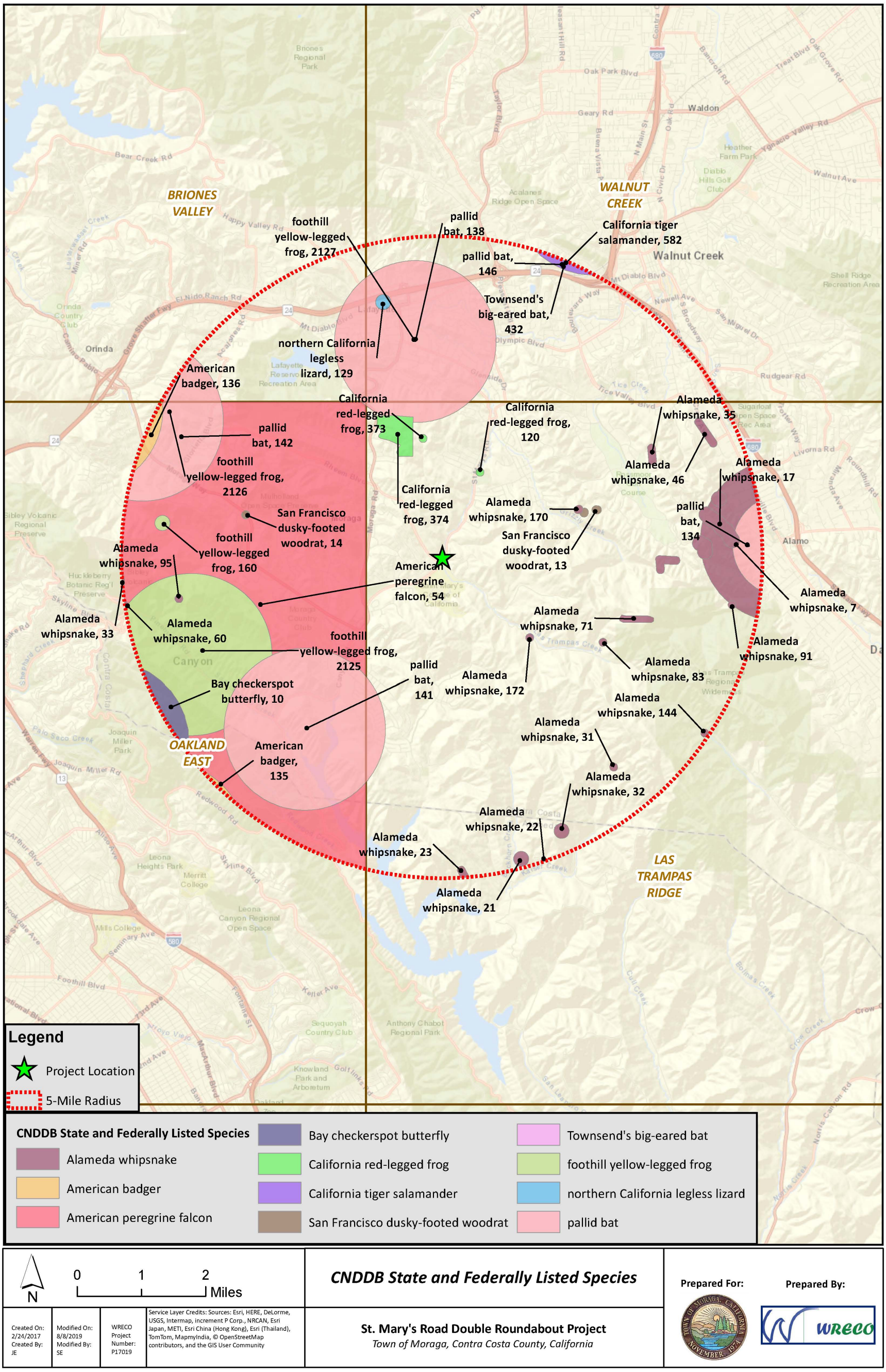

Figure 9. CNDDB Wildlife Occurrences within a 5-maile Radius

4 RESULTS: BIOLOGICAL RESOURCES EVALUATIONS AND DISCUSSION

Results described in this section are based upon data collected during site surveys, biological resources evaluations, and various database searches. Project-related impacts are discussed for each resource. Table 8 in section 6, lists recommended avoidance and minimization measures (AMM) for the Project. All plant and wildlife species observed during the biological surveys are included in Appendix E. Project-related impacts and avoidance measures are discussed for each resource.

4.1 Habitats and Natural Communities of Special Concern

4.1.1 Designated Sensitive Natural Communities

The CDFW's Natural Community Conservation Planning (NCCP) program originated from Fish and Game Code (F.G.C.) Section 2800. The purpose of the NCCP program was to combine CDFW's efforts with private and public partners to take a broad-based ecosystem approach to planning for the protection and perpetuation of California's biological diversity. The goal of the NCCP is to identify and provide for regional protection of plants, wildlife, and their habitats. Part of this effort is the development of a standardized classification of vegetation community nomenclature that is utilized by the National Vegetation Classification System. Another tool initiated by the NCCP is the Vegetation Classification and Mapping Program (VegCAMP) as a result of a State mandate requiring CDFW to develop and maintain a vegetation mapping standard for the State per F.G.C. Section 1940. Sensitive natural communities that have been mapped to date as a result of the VegCAMP effort are included in the CNDDB database.

4.1.1.1 Impact Analysis and Avoidance Measures

There are no CDFW-designated sensitive natural communities within or adjacent to the BSA, as well as within a 5-mile radius of the BSA. Therefore, no impacts to CDFW-designated sensitive natural communities are anticipated, and no specific AMM are proposed.

4.1.2 Wetlands and Other Waters of the United States

Within the BSA approximately 0.024 ac of potentially jurisdictional other waters of the U.S. under Section 404 of the CWA was delineated in Las Tramps Creek and the two tributaries. The aquatic features are designated as potential, because they have not gone through a USACE jurisdictional determination. No potential jurisdictional waters of the U.S. (wetlands) were identified or delineated within the Project limits. Table 5 lists each aquatic feature, along with its total area and length within the Project limits.

Table 5. Aquatic Resources Delineated within the BSA

Potential Other Waters of the U.S.	Area (ft^2)	Area (ac)	Length (lf)
Las Trampas Creek	689	0.016	88
Tributary 1	55	0.001	44
Tributary 2	335	0.007	101
Total	**1,079**	**0.024**	**233**

4.1.2.1 Impact Analysis and Avoidance Measures

The Project will result in temporary disturbance totaling 0.020 ac. Temporary impacts will consist of grading and ground disturbance associated with construction. Permanent impacts will total 0.005 ac. Permanent impacts include filing of slopes from pavement widening, as well as the extension of a culvert. Compensatory mitigation will be required for permanent and temporary impacts, and will require negotiations and approvals from the resource agencies.

Prior to construction, including clearing and grubbing, the Project biologist should delineate areas along the construction alignment where silt fence and high visibility environmentally sensitive area (ESA) fencing should be erected to protect other waters adjacent to the Project limits.

4.1.3 Critical Habitat

Critical habitat is designated by the USFWS and NOAA Fisheries to protect areas that are essential to the survival of federally-listed species of plants and wildlife. Projects that involve a federal permit, license, or funding and are likely to destroy or adversely modify critical habitat of are required to consult with the USFWS and NOAA Fisheries.

Critical habitat for Alameda whipsnake (*Masticophis lateralis euryxanthus*), Unit 2 (Oakland-Las Trampas), is adjacent to the northern boundary of the BSA (Figure 10).

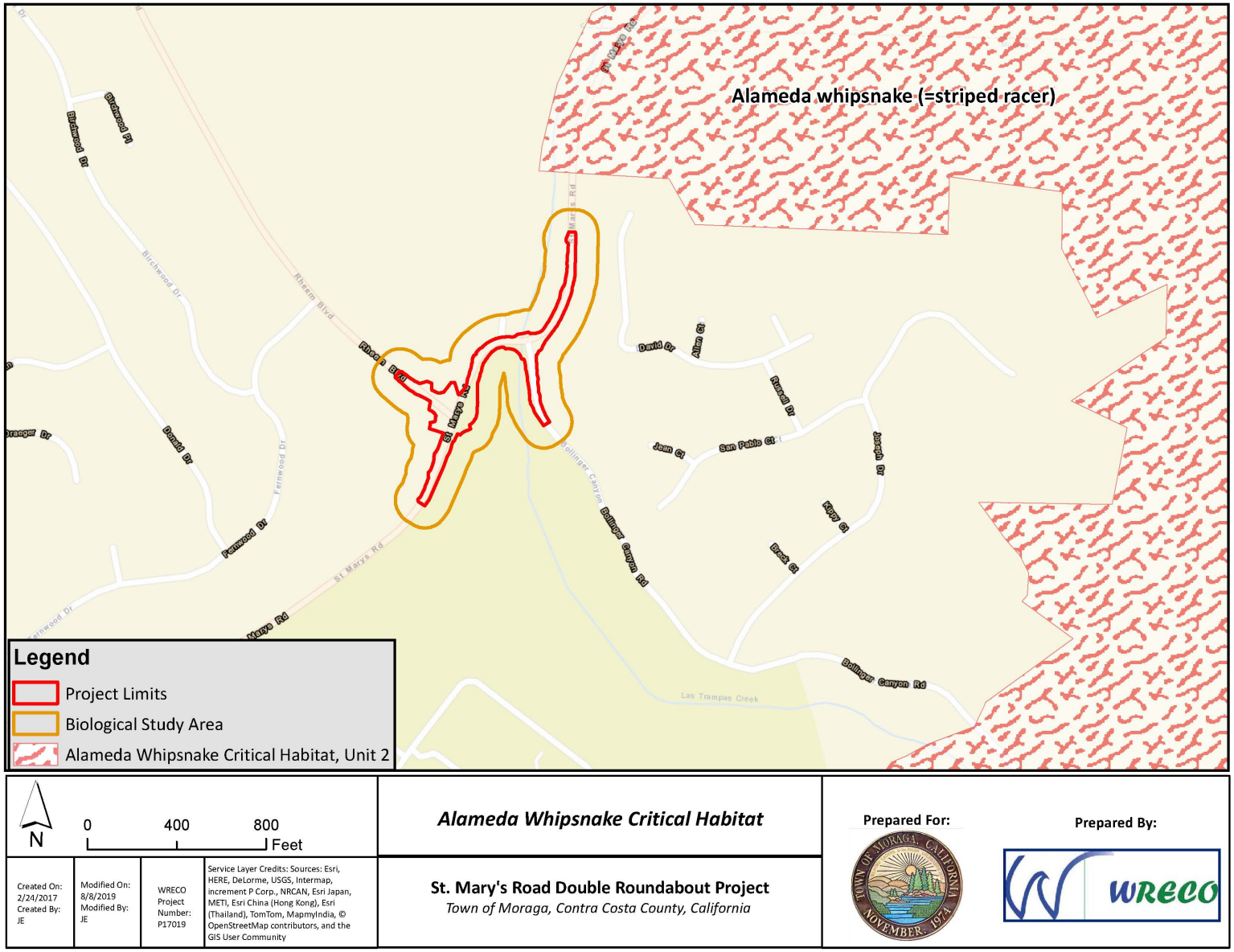

Figure 10. Alameda Whipsnake Critical Habitat Map

4.1.3.1 Impact Analysis and Avoidance Measures

Alameda whipsnake critical habitat does not occurr within the BSA. Therefore, no impacts to critical habitat are anticipated, and no specific AMMs are proposed. However, compensatory mitigation will be required for impacts to whipsnake habitat.

4.1.4 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act was passed in 1976 for the conservation and management of the fishery resources of the U.S. to prevent overfishing, to rebuild overfished stocks, to ensure conservation, and to facilitate long-term protection of EFH. This Act is implemented by regional Fishery Management Councils that work with NOAA to develop and implement fishery management plans. The plans must identify the EFH for each fishery within their NOAA jurisdiction. When a project is proposed that could adversely affect EFH, federal agencies must consult with NOAA in order to obtain avoidance and minimization consultation as well as conservation and enhancement recommendations.

As previously state in Section 3.5, anadromous fish species have no potential to occur due to two fish barriers between Suisun Bay and the BSA (located in Walnut Creek and Las Trampas Creek). These barriers completely block all fish passage for anadromous fish species. However, the Project is within EFH for Chinook salmon (*Oncorhynchus tshawytscha*) (Suisun Bay HUC-8). Chinook salmon EFH is shown on Figure 11.

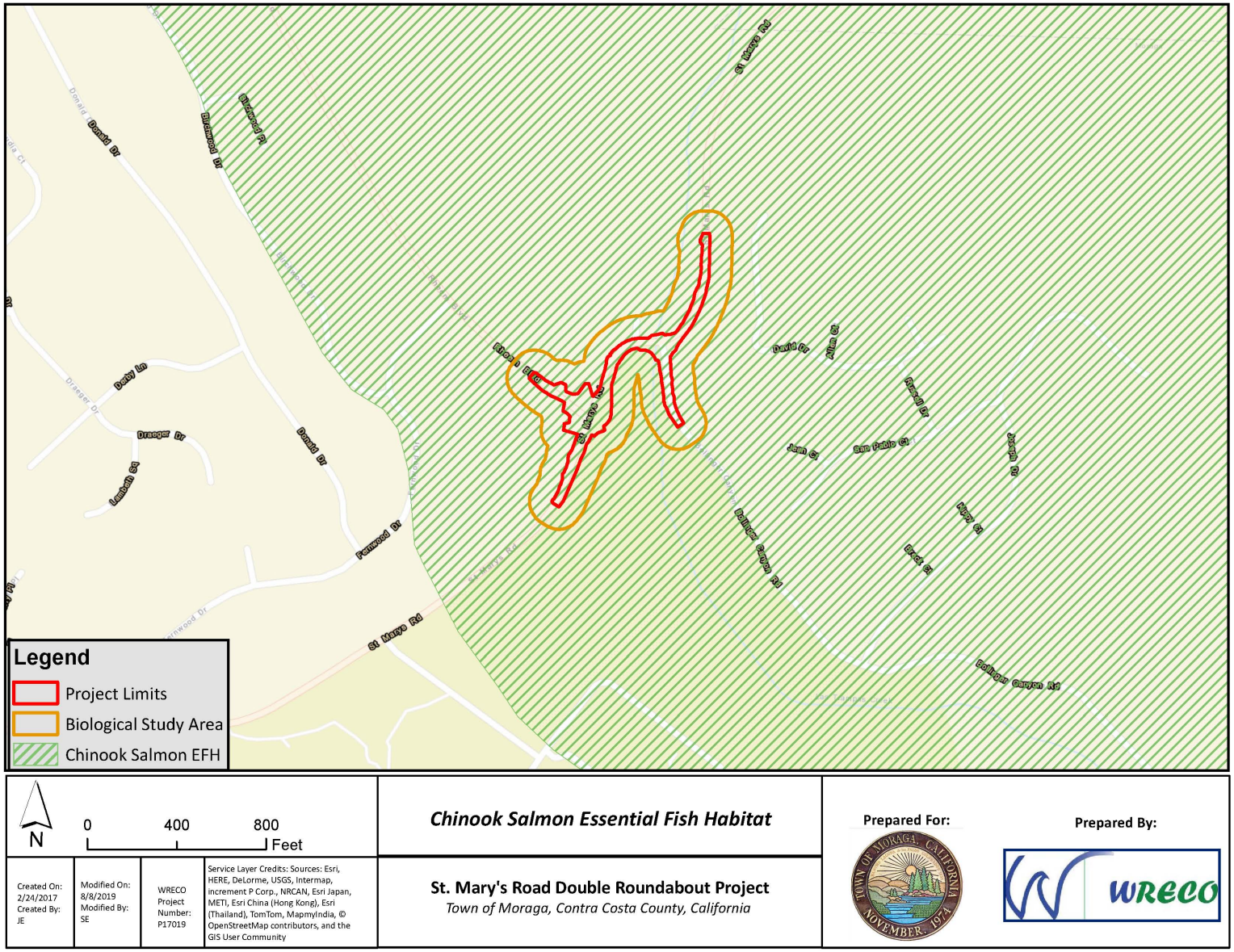

Figure 11. Chinook Salmon Essential Fish Habitat

4.1.4.1 Impact Analysis and Avoidance Measures

The Project may have minimal impacts on EFH for Chinook salmon, however due to the fish barriers that exclude this species from the Study Area, it is unlikely that consultation with NOAA Fisheries is necessary. The Town will implement AMMs described in Table 8 to protect water quality and EFH for Chinook salmon as necessary.

4.2 Special-Status Plant Species

Based on literature and database searches and botanical surveys, 50 plant species were initially evaluated (Table 3), and 2 were determined to potentially occur within the BSA. Species with no suitable habitat in the BSA were dropped from consideration and are not discussed further. Table 6 lists the special-status species that were determined to have the potential to occur within the BSA.

Table 6. Special-Status Plant Species with Potential to Occur within the BSA

Common Name	*Scientific Name*	Status	Occurrence Potential
Diablo helianthella	*Helianthella castanea*	1B.2	Low
Northern California Black Walnut	*Juglans hindsii*	1B.1	Present

4.2.1 Diablo helianthella

Diablo helianthella is a CNPS list 1B plant with no federal or state listing. This perennial herb occurs only in California and is found in broadleafed upland forests, chaparral, riparian woodlands, valley grasslands, and foothill woodlands. It occurs between 195 and 4,625 feet and blooms from March to June.

There are 15 CNDDB records in the 5-mile radius of the Project. The two nearest are for Occurrence #99 which was 11 plants observed in 2009 approximately 0.69 miles southeast of the Project area near St. Mary's College. The second record is for Occurrence #75 which was 6 plants observed in 2003 approximately 0.70 miles northwest of the Project area east of Rheem Valley, about 1 mile north of St. Mary's College.

4.2.1.1 Impact Analysis and Avoidance Measures

Diablo helianthella was not observed during the 2017 botanical surveys. There is a low potential for Diablo helianthella to occur within the BSA, including fairly undisturbed foothill or riparian woodlands, or valley grasslands adjacent to Las Trampas Creek. The following AMMs will be implemented to prevent Project impacts to Diablo helinathell:

- No later than 48 hours prior to any ground disturbance, pre-construction botanical surveys will be conducted by a qualified biologist within the BSA, following CNPS and CDFW protocol.
- If Diablo helianthella is found within the BSA during pre-construction surveys or during construction, the qualified biologist must consult with CDFW.

4.2.2 Northern California black walnut

Northern California Black Walnut (*Juglans hindsii*) is a CNPS list 1B deciduous tree with no federal or state special status listing. The northern subspecies is found in nature at only a few sites. Most black walnut trees in northern California have hybridized with *J. Californica*, a mostly non-riparian tree of Southern California, as well as other walnut species. The northern California black walnut is found in riparian forest, and riparian woodland. Few extant native stands remain. This rare species occurs in deep alluvial soil associated with a creek or stream between elevations of 0 to 1,300 feet.

The only CNDDB record (occurrence #2) in the 5-mile radius is for 6 trees observed in 2001 approximately 2.1 miles northeast of the Project area. This species was observed in the study area during the May 2017 botanical surveys. Multiple trees were located in the riparian corridor of Las Trampas Creek along the banks. According to CNPS, the Las Trampas Ridge quad (465D) contains populations of northern California black walnut that are presumed extant (CNPS, 2019).

4.2.2.1 Impact Analysis and Avoidance Measures

Since Northern California black walnut trees are present within the BSA, the following AMMs will be implemented to prevent Project impacts to these trees:

- The Project will avoid impacting or removing Northern California black walnut trees during construction.
- If impacting or removing Northern California black walnut trees can't be avoided, then the qualified biologist must consult with CDFW.

4.3 Special-Status Wildlife Species

Based on literature and database searches, a total of 32 wildlife species were initially evaluated (see Table 4 above). Species with no suitable habitat in the BSA were dropped from consideration and are not discussed further. Table 7 lists the special-status species that have the potential to occur within the BSA.

Table 7. Special-Status Species with Potential to Occur within the BSA

Common Name	*Scientific Name*	Status	Occurrence Potential
Western pond turtle	*Emys marmorata*	SSC	Low
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	High
Foothill yellow-legged frog	*Rana boylii*	SSC	Low
California red-legged frog	*Rana draytonii*	FT, SSC	Moderate
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	SSC	Present

Notes
FT = Federally threatened

ST = State threatened SSC = Species of special concern
See Appendix D for details.
In this BRS, evaluation of potential presence is based upon the types of habitat that each listed species occupies and on observations made during the March 31, May 25, and July 5, 2017, site surveys.

4.3.1 Western Pond Turtle

The Western pond turtle (*Emys marmorata*), a California-listed SSC, and USFWS is in the candidate assessment process for protection under FESA. Western pond turtle range throughout California, from southern coastal California and the Central Valley, north to the Cascade and eastern Sierra Nevada mountain ranges. Western pond turtle occurs in a variety of permanent and intermittent aquatic habitats, such as ponds, lakes, marshes, rivers, streams, irrigation ditches and ephemeral pools. They dig their nests in dry soils upland of streams in areas with sparse vegetation and southern exposure. Nesting occurs during the months of April through August (Stebbins, 2003).

Western pond turtle could occur within Las Trampas Creek, Tributary 1, and Tributary 2, within the BSA; however, there are no CNDDB records within 5-miles of the BSA. No focused surveys were conducted for Western pond turtle; however, none were observed during the biological surveys conducted on March 31, May 25, July 5, 2017, and June 2019.

4.3.1.1 Impact Analysis and Avoidance Measures

There is a low potential for western pond turtle to occur within the BSA, including riverine and riparian habitats associated with Las Trampas Creek, Tributary 1, and Tributary 2. The following AMMs will be implemented to prevent Project impacts to western pond turtle and its habitat:

- No later than 48 hours prior to any ground disturbance, pre-construction surveys will be conducted by a qualified biologist within the BSA.
- If a pond turtle is observed in the Project limits during construction, all work will be stopped, and the turtle will: 1) be allowed to leave on its own volition, or 2) be moved by the qualified biologist in the direction it was heading (upstream or downstream), at a safe distance from the construction activities, and at a safe location. The biologist will report observations and relocations to the Town.

4.3.2 Alameda Whipsnake

The Alameda whipsnake (*Masticophis lateralis euryxanthus*) is listed as threatened under both the FESA and CESA. It was federally listed in 1997, and state listed in 1971.

The range of this species is primarily restricted to the inner Coast Range in western and central Contra Costa and Alameda counties, though there are also records in San Joaquin and Santa Clara counties (USFWS, 2002). The snakes are 30 to 60 inches long, with dark brown or black on the back and wide orange stripes down the sides. The underside is also orange, becoming pink toward the tail (Stebbins and McGinnis, 2012).

Alameda whipsanke typically occurs on south-, southwest-, and southeast-facing slopes. The snakes require open coastal shrub or chaparral, with small mammal burrows as retreat sites (Stebbins and McGinnis, 2012). Lizards, particularly western fence lizards (*Sceloporus*

occidentalis), are the primary prey of Alameda whipsnake. Rock outcrops are of importance to this species as cover and to provide hunting opportunities (USFWS, 2011).

This species will also venture into adjacent habitats, including grassland, oak savanna, and occasionally oak woodland (USFWS, 2002). Individual whipsnakes have been located more than 4 miles from coastal scrub or chaparral habitat (USFWS, 2011), though they have been found to occur more regularly within 500 meters (1,640 feet) of scrub habitats. They may also travel along riparian corridors (Swaim, 2000, as cited in Jones & Stokes, 2006).

Critical habitat was designated for the Alameda whipsnake in 2006 (USFWS, 2006), and there is one critical habitat unit (Unit 2-Oakland-Las Trampas) located approximately 300 feet north of the BSA. This critical habitat unit and extends outside the BSA along Las Trampas Regional Wilderness to San Leandro Reservoir and Redwood Regional Park. See Figure 8 for Alameda whipsnake critical habitat map.

No Alameda whipsnakes were observed during the biological surveys conducted on March 31, May 25, July 5, 2017, and June 2019. However, there are 26 CNDDB occurrences within a 5-mile radius of the BSA, 6 of these are within 3 miles. The nearest record was for Occurrence #172 located approximately 1.5 miles southeast of the Project, for a species found dead on the road in 2012.

4.3.2.1 Impact Analysis and Avoidance Measures

Due to the high mobility of this species, the presence of known populations and critical habitat in the region, and the presence of dispersal corridors on-site, Alameda whipsnake has a high potential to occur in grassland, oak woodland, and riparian woodland habitats in the BSA. A Biological Opinion from the USFWS for Alameda whipsnake will likely be required for the Project. The following AMMs will be implemented to prevent Project impacts to Alameda whipsnake:

- No later than 48 hours prior to any ground disturbance, pre-construction surveys will be conducted by a qualified biologist within the BSA.
- If Alameda whipsnakes are found within the BSA during pre-construction surveys or during construction, the qualified biologist will stop all construction activities within the vicinity of the whipsnake and will consult with USFWS and CDFW.
- To prevent inadvertent entrapment of Alameda whipsnake during construction, excavated holes or trenches more than 1 foot deep with walls steeper than 30 degrees will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 4-foot-high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent entrapment of listed species. If it is not feasible to cover an excavation or provide an additional 4-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 filled, they will be thoroughly inspected by the on-site biologist for trapped animals. If at any time a trapped listed animal is discovered, the on-site biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, or the USFWS and CDFW will be

contacted by telephone for guidance. The USFWS and CDFW will be notified of the incident by telephone and email within 48 hours.

- Plastic monofilament netting (erosion control matting) or similar material will not be used for the Project because Alameda whipsnake may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

Compensatory mitigation will be required for impacts to habitat for Alameda whipsnake habitat. Appropriate mitigation would need to be negotiated with USFWS and CDFW.

4.3.3 Foothill Yellow-legged Frog

The foothill yellow-legged frog (*Rana boylii*) is a California-listed SSC, it has no federal status. These medium sized frogs are found in streams, creeks or rivers with sunny banks and gravel and cobble bar substrates between sea level and 6,700 feet. Their historical range in California extends from the Oregon border to southern California and east to the Sierras. Foothill yellow-legged frogs require shallow, flowing water in small to moderate-sized streams, with at least some cobble-sized substrate, which is used for attaching egg masses of about 900 eggs to rocks at the water surface along the edges of pools and riffles between March and early June after winter flows have subsided (Jennings and Hayes, 1994; Stebbins, 2003). Larvae require water in pools or riffles at least through September in order to successfully transform to the adult phase. Both the adults and larvae are prey to a large range of predators including insects, fish, snakes, and mammals. Foothill yellow-legged frogs are rare in areas occupied by introduced species such as bullfrogs (*Rana catesbeiana*) and warm-water fishes such as green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), and largemouth bass (*Micropterus salmoides*) often disappearing entirely from such areas (Jennings and Hayes, 1994).

No foothill yellow-legged frogs were observed during biological surveys conducted on March 31, May 25, July 5, 2017, and June 2019. However, there is one CNDDB record (occurrence 160) for two adult frogs observed in 1997 approximately 4.3 miles northwest of the BSA in an intermittent tributary to Moraga Creek near the intersection of Moraga Hwy and Glorietta Blvd. There is marginal breeding habitat and suitable dispersal habitat for the foothill yellow-legged frog within the BSA.

4.3.3.1 Impact Analysis and Avoidance Measures

There is a low potential for foothill yellow-legged frog to occur within the BSA, including Las Trampas Creek, Tributary 1, and Tributary 2. The following AMMs will be implemented to prevent Project impacts to foothill yellow-legged frog:

- No later than 48 hours prior to any ground disturbance, pre-construction surveys will be conducted by a qualified biologist within the BSA.
- If a foothill yellow-legged frogs are found within the BSA during pre-construction surveys or during construction, the qualified biologist must consult with CDFW.

4.3.4 California Red-legged Frog

The California red-legged frog (*Rana draytonii*) is a federally listed threatened species and a State SSC. The California red-legged frog is a large, cryptically colored frog that blends in well

with its surroundings, making detection of this species particularly difficult. This frog historically occurred in coastal habitats from the vicinity of Point Reyes National Seashore and inland from the vicinity of Redding southward to northwestern Baja California, Mexico. The species has been extirpated from 70 percent of its historical range; its current distribution has been reduced to isolated localities in the Sierra Nevada, northern Coast Range, and northern Transverse Range (USFWS, 1996).

The California red-legged frog inhabits a variety of aquatic, upland, and riparian environments, including ephemeral and permanent ponds, seasonal wetlands, perennial creeks, intermittent streams, manmade aquatic features (e.g., stock ponds), riparian corridors, blackberry thickets, non-native annual grasslands, and oak savannahs (USFWS, 1996). Their preferred habitat consists of deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails. Well-vegetated upland habitats in proximity of a riparian corridor may provide sheltering habitat during the winter. Breeding occurs during winter and early spring (late November through April). Adults have a highly variable diet including pacific tree frogs, and occasionally, mice. During the dry summer months, these frogs estivate in small mammal burrows and moist leaf litter. California red-legged frogs have been recorded to cover distances from 0.25 mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (USFWS, 2005).

No California red-legged frogs were observed during biological surveys conducted on March 31, May 25, July 5, 2017, and June 2019. However, there are three CNDDB records for California red-legged frog within 5-miles of the BSA. The nearest CNDDB record (occurrence 120) is for one adult and 1 egg cluster observed in 1994 in Las Trampas Creek approximately 1.4 miles northeast of the Project. Suitable breeding habitat is not present in the immediate Study Area however there could be breeding pools upstream and/or downstream of the Study Area. Uplands and dispersal habitat is present.

4.3.4.1 Impact Analysis and Avoidance Measures

There is no suitable breeding habitat within the Project limits; however, there is a moderate potential they could occur within the BSA, including Las Trampas Creek, Tributary 1, and Tributary 2; and riparian woodland. The following AMMs will be implemented to prevent Project impacts to California red-legged frog:

- No later than 48 hours prior to any ground disturbance, pre-construction surveys will be conducted by a qualified biologist within the BSA.
- If a California red-legged frogs are found within the BSA during pre-construction surveys or during construction, the qualified biologist must consult with USFWS and CDFW.

Compensatory mitigation will be required for permanent impacts to California red-legged frog habitat.

4.3.5 San Francisco Dusky-footed Woodrat

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is a California-listed SSC. The San Francisco dusky-footed woodrat is one of 11 subspecies of dusky-footed woodrat

found in California. The approximate range of this subspecies extends from the San Francisco Bay south to Elkhorn Slough and east, including counties surrounding the San Francisco Bay (Hall, 1981). These nocturnal animals inhabit wooded environments that provide moderate canopy with an evergreen understory where they can feed on native vegetation including live oak, coffeeberry, alder, and elderberry (Brylski, 2005). They build stick houses approximately 1 meter in diameter by piling sticks, and houses are often clustered together. Nests are constructed within the houses and breeding occurs from December to September with a peak in mid-spring.

No San Francisco dusky-footed woodrats or their nests were observed during biological surveys conducted on March 31, May 25, and July 5, 2017. However, three dusky-footed woodrat nests were found during the wetland delineation survey conducted on June 18 2019. There are two CNDDB record (Occurrence 14 and Occurrence 13), both located approximately 3-miles from the BSA. Occurrence 14 is for an adult male that was trapped and relocated in 2015, found near the southwest side of Moraga way, located northwest of the Project. Occurrence 13 is for three adult males that were trapped and relocated in 2015, found near Hunsaker Canyon Rd, located northeast of the Project.

4.3.5.1 Impact Analysis and Avoidance Measures

San Francisco dusky-footed woodrat is present within the riparian woodland habitat in the BSA. The following AMMs will be implemented to prevent Project impacts to San Francisco dusky-footed woodrat:

- No later than 48 hours prior to any ground disturbance, pre-construction surveys for San Francisco dusky-footed woodrats or their nests be conducted by a qualified biologist.
- If a San Francisco dusky-footed woodrats or their nests are found within the BSA during pre-construction surveys or during construction, the qualified biologist must consult with CDFW.
- If a nest cannot be avoided, the qualified biologist will consult with CDFW about moving the nest.

4.3.6 Migratory Birds

The federal MBTA and California F.G.C. Sections 3503 and 3800 protect the occupied nests and eggs of migratory and non-game bird species. The Federal Bald and Golden Eagle Protection Act also prohibits the take of bald and golden eagles and their nests. Birds nest in a variety of places including trees, shrubs, man-made structures, and the ground. Work buffers around migratory birds and their nests are typically needed to minimize impacts to these species. Incidental take permits are not issued under the MBTA. Any proposed project must take measures to avoid the take of any migratory and non-game birds, nests, or eggs.

4.3.6.1 Impact Analysis and Avoidance Measures

Numerous migratory bird species were observed during the wildlife surveys. An active black phoebe nest was identified within the outlet side of the Las Trampas Creek culvert during the March 31, 2017 survey.

CDFW typically requires that if projects take place during bird-nesting season (February 1 to September 1), a qualified biologist would be required to conduct pre-construction nesting surveys within 48 hours of construction for nesting passerines (small perching songbirds) and raptors (birds of prey). If active nests are located, the Project biologist would establish a protective buffer around the nest to remain in place until the young have fledged. Typically, a 50-ft buffer is recommended for passerines, 500-ft for large raptors. If construction is projected to encroach within a protective buffer zone, the Project biologist will prepare a nest-monitoring plan to describe measures that will be taken to ensure that the Project does not result in the nest failure or take of this species. This applies only to birds that are not federally or state listed due to consultation required by agencies with protection oversight.

4.3.7 Bats

Several species of bats are considered species of special concern by the state, including: pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), western red bat (*Lasiurus blossevillii*), and western mastiff bat (*Eumops perotis*). In addition to bat species listed as sensitive by the resource agencies, state laws protect bats and their occupied roosts from harassment and destruction. Protection under California Law is found in the F.G.C. Sections 2000, 2002, 2014 and 4150, and under California Code of Regulations (CCR) Section 251.1.

Bats are commonly found in association with many habitats, often with a source of water nearby that attract insects upon which bats forage. Many bats found in California may roost in manmade structures including bridges, buildings, crevices of box culverts, and mines. Bats that may utilize bridges, structures, and occasionally trees for roosting and raising pups include:

- Pallid bat
- Townsend's big-eared bat
- Big brown bat *(Eptesicus fuscus*)
- California myotis (*Myotis californicus*)
- Small-footed myotis (*M. ciliolabrum*)
- Long-eared myotis (*M. evotis*)
- Little brown bat (*M. lucifugus*)
- Fringed myotis (*M. thysanodes*)
- Long-legged myotis (*M. volans*)
- Yuma myotis (*M. yumanensis*)
- Mexican free-tailed bat (*Tadarida brasliensis*)

Some species of bats almost exclusively roost in hollowed trees, peeling bark, and tree foliage. These species require trees for some or all of the following activities depending on the species: thermal regulation, predator avoidance, maternity roosting, and for resting between foraging flights. Bat species that almost exclusively depend on trees for roosting include:

- Western red bat
- Hoary bat (*Lasiurus cinereus*)
- Silver-haired bat (*Lasionycteris noctivagans*)

4.3.7.1 Impact Analysis and Avoidance Measures

In the BSA, bats could roost in the multiple tree species that were observed. However, no acoustic or focused surveys of vegetation were conducted in the BSA for roosting bats.

To the extent practicable, tree and vegetation removal or trimming should occur from September 1 to March 1, outside of bat maternity season so as not to disturb maternal colonies or roosts.

One week prior to construction, visual surveys of the trees and vegetation scheduled for removal in the Project area should be conducted for bat roosts by a qualified bat biologist. If bats are found, the Project biologist will determine if they could be affected by the Project. If it is determined that bats must be passively or actively excluded, the Project biologist must prepare an exclusion plan, or as otherwise required by CDFW.

4.3.8 Tree Ordinance

The Town of Moraga Municipal Code includes a tree ordinance (12.12.030) which requires a permit for removal of native trees, orchard tree or trees, or a tree of historic significance, located either on public or private property. Each tree type is defined below:

- A native tree is a tree, which is native to California and indigenous to the Moraga area, the most common being the bay (*Umbellularia californica*), oak (*Quercus* sp.), redwood (*Sequoia sempervirens*), toyon (*Heteromeles arbutifolia*) and the knobcone pine (*Pinus attenuata*).
- An orchard tree or trees are fruit or nut trees planted for commercial agricultural purposes.
- A tree of historic significance as a tree having historic value related to the heritage of the town and designated by action of the town council.

4.3.8.1 Impact Avoidance and Minimization Measures

There are numerous native trees within the BSA protected by the tree ordinance. A tree survey should be conducted to identify all tree species, including their diameter-at-breast height (DBH), within the Project limits so it can be determined 1) how many protected trees will be removed, 2) if a tree permit will be required, and 3) what mitigation replacement planting will be required.

5 REGULATORY REQUIREMENTS AND RECOMMENDATIONS

This section lists the federal and state regulations and associated permits that are applicable to the Project. Appendix A provides a brief description of the regulations in the context of the biological resources present or potentially present at the site.

The following federal regulatory requirements and laws apply to the proposed Project:

- Federal Endangered Species Act (FESA) (16 U.S.C. § 1531)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712)
- Clean Water Act (CWA), Section 404 (33 USC § 1344)
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1884) for the presence of Chinook Essential Fish Habitat

The following state regulatory requirements and laws apply to the proposed Project:

- CWA, Section 401 (33 U.S.C. § 1341)
- California Environmental Quality Act (CEQA) (Public Resources Code, Division 13 § 21000 et seq.)
- California Endangered Species Act of 1984 (CESA) Fish and Game Code [F.G.C.] § 2050 et seq.
- Protection of Migratory Birds (F.G.C. §§ 3503 and 3800)
- Porter-Cologne Water Quality Control Act (Water Code § 13000 et seq.)

The following federal permits and/or consultations will be required:

- USACE Section 404 permit for work in jurisdictional other waters
- Section 7 Consultation with USFWS for Alameda whipsnake and California red-legged frog.

The following state permits will be required:

- Section 401 Water Quality Certification from the San Francisco Bay Regional Water Quality Control Board
- CDFW 1602 Streambed Alteration Agreement
- CDFW Incidental Take Permit for Alameda whipsnake

Compensatory mitigation will be required for permanent impacts to:

- Waters of the U.S. and State;
- Alameda Whipsnake habitat; and,
- California red-legged frog habitat.

6 RECOMMENDATIONS

Recommendations in Table 8 below are intended as guidance for compliance with federal and state laws and regulations protecting biological resources.

Table 8. Biological Resources Avoidance and Minimization Measures

Avoidance and Minimization Measures	Description
Permits	• The Town will include a copy of all relevant permits within the construction bid package of the proposed Project. The Resident Engineer (RE) or designee will be responsible for implementing the conditions of all biological permits. •
Protect Environmentally Sensitive Areas (ESAs)	• Environmentally Sensitive Areas (ESAs) will be delineated with high-visibility fencing to avoid ground disturbance adjacent to work and access areas. • Trees will be preserved in place to the extent practicable and protected. • All spoils, excavated materials, and plant materials will be disposed at a licensed and approved facility.
Provide Environmental Awareness Training	Before Project activities, a qualified biologist will conduct an education program for all Project personnel. Species to be covered in the training include Diablo helianthella, Northern California black walnut, western pond turtle, Alameda whipsnake, California red-legged frog, foothill yellow-legged frog, San Francisco dusky-footed woodrat, nesting birds, and roosting bats. The program will include: • Information on the protected species and the habitats likely to be found within the BSA. • Requirements of federal and State laws pertaining to these species. • Identification of measures implemented to conserve the species and habitats within the Project area. • Distribution of a fact sheet conveying this information to the personnel who may enter the BSA.
Implement Project Schedule Windows and Pre-Construction Surveys	• Special-Status Plants: Pre-construction surveys for Diablo helianthella and Northern California black walnut should be conducted by a qualified biologist no more than 48 hours prior to any ground disturbance. Surveys will follow CNPS and CDFW protocols. If Diablo helianthella is found during pre-construction surveys or during construction, the qualified biologist will immediately consult with CDFW. If Northern California black walnut trees will be removed consultation with CDFW will be required. • Turtles: Pre-construction surveys for western pond turtle should be conducted by a qualified biologist no more than 48 hours prior to any ground disturbance. If a pond turtle is observed in the project limits during construction, all work will be stopped, and the turtle will: 1) be allowed to leave on its own volition, or 2) be moved by the qualified biologist in the direction it was heading (upstream or downstream), at a safe distance from the construction activities, and at a safe location. The biologist will report observations and relocations to the Town. • Snakes: Pre-construction surveys for Alameda whipsnake should be conducted by an Agency-approved biologist no more than 48 hours prior to any ground disturbance and within a 200 foot buffer of the work area. If Alameda whipsnake is found during pre-construction surveys or during construction, the qualified biologist will immediately consult with USFWS and CDFW. • Frogs: Pre-construction surveys for foothill yellow-legged frog and California red-legged frog should be conducted by a qualified biologist no more than 48 hours prior to any ground disturbance. If either species is found during pre-construction surveys or during construction, the qualified biologist will immediately consult with USFWS and CDFW. • Woodrats: Pre-construction surveys for San Francisco dusky-footed woodrat or their nests should be conducted by a qualified biologist no more than 48 hours prior to any ground disturbance. If a San Francisco dusky-footed woodrats or their nests are

Avoidance and Minimization Measures	Description
	found within the BSA during pre-construction surveys or during construction, the qualified biologist must consult with CDFW. • MBTA protected Birds: CDFW typically requires that if projects take place between February 1 and October 15 of any year, a qualified biologist would conduct pre-construction nesting surveys within 48 hours of construction for nesting passerines (small songbirds) and raptors. If nests are located, the biologist, would establish a buffer around the nest to remain in place until the young have fledged. Typically, a 50-ft buffer is recommended for passerines and a 250-ft buffer for raptors. If construction is projected to encroach within a protective buffer zone, the Project must prepare a nest monitoring plan to describe measures that will be taken (i.e. nest monitoring) to ensure that the Project does not result in nest failure or take of this species. This applies only to birds that are not federally or state listed due to consultation required by regulatory agencies with protection oversight. • Bats: To the extent practicable, trees and vegetation will be removed or trimmed from September 1 to March 1, outside of the breeding season, so as not to disturb maternal colonies or roosts. • Bats: One week prior to construction, visual surveys of the vegetation and trees scheduled for removal in the Project area should be conducted for bat roosts by a qualified bat biologist. If bats are found, the Project biologist will determine if they could be affected by the Project. If it is determined that bats must be passively or actively excluded, the Project biologist must prepare an exclusion plan.
Install Wildlife Exclusion Devices	• An approved biological monitor will be present during ground-disturbing activities (e.g., clearing, grubbing, or excavation) that could result in take of a special-status species. • Temporary, high-visibility wildlife exclusion fencing will be installed around the perimeter of the Project footprint prior to the initiation of construction. The fencing will function to prevent California red-legged frogs, Alameda whipsnake, and other sensitive wildlife species from entering the Project work site. The fencing will remain in place throughout the Project, and will be inspected regularly and fully maintained. • If feasible, consistent removal of nests during nest building will be used to deter birds from nesting in the Project area. If an occupied nest occurs in the Project area, the Town will consult with the CDFW to develop appropriate measures to avoid disturbance to nesting birds.
Implement Erosion Control Measures and Storm Water Pollution Prevention Plans	Storm Water Pollution Prevention Plans (SWPPP) and erosion control best management practices (BMPs) should be developed to minimize any wind erosion or storm water runoff. The SWPPP will provide guidance to include provisions for sediment removal, for protection of sensitive areas, and to prevent and minimize storm water and non-storm water discharges. Protective measures would include, but are not limited to: • No discharge of pollutants from vehicle and equipment cleaning would be allowed into storm drains or watercourses. • Vehicle and equipment fueling, and maintenance operations would be at least 50 feet away from watercourses. • Dust control will include the use of water trucks and dust palliatives to control dust in excavation and fill areas. • Stockpiles will be covered when weather conditions (rain or wind) could cause erosion of materials. • Biodegradable coir rolls or straw wattles will be installed along, or at the base of slopes during work to capture sediment.

Avoidance and Minimization Measures	Description
	• Protect graded areas from erosion using a combination of silt fences, biodegradable fiber rolls, and/or biodegradable erosion control netting (such as jute or coir) as appropriate on slopes.
Control Exotic and Invasive Weeds	• Exotic and invasive plants will be controlled to the maximum extent practicable. Heavy duty equipment will be washed clean and be free of organic plant material (including seeds and propagules) prior to entry and exit into the BSAs. • Staging and storage of equipment would be done in weed free areas to the extent feasible to limit exposure of seeds, and noxious weed propagules from spreading into sensitive areas in Project limits.
Implement General Best Management Practices and Water Quality Protection	• Access routes and the number and size of staging, access and work areas will be limited to existing paved, graveled or other previously compacted surfaces as identified in the Project plans. Movement of heavy equipment to and from the site will be restricted to established roadways. • Routes and boundaries will be clearly marked prior to initiating ground disturbance. • All food and food-related trash items will be enclosed in sealed trash containers and removed weekly. • No pets from Project personnel will be allowed anywhere in the BSA during work. • All equipment will be maintained such that there will be no leaks of automotive fluids such as gasoline, oils, or solvents, and a Spill Response Plan will be prepared. • Hazardous materials such as fuels, oils, and solvents will be stored in sealable containers in a designated location that is at least 100 feet from aquatic habitats. • No firearms will be allowed except for those carried by authorized security personnel, or local, State or federal law enforcement officials.

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Appendix A Representative Photos

Photo 1. View of Culvert Inlet Along Las Trampas Creek Facing Downstream (North).

Photo 2. View of Culvert Outlet Along Las Trampas Creek Facing Upstream (South)

Photo 3. Intersection of Bollinger Canyon Road and St. Mary's Road, Facing Southeast.

Photo 4. Annual Grassland Habitat within the Southwest Portion of the BSA.

Photo 5. View of Northwest Portion of the BSA.

Photo 6. Valley Oak Woodland Habitat within the BSA.

Photo 7. Riparian Habitat along Las Trampas Creek within the BSA.

Photo 8. View of Las Trampas Creek and Riparian Habitat, Upstream of Culvert Inlet Facing South.

Appendix B Species Observed in the BSA

Observed Plant Species

Scientific Name	Common Name
Avena fatua	wild oat
Acer macrophyllum	Big leaf maple
Aesculus californica	California buckeye
Agrostis capillaris	Colonial bentgrass
Alnus ssp.	Alder ssp.
Aristolochia californica	California pipe vine
Avena barbata	slender oat
Baccharis pilularis	Coyote brush
Brassica nigra	black mustard
Bromus diandrus	Ripgut brome
Bromus hordeaceus	Soft brome
Bromus madritensis	foxtail chess
Calystegia sp.	morning glory sp.
Carduus pycnocephalus	Italian thistle
Carex nudata	Dudley's sedge
Chlorogalum sp.	soap plant sp.
Clarkia unguiculata	elegant clarkia
Claytonia perfoliata	Miner’s lettuce
Conium maculatum	Poison hemlock
Cynara cardunculus	artichoke thistle
Cynosurus echinatus	bristly dogtail grass
Cyperus eragrostis	tall flatsedge
Dryopteris arguta	California wood fern
Elymus glaucus	blue wildrye
Equisetum arvense	Common horsetail
Erodium sp.	filaree sp.
Euphorbia characias	Albaninan spurge
Festuca californica	California fescue
Festuca perennis	Italian rye grass
Galium sp.	Bedstraw sp.
Geranium dissectum	cutleaf geranium
Geranium purpureum	Herb robert
Helminthotheca echioides	Bristly ox-tongue
Heteromeles arbutifolia	toyon
Hirschfeldia incana	Mediterranean hoary mustard
Hordeum murinum	foxtail barley
Juglans hindsii	Northern California black walnut
Juncus patens	common rush
Lonicera hispidula	pink honeysuckle

Scientific Name	Common Name
Maianthemum racemosum	false solomon's seal
Marah fabacea	California man-root
Medicago polymorpha	bur clover
Melica californica	California melicgrass
Mimulus aurantiacus var. aurantiacus	sticky monkeyflower
Pentagramma trianularis	goldenback fern
Phoradendron leucarpum	American mistletoe
Plantago lanceolata	narrow leaved plantain
Poa annua	annual bluegrass
Quercus agrifolia	coast live oak
Quercus lobata	valley oak
Quercus ssp.	scrub oak
Raphanus sativus	Wild radish
Ribes sp.	Currant sp.
Rosa californica	California wild rose
Rubus armeniacus	Himalayan blackberry
Rubus ursinus	California blackberry
Rumex crispus	curly docks
Salix exigua	narrowleaf willow
Salix lasiolepis	Arroyo willow
Sambucus nigra ssp. caerulea	blue elderberry
Solanum nigrum	Black nightshade
Sonchus arvensis	field sowthistle
Stachys arvensis	annual hedgenettle
Symphoricarpos albus	snowberry
Toxicodendron diversilobum	poison oak
Tribulus terrestris	puncture vine
Trifolium hirtum	rose clover
Umbellularia californica	California bay
Urtica dioica	Stinging nettle
Vicia benghalensis	Purple vetch
Vinca major	periwinkle

Observed Wildlife Species

Scientific Name	Common Name
Birds	
Cathartes aura	Turkey vulture
Buteo jamaicensis	Red-tailed hawk
Calypte anna	Anna's hummingbir
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	Black phoebe
Cyanocitta stelleri	Steller's Jay
Apehlocoma californica	California scrub-jay
Petrochelidon pyrrhonota	Cliff swallow
Baeolophus inornatus	Oak titmouse
Poecile rufescens	Chestnut-backed chickadee
Corvus brachyrhynchos	American crow
Psaltriparus minimus	Bushtit
Thryomanes bewickii	Bewick's wren
Pipilo maculatus	Spotted towhee
Melozone crissalis	California towhee
Junco hyemalis	Dark-eyed junco
Spinus psaltria	Lesser goldfinch
Mammals	
Sciurus niger	Fox squirrel
Odocoileus hemionus	Mule deer

Appendix C Summary of Applicable Regulations

Regulatory Setting

Federal Regulations

This section lists the federal regulations that are applicable to the Project. Also included is a brief description of the regulation, the agency responsible for enforcing the regulation, and the type of permit required, if any.

Federal Endangered Species Act

FESA protects fish and wildlife species that have been identified by the USFWS and NOAA Fisheries as endangered or threatened. "Endangered" refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range. "Threatened" refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

USFWS is responsible for the protection of federally listed endangered and threatened terrestrial and freshwater species, while NOAA Fisheries is responsible for marine wildlife and anadromous fish (those spawned and reared in freshwater that then migrate to marine waters). It is illegal to take federally listed species. To "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in such conduct."

FESA requires the government to designate "critical habitat" for any species it lists as endangered or threatened. Critical habitats are specific geographical areas occupied by the species for which the habitat has been designated; these areas contain physical or biological features essential to conservation, and those features may require special management considerations or protections. FESA also requires the government to develop and implement recovery plans to promote conservation of threatened and endangered species. Not all federally listed species have recovery plans or critical habitat designated.

If there is potential for a federally listed species, or habitat for a listed species, to occur on a proposed project site, consultation with the federal agency responsible for protection is required. Under a Section 7 consultation with USFWS and/or NOAA Fisheries, the agency reviews the project documents and issues a determination (Biological Opinion) as to whether a proposed project could jeopardize an endangered or threatened species and/or its habitat. The Biological Opinion contains measures and conditions that a project proponent is required to implement in order to avoid impacts to a special-status species and/or its habitat.

Clean Water Act

CWA Section 404

The federal CWA is applicable to all waters of the United States. The central premise of Section 404 of the CWA is:

> "Dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other

> activities affecting the ecosystem." (40 Code of Federal Regulations [CFR] 230 Section 404)

The USACE requires a permit to be issued before dredged or fill material may be discharged into waters of the United States including wetlands or other waters of the United States including, but not limited to, all waters that are subject to the ebb and flow of tide, wetlands, lakes, rivers, streams including intermittent or ephemeral streams, mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, natural ponds, and tributaries to the above features.

The CWA defines the ordinary high-water mark (OHWM) as the Section 404 jurisdictional limit for non-tidal waters. When adjacent wetlands are present, the limit of jurisdiction extends to the limit of the wetland. Field indicators of the OHWM include clear and natural lines on opposite sides of the banks, scouring, sedimentary deposits, drift lines, exposed roots, shelving, destruction of terrestrial vegetation, and the presence of litter or debris. Typically, the width of waters corresponds to the 2-year flow event, or bank-full flow.

The project proponent must demonstrate actions taken to minimize potential adverse impacts of the discharge on the above elements. Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a Section 404 permit complies with the Section 404(b) (1) guidelines.

CWA Section 401

The Regional Water Quality Control Board (RWQCB) has jurisdiction over activities in waters of the United States pursuant to the federal CWA. When the RWQCB issues Section 401 certifications, it simultaneously issues general Waste Discharge Requirements (WDRs) for the project under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Activities in areas that are outside of the jurisdiction of the USACE (e.g., isolated wetlands, vernal pools, or stream banks above the OHWM) are regulated by the RWQCB, under the authority of the Porter-Cologne Act. Activities that lie outside of USACE jurisdiction may require the issuance of either individual or general WDRs from the RWQCB.

Migratory Bird Treaty Act (MBTA)

The MBTA of 1918 (16 United States Code [U.S.C.] 703-712) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Part 21). The MBTA defines a disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) as a take that is potentially punishable by fines and/or imprisonment. The USFWS does not issue incidental take permits under this act. Any proposed project must take measures to avoid the take of any migratory birds, nests, or eggs. Only non-native species such as feral pigeon (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*) are exempt from protection. The MBTA is enforced by the USFWS Migratory Bird Program.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

State Regulations

This section lists the State of California regulations that are applicable to the Project. Also included is a brief description of the regulation, the agency responsible for enforcing the regulation, and the type of permit required, if any.

California Environmental Quality Act

The purpose of CEQA (Public Resource Code §21000 et seq.) is to develop and maintain a high-quality environment by requiring California's public agencies to identify, avoid, and mitigate significant environmental effects from proposed projects. When a project requires approvals from more than one public agency, one of the agencies will be required to act as the lead agency. The lead agency is responsible for determining whether the project is subject to CEQA review or exempt from it. Initial Studies are required to identify the environmental impacts of the project and their level of significance. CEQA documents require the identification of special-status plant and wildlife species that could occur in a proposed project area. The potential for impacts to special-status species must be evaluated. If a project is found to have no significant impacts, typically a Negative Declaration can be prepared. For projects that have significant impacts that can be minimized through implementation of mitigation measures, a Mitigated Negative Declaration document would be prepared. If significant impacts are unavoidable, an Environmental Impact Report (EIR) must be prepared for the project. An EIR is intended to provide detailed information about the project and any significant impacts it may have on the environment. The document includes potential alternatives to the project and methods to minimize impacts.

California Endangered Species Act of 1984

CESA (Fish and Game Code Sections 2050 to 2097) is administered by the CDFW. CESA states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, plants, and their habitats threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. CESA prohibits the take of plant and animal species designated by the State as either threatened or endangered in the State of California. In the context of CESA, to "take" means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when attempting to take individuals of a listed species.

The CDFW is also the enforcement agency for protecting State-listed species of special concern. A State SSC is a species, subspecies, or distinct population of an animal native to California that falls into one or more of the following categories:

- The animal is extirpated from the state or, in the case of birds, from their primary seasonal.
- The animal meets the State definition of threatened or endangered but has not been formally listed.
- The animal is or has experienced serious population or range declines which, if continued, could qualify the animal for State threatened or endangered status.
- The animal has naturally small populations and is highly susceptible to risk of any factor(s) that could lead to declines, which would qualify it for State threatened or endangered status.

SSC that have potential to occur within a proposed project area are required to be disclosed in documentation prepared to satisfy CEQA. Avoidance and minimization measures to protect SSC are also part of the documentation. Sections 15063 and 15065 of the CEQA guidelines (California Natural Resources Agency 2016) address how an impact is identified as relevant pertaining to SSCs. Habitat for these species is not protected; therefore, no mitigation is required for projects that affect habitat. However, individuals of a species are protected.

In addition, California has designated some wildlife species as "fully protected," which means that CDFW is charged with identifying and providing additional protection to those animals that are rare or face possible extinction. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collection for scientific research and relocation of bird species for the protection of livestock.

California Fish and Game Code 3503 and 3800 – Protected Birds and Nests

Bird nests, eggs, and young are protected under §3503, §3503.5, and §3800 of the California Fish and Game Code. The code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. "Take" of any species that the California Fish and Game Commission determines to be an endangered species or a threatened species is prohibited (§2080). To "take" is defined as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (§86). CDFW is the agency responsible for enforcing Fish and Game Code. When no CDFW permits are required for a proposed project, and State-listed special-status species have potential to occur within a project area, the federal, State, regional, or local agency that is responsible for project permitting must submit documentation to CDFW for review in accordance with the CDFW's Conservation Planning Program. This mechanism is in place so that CDFW can provide guidance to permitting agencies for compliance with laws protecting State-listed species.

Section 1602 of the California Fish and Game Code

California Fish and Game Code (§1600 et seq.) states that "An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." These are further described as Waters of the State and include stream bed, channel, and stream banks, as well as associated wetland vegetation and/or riparian tree cover. Specifically, wetlands are defined by the State as lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water, or

periodically support hydrophytic dominant vegetation, or in which soils are hydric in nature. Under this definition, riparian vegetation within and adjacent to waterways is considered as waters of the State, extending to the outer drip-line of the riparian canopy.

- Responsible Agency: CDFW
- Permit Type: Work within CDFW jurisdiction as described above requires a 1602 Lake and Streambed Alteration Agreement.

Appendix D Aquatic Resources Delineation

St. Mary's Double Roundabouts Project

DRAFT AQUATIC RESOURCES DELINEATION REPORT

Town of Moraga, Contra Costa County, California

August 2019

Prepared for:

Prepared by:

Executive Summary

The Town of Moraga (Town) proposes to implement the St. Mary's Road Roundabouts Project (Project) in the Town of Moraga, Contra Costa County, California.

The purpose of the proposed Project is to provide congestion relief at the St. Mary's Road and Rheem Boulevard and to improve stopping sight distance and visibility at the Rheem Boulevard and Bollinger Canyon Road intersections. The Project is proposed to alleviate the current congestion, reduce intersection delays and queues, improve multimodal safety, and to better accommodate pedestrian and bicycle traffic safety. The proposed Project is needed because the roadway presently experiences inadequate intersection level of service (LOS) under cumulative build-out conditions with traffic queue lengths exceeding existing intersection geometry. Improvements at this intersection are also needed to accommodate projected growth of the St. Mary's College campus and to address safety issues at the intersection.

The Project area consists of residential housing developments with a mixture of grassland and oak woodlands surrounding the entire Project limits. The Project limits are bounded by the Las Trampas Ridge to the east, the Gudde Ridge to the west, the Town of Moraga to the south and the City of Lafayette to the north. The Project is located along St. Mary's Road. Las Trampas Creek crosses beneath St. Mary's Road via a box culvert flowing south to north. It is located approximately 30 ft below the road surface. Tributary 1 crosses beneath Bollinger Canyon Road via a culvert, flowing east to west into Las Trampas Creek. Tributary 2 crosses beneath Rheem Boulevard, flowing south to north and into Last Trampas Creek, north of the Study Area.

Aquatic resource delineations were conducted using U.S. Army Corps of Engineers' (USACE) guidance. Field surveys were performed on March 31, 2017 and June 18, 2019. For the purposes of the delineation, a Study Area was developed to evaluate potential jurisdictional areas that may be directly, indirectly, temporarily, or permanently impacted by construction and construction-related activities.

As summarized in Table 1S, the approximately 2.87-acre Study Area contains approximately 0.024 acre of potentially jurisdictional other waters of the U.S. (OWUS).

Table 1S. Summary of Potential Jurisdictional Waters in the Study Area

Potential Other Waters of the U.S.	Area (ft^2)	Area (ac)	Length (lf)
Las Trampas Creek	689	0.016	88
Tributary 1	55	0.001	44
Tributary 2	335	0.007	101
Total	**1,079**	**0.024**	**233**

No potential jurisdictional waters of the U.S. (wetlands) were identified and delineated within the Study Area.

The conclusions of this Aquatic Resources Delineation Report (ARDR) are based on conditions observed at the time of the field surveys conducted on March 31, 2017 and June 18, 2019. The

findings of this document are considered preliminary until verified by the USACE and/or until any permits are issued by these agencies authorizing or exempting activities within or near these areas.

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Figures

Tables

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Acronyms

ac	acre
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIP	Capital Improvement Project
CMP	corrugated metal pipe
CWA	Clean Water Act
CY	cubic yards
du	dwelling unit
EPA	Environmental Protection Agency
ºF	degrees Fahrenheit
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FHWA	Federal Highway Administration
ft	foot/feet
ft^2	square feet
GPS	Global Position System
HSG	hydric soil group
in.	inch
IS/MND	Initial Study/Mitigated Negative Declaration
lf	linear feet
LOS	level of service
mi	mile(s)
MMRP	Mitigation and Monitoring Plan
MSL	mean sea level
NRCS	Natural Resources Conservation Service
NRPW	Non-relatively Permanent Water
OBL	Obligate
OHWM	ordinary high water mark
OWUS	Other Waters of the U.S.
RPW	Relatively Permanent Water
RSP	rock slope protection
RWQCB	Regional Water Quality Control Board
SSSC	side-street stop controlled
SSURGO	Soil Survey Geographic
SWRCB	State Water Resources Control Board
TDM	Transportation Demand Management
TNW	Traditional Navigable Water
Town	Town of Moraga
TSM	Transportation System Management
UPL/NL	Upland or Not Listed
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION AND PROJECT DESCRIPTION

This Aquatic Resources Delineation Report was prepared to describe the methodology used and results of surveys performed to identify potential jurisdictional waters and wetlands regulated by the United States Army of Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) pursuant to Sections 404 (waters and other waters of the United States [OWUS]) and 401 of the Clean Water Act.

1.1 Project Description

The Town of Moraga (Town) proposes to provide improvements to a single-land roundabout corridor at the intersections of St. Mary's Road/Rheem Boulevard and St Mary's Road/Bollinger Canyon Road. The St. Mary's Double Roundabouts Project (proposed project) would improve traffic operations and pedestrian and bicycle access and safety. The Project would construct two roundabouts on St. Mary's Road at the Rheem Boulevard and Bollinger Canyon Road intersections, install green infrastructure, and create safer pedestrian and bicycle crossings. The Project would be implemented in the Town of Moraga, Contra Costa County, California. Figure 1, *Regional Location Map,* and Figure 2, *Vicinity Map*, shows the Project vicinity and location, respectively. The Town is the lead agency under the California Environmental Quality Act (CEQA).

The Project is included in the Town of Moraga Capital Improvement Project (CIP). The design concept and scope of the Project is consistent with the Project description in the CIP and is intended to meet the traffic needs in the area based on local land use plans. The Project is partially funded through Measure J 2013 Strategic Plan: Major Streets category.

Project Purpose

The purpose of the proposed project is to provide congestion relief at the St. Mary's Road and Rheem Boulevard and to improve stopping sight distance and visibility at the Rheem Boulevard and Bollinger Canyon Road intersections. The Project is proposed to alleviate the current congestion, reduce intersection delays and queues, improve multimodal safety and to better accommodate pedestrian and bicycle traffic safety.

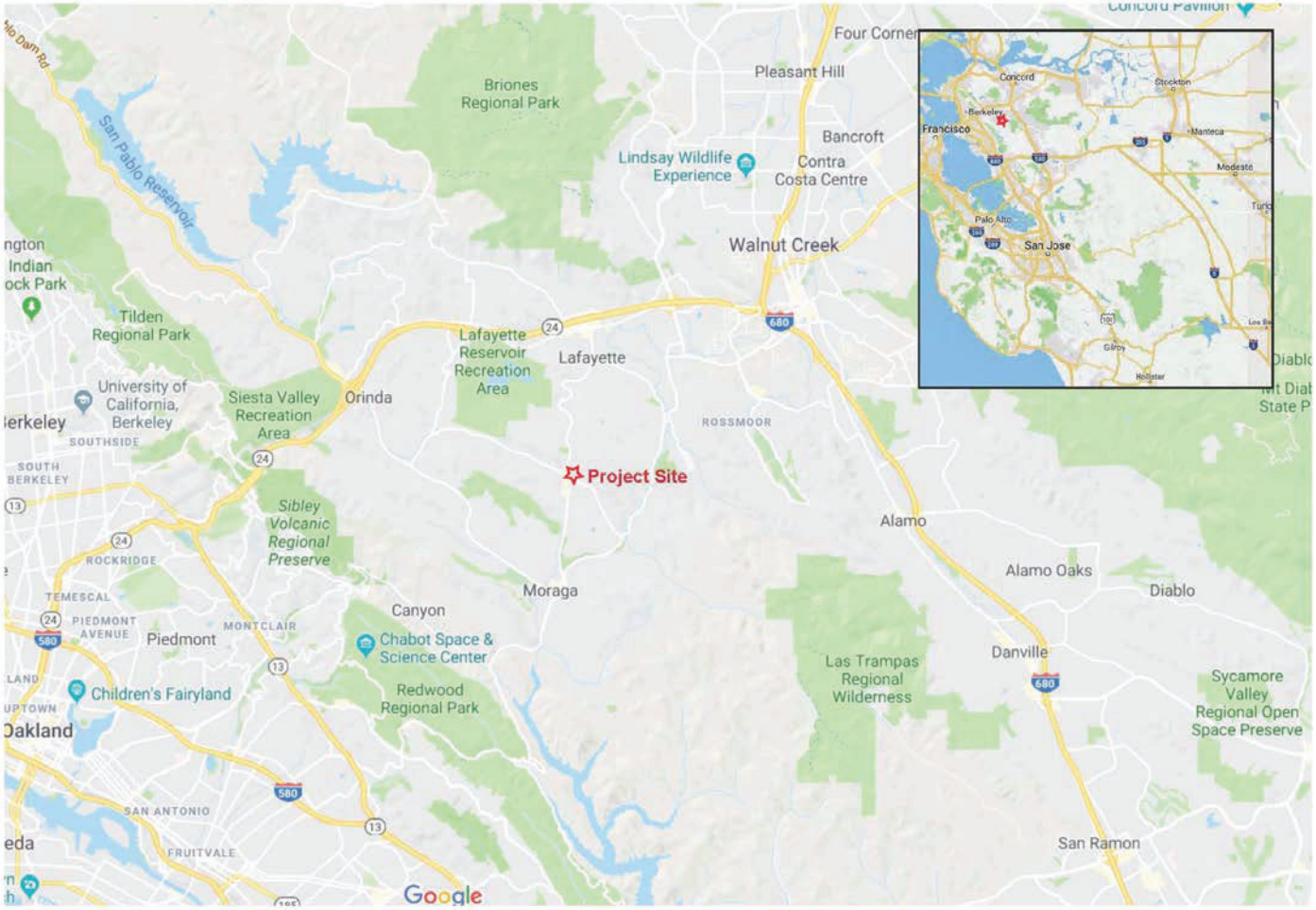


Figure 1. Regional Location Map

Source: ESRI World Imagery, 2019.

Figure 1: Vicinity Map
St Mary's Double Roundabouts Project

Kimley»Horn

Figure 2. Vicinity Map

Project Need

The proposed Project is needed because the roadway presently experiences inadequate intersection level of service (LOS) under cumulative build-out conditions with traffic queue lengths exceeding existing intersection geometry. Improvements at this intersection are also needed to accommodate projected growth of the St. Mary's College campus, and to address safety issues at the intersection. Additionally, the roadway geometry and topography at this closely spaced intersection has insufficient stopping sight distance with visibility issues approaching the Rheem Boulevard and Bollinger Canyon Road intersections, which in turn result in high accident rates and decreased safety.

Traffic collision data from 2010 through 2015 for the Rheem Boulevard and Bollinger Canyon Road intersections were provided by the Town of Moraga Police Department. Eight traffic related incidents were reported involving minor injuries and property damage. A majority of reported accidents occurred at the St. Mary's/Rheem stop controlled intersection with rear end and side impact collisions between motor vehicles due to limited visibility and sight distance. Two collisions involving bicyclists were also reported, one resulting in an injury. There was also a report of an overturned truck on the curve in between the intersections in 2012.

In December 2008, Fehr & Peers prepared a report titled *St. Mary's Road Improvement Evaluation at Rheem Boulevard and Bollinger Canyon Road,* which evaluated the physical and operation characteristics of the St. Mary's intersections at Rheem Boulevard and Bollinger Canyon Road to recommend near-term and long-term improvements. In May 2015, Omni-means prepared the *St. Mary's Road Roundabout Feasibility Study,* which analyzes the design features and safety assessment of a proposed single-lane roundabout corridor at the intersections of St. Mary's Road/Rheem Boulevard and St. Mary's Road/Bollinger Canyon Road in the Town of Moraga.

The heavy congestion along this roadway can be attributed to several regional destinations having access from St. Mary's Road, including the St. Mary's College campus, the shopping center on Moraga Way, and existing residential development.

In addition to vehicle traffic, the Project site contains pedestrian and bicycle traffic. The Lafayette/Moraga Regional Trail runs parallel to St. Mary's Boulevard and crosses the intersection of St. Mary's Road/Rheem Boulevard via an at-grade cross walk. The crossing is marked with white striping and does not have any lighting or sign features. Currently, there are gaps in the pedestrian network, with limited sidewalks along most of the Project corridor. This results in unsafe pedestrian movements through the Project site.

1.1.1 Build Alternative (Proposed Project)

The proposed Project would accommodate anticipated multimodal transportation increases by improving capacity for all travel modes, provide designated facilities separated from the vehicular traffic for pedestrians and bicycles, improve intersection capacity, and reduce overall delays and improve safety.

Roadway Facilities

The Project would widen St. Mary's Road, Rheem Boulevard, and Bollinger Canyon Road to accommodate two new roundabouts and the approaches to the roundabouts. The existing two-

lane roadways would remain as two-lane roadways. The roundabout geometry will be designed in a way to decrease approaching speeds at these intersections and improve visibility, subsequently improving traffic operations and safety. These improvements would require the roadway to be relocated, partially outside the existing right-of-way. The amount of potential cut and fill is included in the ranges of excavation provided for the various project components described below.

As show in Figure 3a, 3b, and 3c, *Proposed Roadway Design,* the vehicle travel lanes would be 12 feet (ft) wide. The proposed roundabouts would have single-lane entries on all intersection approaches and the central islands would be circular in shape with a symmetric diameter. The St. Mary's Road/Rheem Boulevard roundabout would be approximately 120 ft in diameter, with landscaping in the center. The St. Mary's Road/Bollinger Canyon roundabout would be a mini-roundabout, approximately 80 ft in diameter. The existing roadway would be excavated from between 4 to 16 inches where pavement would be replaced. The new relocated segments of roadway would require excavation of depths up to 2 ft. The two directions of traffic would be separated by road striping and medians approaching the roundabouts. The medians would be excavated to a maximum depth of six feet, measured from existing roadway surface, to provide room for import soil and roadway signs.

To accommodate the roadway widening, existing slopes would need to be excavated and laid back. This may result in a vertical difference between the existing slope surface and the new slope surface. Retaining walls would be needed at the north and south sides of the St. Mary's Road/Bollinger Canyon Road intersection to avoid impacts to the creek. Retaining walls would range in height up to a maximum of 8 ft. Retaining walls would require excavation up to 10 ft from existing surface.

Native material from the Project site would be used to construct the proposed roadway embankment. Up to 480 cubic yards (CY) of native materials would need to be exported from the site during construction.

As shown in Figure 4a and 4b, *Proposed Roundabout Sections,* the existing intersections of St. Mary's Road/Rheem Boulevard and St. Mary's Road/Bollinger Canyon Road would be converted to roundabouts. The existing side-street stop controlled (SSSC) intersections of St. Mary's Road/Rheem and St. Mary's Road/Bollinger Canyon Road would be converted to 'yield' approaches. New yield sign pole foundations may be necessary at both intersections, requiring excavation of up to 6 ft deep.

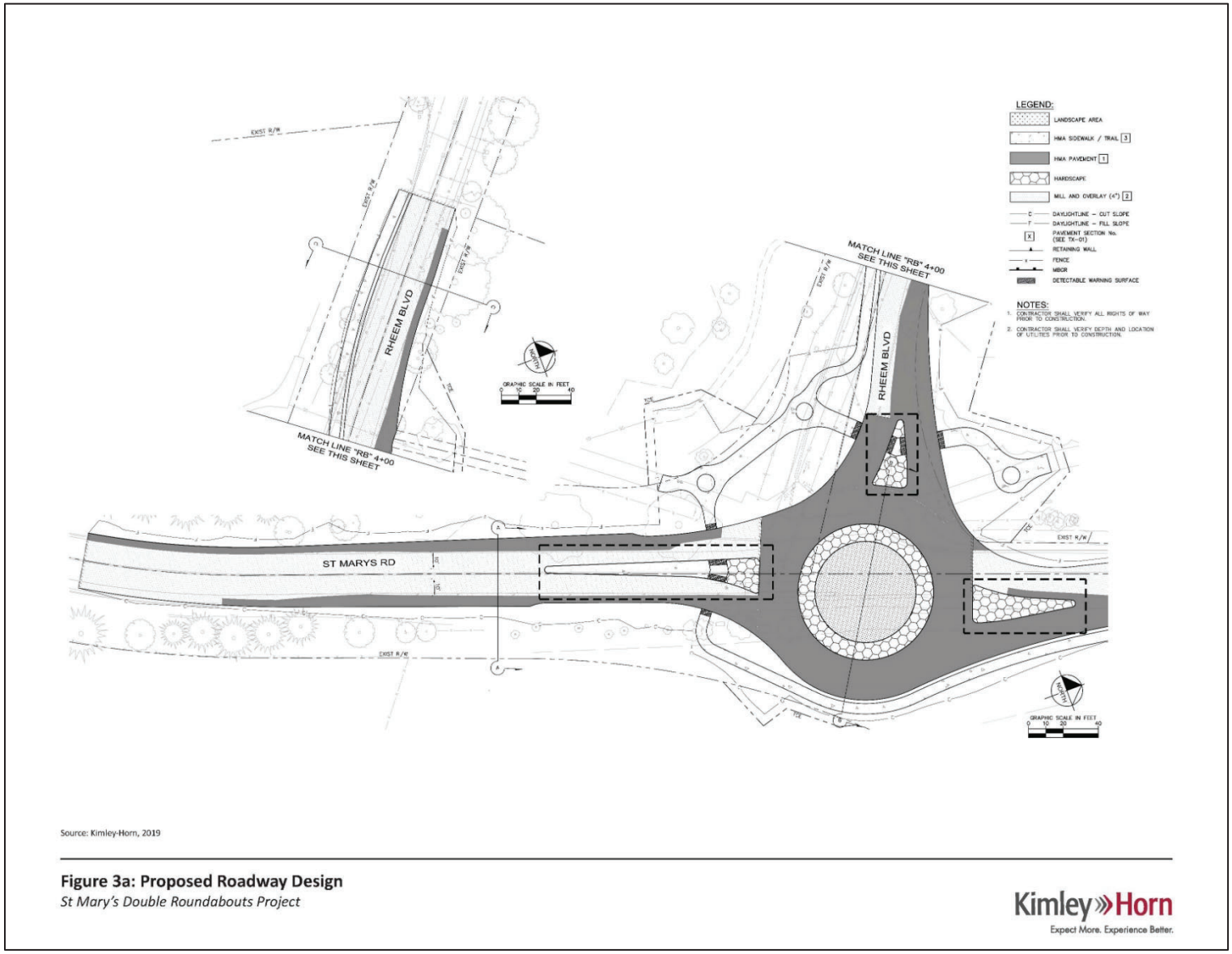
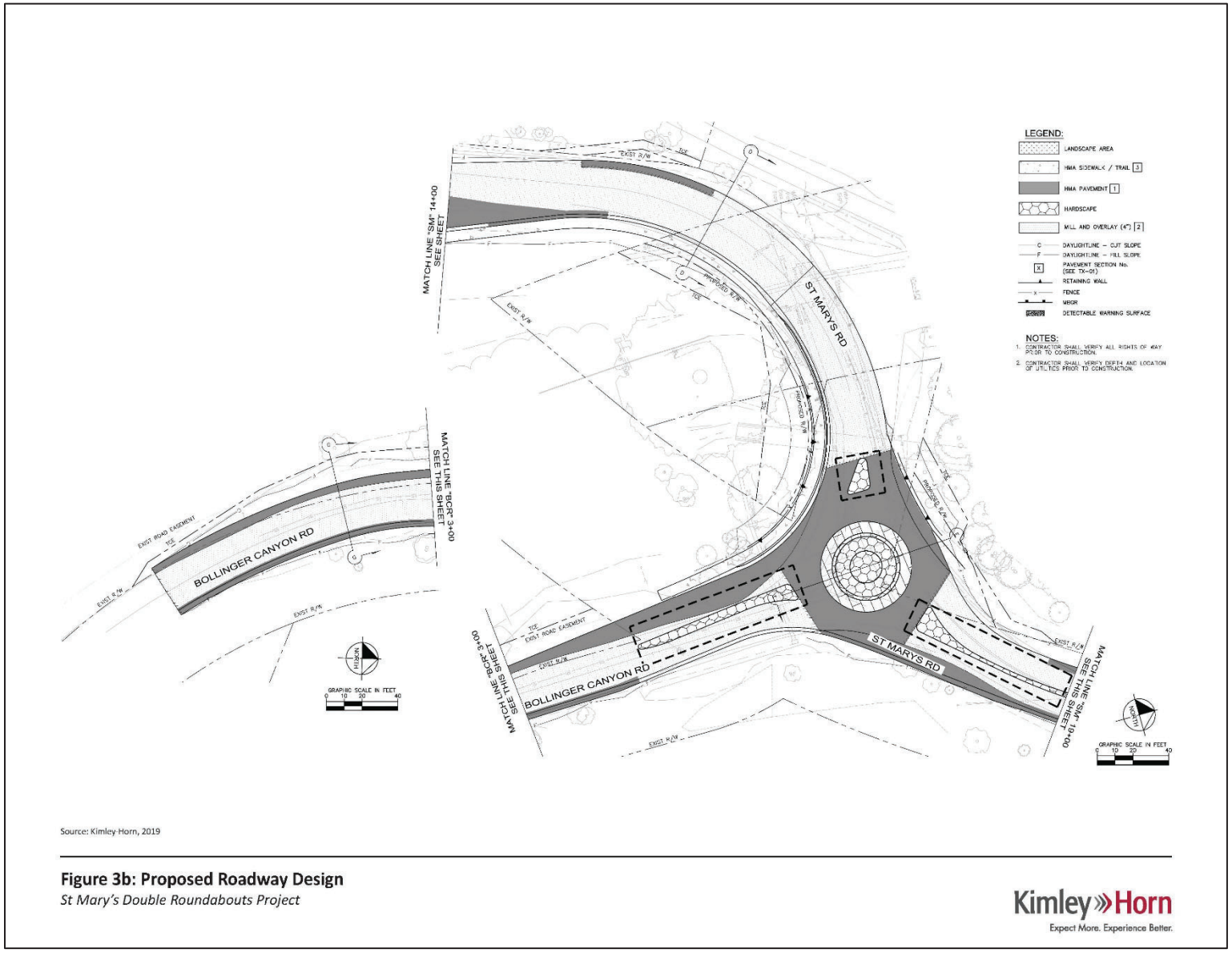


Figure 3a. Proposed Roadway Design



Source: Kimley-Horn, 2019

Figure 3b: Proposed Roadway Design
St Mary's Double Roundabouts Project

Kimley»Horn
Expect More. Experience Better.

Figure 3b. Proposed Roadway Design

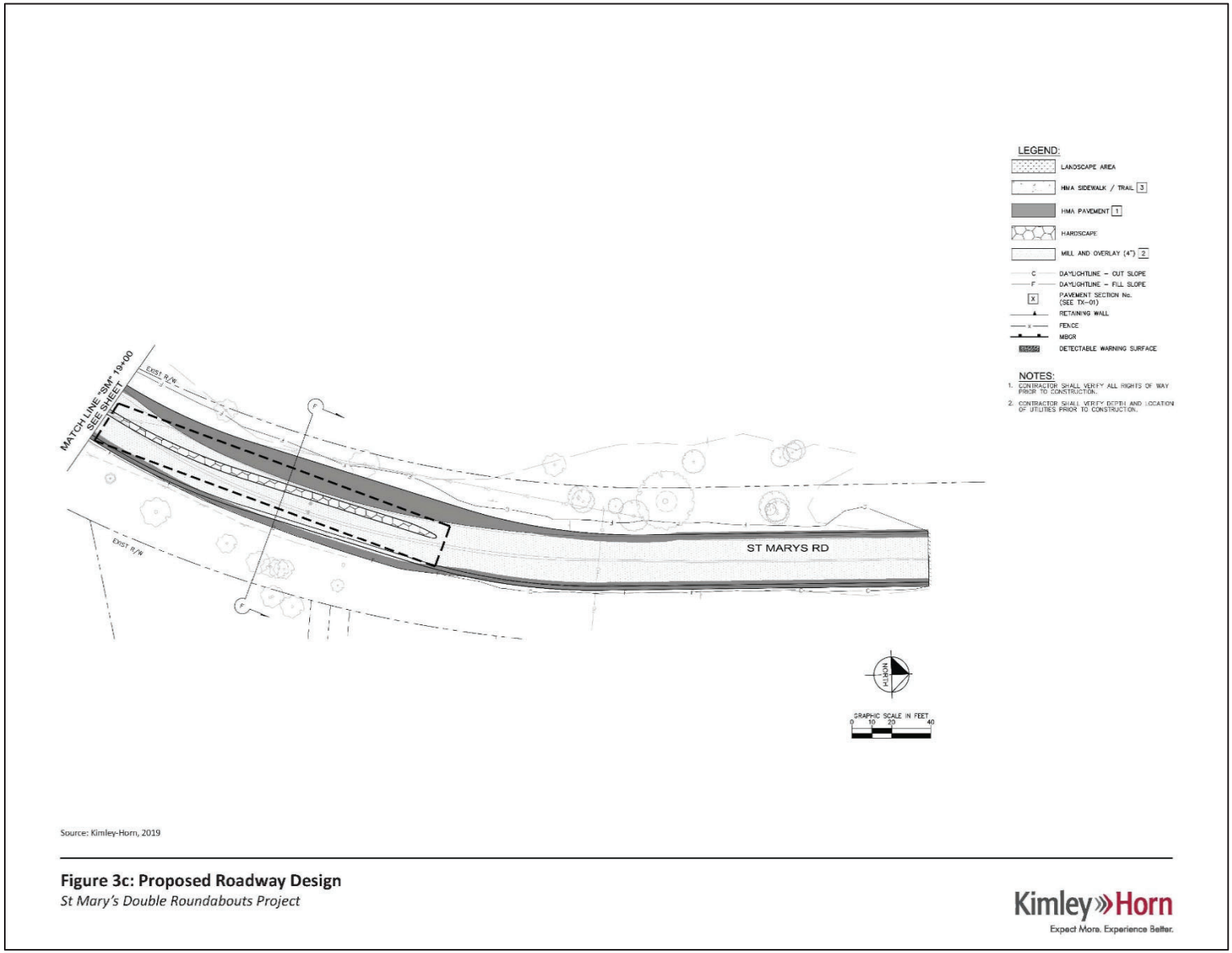


Figure 3c. Proposed Roadway Design

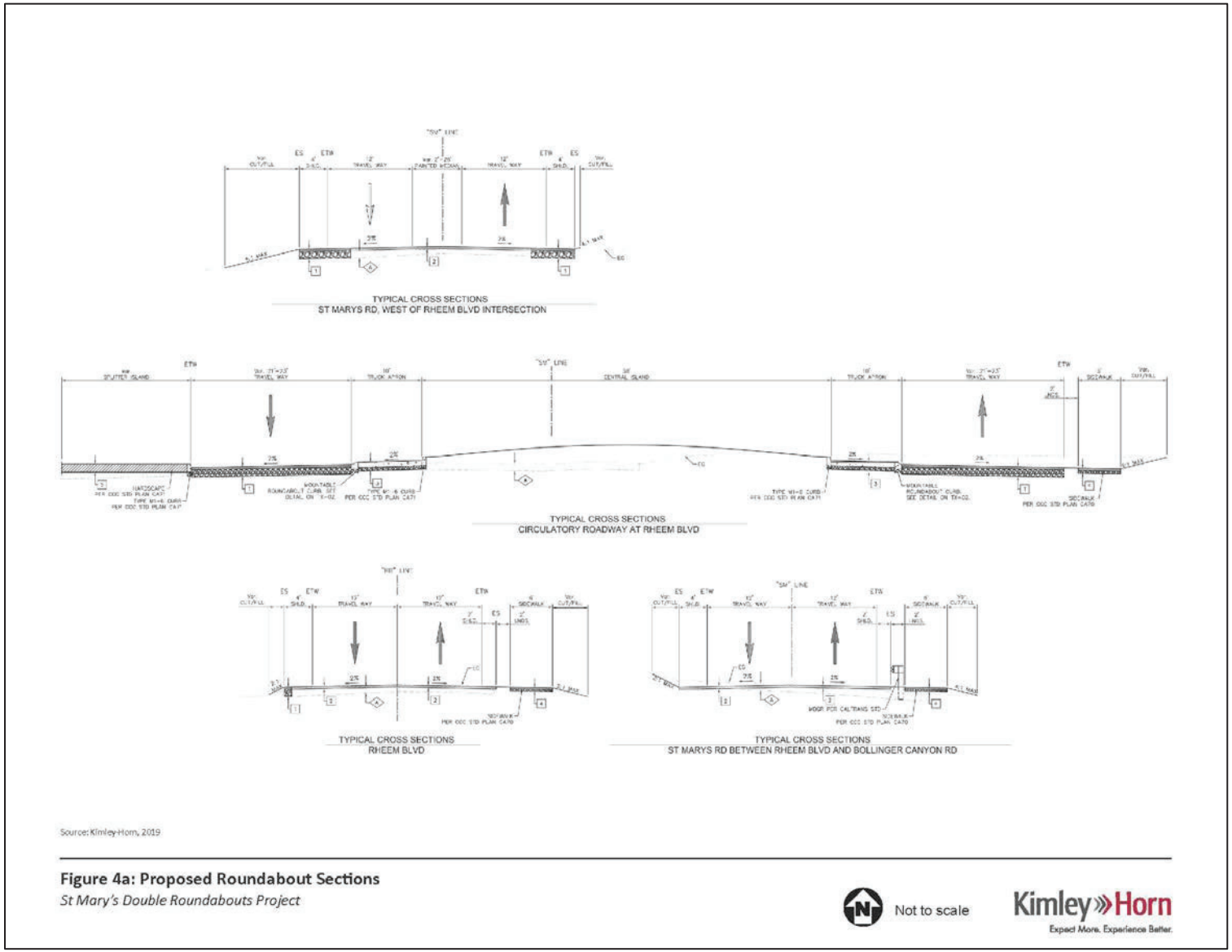


Figure 4a. Proposed Roundabout Sections

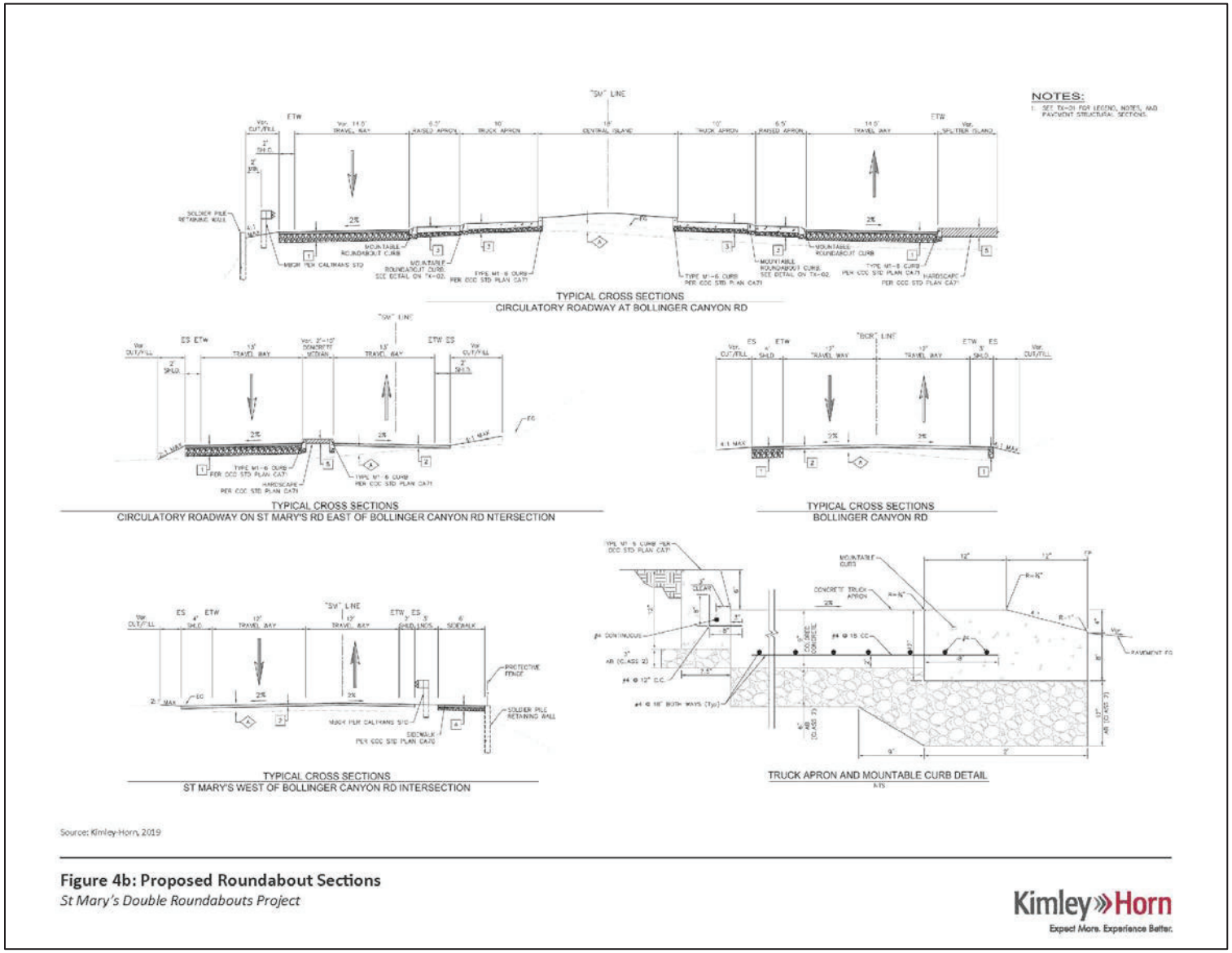


Figure 4b. Proposed Roundabout Sections

Bicycle and Pedestrian Facilities

The Lafayette/Moraga Regional Trail runs parallel and west of St. Mary's road, crossing Rheem Boulevard via a cross walk in front of the SSSC intersection. A new trail crossing at Rheem Boulevard would realign the trail crossing to be located approximately 40 ft west of the existing trail crossing. The new crossing would connect to the existing trail. The new trail crossing would allow for safe pedestrian and bicycle crossings west of the proposed roundabout by improving visibility and decreasing approaching vehicular speed.

The roundabouts accommodate bicyclists by allowing users to choose their path of travel. Cyclists who have experience and confidence riding on the roadway can travel through the facility as a vehicle by merging with other vehicular traffic and occupying the lane within the roundabout itself. Other cyclists that may not feel comfortable riding within the travel lane can access the shared-use pathway with bike ramps and travel through the roundabout and cross as a pedestrian.

A new sidewalk is proposed along the east side of St. Mary's Road, starting near the Bollinger Canyon Road intersection and would connect to the regional trail on the south side of the proposed roundabout at the Rheem Boulevard intersection. The new sidewalk installation would allow for safe pedestrian crossings for the users on Bollinger Canyon Road.

Utilities

There are existing street lights within the Project area along the St. Mary's Road that would be relocated. A new streetlight would be constructed outside of the proposed roadway pavement area. These would require excavation up to 6 ft in depth.

Existing telephone and electrical poles and boxes are located along St. Mary's Road. These telephone and electrical poles and boxes would be relocated outside of the proposed roadway. These would require excavation up to 6 ft in depth.

Several sanitary sewer manholes exist along St. Mary's Road and one, located at the St. Mary's Road/Bollinger Canyon Road intersection, would require relocation. The new sanitary sewer manhole will require excavation with maximum depths of 10 ft.

There are existing water lines with proposed Project limits. It is intended the water valves be adjusted to the proposed grade. An existing culvert crosses Rheem Boulevard, just north of the St. Mary's Road/Rheem Boulevard intersection. The Project would realign a portion of the culvert, requiring excavation up to 2 ft in depth.

Construction Activities

Construction of the proposed Project is anticipated to take 12 months. St. Mary's Road would remain open during construction; however, there may be temporary lane closures on St. Mary's Road, Rheem Boulevard, and Bollinger Canyon Road during non-commute times, and there may be one-way traffic control at night during stage construction switchovers. Access to adjacent and adjoining properties would be maintained during the duration of construction activities. Bus access would also be maintained. Construction methods would include excavator trenching, pipe, valve and fitting installation, backfill, and compaction of backfill.

Construction limits are the limits of the proposed Project. A staging area would be located on the east side of St. Mary's Road, between Rheem Boulevard and Bollinger Canyon Road intersections.

1.2 Surrounding Land Uses and Environmental Setting

Project Location and Setting

St. Mary's Boulevard is located in the Town of Moraga within Contra Costa County. St. Mary's Road and Rheem Boulevard are two of the major arterials in the Town of Moraga, providing access to the St. Mary's College and connection to the surrounding Cities of Orinda and Lafayette. St. Mary's Road is currently a two-lane divided roadway with stop-signaled intersections at Rheem Boulevard and Bollinger Canyon Road.

The Project area is undeveloped, apart from the roadways, and is characterized by roadside vegetation. The Lafayette/Moraga Regional Trail runs parallel and approximately 30 feet northwest of St. Mary's Road. There is a gravel pull-out immediately west of the Bollinger Canyon Road/St. Mary's Road intersection, with gate access to the Lafayette/Moraga Regional Trail and a private, gated residential road that provides access to two single-family dwellings.

Single-family residential dwellings are located immediately northwest of the Rheem Boulevard/St. Mary's Road intersection on Rheem Boulevard. The St. Mary's College is located approximately 0.25 miles southwest of the Rheem Boulevard/St. Mary's Road intersection, with access along St. Mary's Road.

The Project site is bordered by properties with the following land use designations in the Town of Moraga General Plan: Community Facilities, Residential (1 dwelling unit (du)/acre), Residential (2 du/acre), and MOSO Open Space.

Existing Facility and Operations

St. Mary's Road is currently a two-lane undivided roadway with stop-signalized intersections at Rheem Boulevard and Bollinger Canyon Road. Table 1, *Existing (2017) Conditions – Intersection Level of Service,* provides the existing conditions at the intersections on Rheem Boulevard and Bollinger Canyon Road.

Table 1. Existing (2017) Conditions – Intersection Level of Service

ID	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	St. Mary's Road / Rheem Boulevard	SSSC	3.6	A	3.9	A
	Worst Approach		18.5	C	20.4	C
2	St. Mary's Road / Bollinger Canyon Road	SSSC	1.5	A	0.9	A
	Worst Approach		16.5	C	16.2	B

According to the *Town of Moraga General Plan* (2002), the Town endeavors to maintain a target level of service (LOS) no worse than LOS C for all intersections. Therefore, LOS C or better for the study intersections on St. Mary's Road is considered acceptable.

1.3 Discretionary Approvals

The Project Initial Study and proposed Mitigated Negative Declaration (IS/MND) are intended to serve as the primary environmental document for all actions associated with the Project and all discretionary approvals requested or required to implement the Project. In addition, this is the primary reference document for the formulation and implementation of the Project Mitigation Monitoring and Reporting Program (MMRP). This document is also intended to provide sufficient information to allow permitting agencies to evaluate the potential impacts from construction and operation of the Project. Anticipated discretionary approvals including the approving agencies are identified below.

Town of Moraga

- Adoption of the Initial Study/Mitigated Negative Declaration
- Approval of Roadway Design

California Department of Fish and Wildlife

- Incidental Take Permit for Alameda whipsnake
- 1602 Streambed Alteration Agreement

U. S. Fish and Wildlife Service

- Letter of Concurrence or Biological Opinion for Alameda whipsnake, and California red-legged frog.

USACE

- 404 Permit

San Francisco Bay Regional Water Quality Control Board

- 401 Water Quality Certification

2.0 LOCATION

The Project is located in Contra Costa County (USGS), California. Table 2 provides general location information for the study area, including the USGS 7.5-minute quadrangle, nearest town and intersection, and the latitude and longitude.

Table 2. Project Location Summary

Location of Work	USGS Quadrangle	Nearest Town	Nearest Intersection	Latitude, Longitude
Along St. Mary's Road between Rheem Blvd. and Bollinger Canyon Rd.	Las Trampas	Moraga	Raheem Blvd. and Bollinger Canyon Rd.	37.846740628, -122.108433253

3.0 FEDERAL AND STATE REGULATORY REQUIREMENTS

This Section describes the federal and State regulations that are applicable to the aquatic resources in the Project Area.

3.1 Clean Water Act, Section 404 (33 USC § 1344)

Wetlands and other water resources (e.g., rivers, streams, and natural basins) are a subset of "waters of the U.S." and receive protection under Section 404 of the Clean Water Act (CWA). The USACE has primary federal responsibility for administering regulations that concern waters and wetlands. The USACE acts under two statutory authorities: the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in "navigable waters," and the CWA (Section 404), which governs specified activities in "waters of the U.S.," including wetlands.

The USACE and the U.S. Environmental Protection Agency (EPA) define wetlands as "areas that are saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for the life in saturated soil conditions. Wetlands generally include swamps, marches, bogs, and similar areas." (Environmental Laboratory 1987).

The term "waters of the United States" is defined in 33 *Code of Federal Regulations* (CFR) Part 328.3(a) and 40 CFR Part 230.3(s) as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation of destruction of which could affect interstate or foreign commerce including any such waters:
    I. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    II. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    III. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.

The term "other waters of the U.S." is used to characterize water bodies, such as intermittent streams, that do not meet the full criteria for wetlands designation.

3.1.1 Jurisdictional "Other Waters of the U.S"

The limits of USACE jurisdiction under Section 404 as given in 33 CFR Section 328.4 are as follows: a) territorial seas: 3 nautical miles (mi) in a seaward direction from the baseline; b) tidal waters of the U.S.: high tide line or to the limit of adjacent non-tidal waters; c) non-tidal waters of the U.S.: ordinary high water mark (OHWM) or to the limit of adjacent wetlands; and d) wetlands: to the limit of the wetland. The USACE jurisdiction in non-tidal areas extends to the OHWM, which is defined as:

> "*...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impresses on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*" (Federal Register Vol. 51, No. 219, Part 328.3 (e). November 13, 1986).

3.1.2 Jurisdictional Wetlands

Potential wetlands are evaluated for the presence or absence of indicators of the three parameters described in the *Corps of Engineers Wetland Delineation Manual* (USACE Manual [USACE 1987]) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (Arid West Region supplement [USACE 2008a]). The three parameters used to delineate wetlands are presence of: hydrophytic vegetation, wetland hydrology, and hydric soils. According to the USACE Manual, there must be evidence of at least one positive wetland indicator from each parameter under typical or unproblematic situations.

3.2 Waters of the State

The California Water Code defines "waters of the State" as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Section 13050[e]). According to the State Water Resources Control Board (SWRCB), this includes all waters of the U.S. and is "broadly construed to include all waters within the state's boundaries, whether private or public, including waters in both natural and artificial channels" (SWRCB 2015).

The SWRCB protects the beneficial uses of surface water and groundwater in California under the Porter-Cologne Act, with a focus on water quality. The RWQCBs regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. The San Francisco Bay RWQCB may exercise jurisdiction over discharges into waters of the state pursuant to the Porter-Cologne Act, in cases where the waters are excluded from regulation under the federal CWA.

The SWRCB jointly with the nine RWQCBs issued the State wetland definitions in 2019 to clarify what they consider as jurisdictional waters of the State (California Water Boards 2019). The Water Boards defines an area as wetland if, under normal circumstances:

1. The area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;
2. The duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and

3. The area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The SWRCB determined that all waters of the U.S. are also waters of the state. For non-U.S. waters, an aquatic resource delineation shall be performed using the methods described in the following three federal documents: *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987); *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (2008); and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (2010).

4.0 METHODS

This section describes the methods utilized to delineate waters of the U.S. There were no limitations encountered during the wetland delineation; however, the wetland delineation was conducted following an above-average rainy season.

4.1 Study Area

A Study Area was developed based upon the Project limits maps provided by the design team to define the limits of the aquatic resources delineation. The Study Area is defined as any potential jurisdictional areas that may be directly, indirectly, temporarily, or permanently impacted by construction and construction-related activities. Figure 5 includes a map of the Study Area boundaries.

4.2 Literature Review

Prior to conducting the field surveys, reference materials were reviewed. Soil data for Contra Costa County were downloaded from the Soil Survey Geographic (SSURGO) database ([United States Department of Agriculture] USDA 2019), and the data were imported to ArcGIS. Additional references consulted included the *Soil Survey of Contra Costa County* (USDA 1977); USGS 7.5' quadrangle maps for Las Trampas Ridge, Oakland East, Briones Valley, Walnut Creek, Clayton, Diablo, Dublin, Hayward; and San Leandro; the *National Wetlands Inventory* (United States Fish and Wildlife Service [USFWS] 2019); and aerial photos of the site.

4.3 Delineation of Waters of the United States

WRECO biologists performed field surveys of the study area on March 31, 2017 and June 18, 2019, for the purpose of delineating waters of the U.S., including wetlands and other waters.

4.3.1 Wetlands

The Study Area was visually inspected for any potential wetland areas and the approximate location of the wetland-upland boundary. Paired sample points were used to verify the exact location of the wetland-upland boundary (as necessary); each sample point was marked with a Trimble Model Geo7X sub-meter Global Positioning System (GPS) unit. Paired sample points consist of two locations; one in a suspected wetland area and another in a suspected upland area, where the three wetland parameters are evaluated for presence or absence as described in Sections 4.3.1.1, 4.3.1.2, and 4.3.1.3. If the wetland point displays indicators of each of the three wetland parameters and the upland point does not meet the three-parameter criteria, the wetland-upland boundary is located between the paired sample points. After completing the paired sample points, the wetland-upland boundary was delineated with the same sub-meter GPS unit.

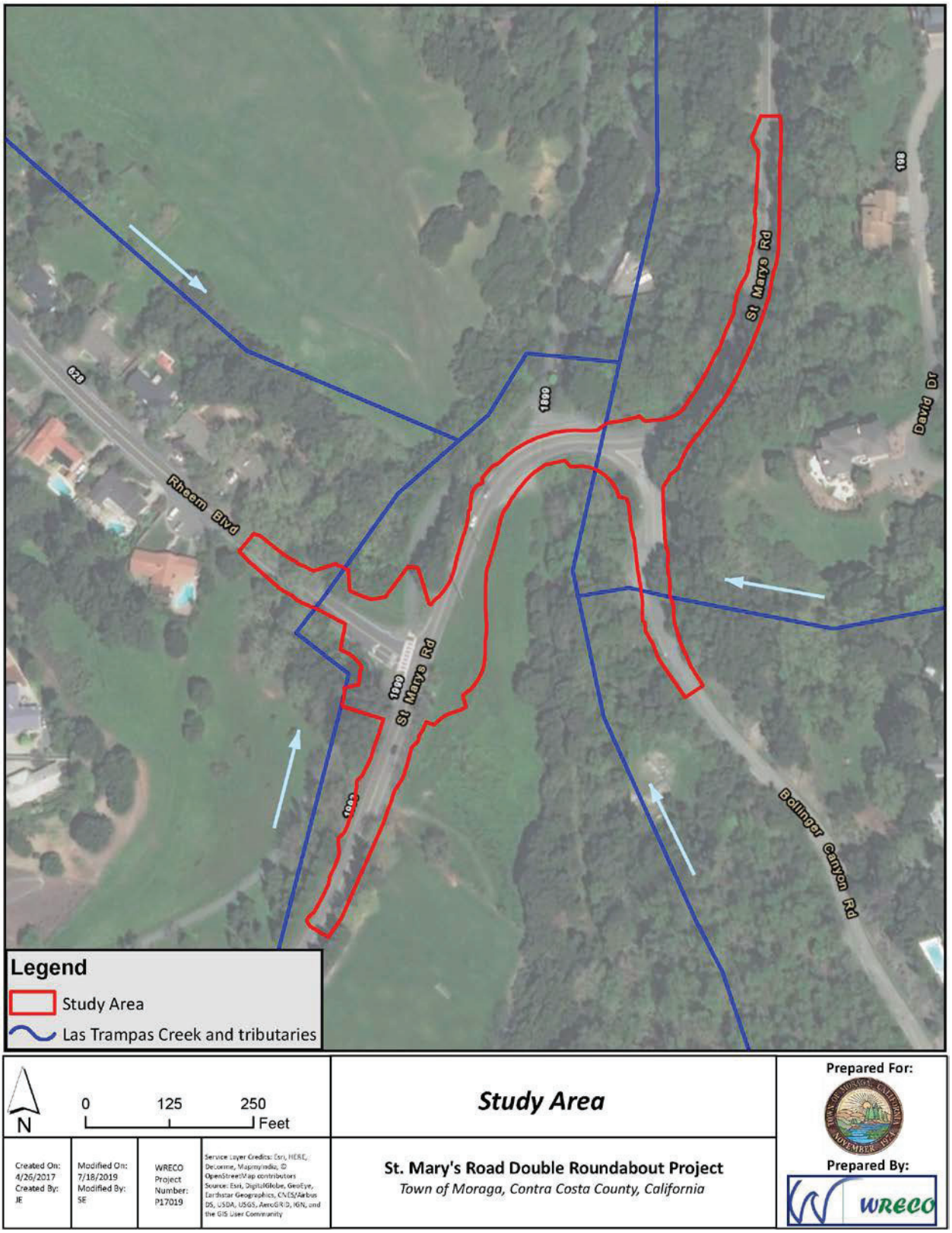


Figure 5. Study Area

The Study Area was also surveyed for problem areas and atypical situations that may result in wetlands lacking positive indicators of hydrophytic vegetation, hydric soils, and hydrology, as described in the Arid West Region supplement. Problem area wetlands may periodically lack wetland indicators due to the nature of the soils or plant species on the site. Atypical situations are defined as wetlands in which indicators are absent due to recent human activities, disturbances, or natural events. Atypical situations may also affect the normal circumstances of a site, or conditions and functions that are relatively permanent (USACE 2008a).

4.3.1.1 Vegetation

WRECO biologists identified vegetation species in the vicinity of the sample points and estimated percent cover for each species within the wetland. Plant species observed in the study area were identified using the *Jepson Manual* (Baldwin et al. 2012). Plants were assigned a wetland indicator status according to the *Arid West 2016 Final Regional Wetland Plant List* (Lichvar 2016). The dominance or prevalence of hydrophytic vegetation at each sample point was then determined based on indicator tests described in the *1987 USACE Manual and Arid West Region supplement* (USACE 2008a). Table 3 provides the wetland vegetation indicator categories, indicator symbols, and the definition of each.

Table 3. Definitions of Wetland Vegetation Indicator Status

Indicator Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	Plants that occur almost always (estimated probability >99%) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1%) in non-wetlands. Example: *Salicornia virginica L.*
Facultative Wetland Plants	FACW	Plants that occur usually (estimated probability >67% to 99%) in wetlands, but also occur (estimated probability 1% to 33%) in non-wetlands. Examples*: Eleocharis macrostachya; Polypogon monspeliensis*
Facultative Plants	FAC	Plants with similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands. Examples: *Rosa californica; Festuca pratensis*
Facultative Upland Plants	FACU	Plants that occur sometimes (estimated probability 1% to 33%) in wetlands, but also occur (estimated probability >67% to 99%) in non-wetlands. Examples: *Taraxacum officinale; Rubus ursinus*
Obligate Upland Plants	UPL/NL	Plants that occur rarely (estimated probability <1%) in wetlands under natural conditions, but which also occur (estimated probability >99%) in non-wetlands in natural conditions. Examples: *Avena sativa; Raphanus sativus* If a plant species is not on the list, it is generally assumed that it is UPL (USACE 2008).

4.3.1.2 Hydrology

WRECO biologists surveyed the Study Area for primary and secondary indicators of wetland hydrology. Primary indicators of wetland hydrology that were surveyed for included but were not limited to visible surface water, soil saturation, water marks, surface soil cracks, aquatic invertebrates, oxidized root channels, and salt crusts. Secondary indicators that were surveyed for included the presence of a shallow aquitard or existing drainage patterns. The presence or absence of the primary or secondary indicators described in the Arid West Region supplement (USACE 2008a) was used to determine if sample points within the Study Area met the wetland hydrology criterion.

4.3.1.3 Soils

WRECO biologists evaluated soil conditions at each sample point. At each sample point, WRECO excavated a 1 to 1.5-foot deep hole. Soil removed from the hole was examined for indicators of hydric soil, including but not limited to a hydrogen sulfide (rotten egg) odor, low chroma matrix color, presence of redox concentrations, gleyed or depleted matrix, and high organic matter content. Soil chroma and values were determined by using a standard Munsell soil color chart (Gretag Macbeth 2009). Hydric soils were determined to be present if the paired soil samples met any of the 23 indicators of hydric soil listed in the Arid West Region supplement (USACE 2008a). Soil from each test pit were photographed.

4.3.2 Other Waters of the United States

The location of OWUS along non-tidal riverine systems was delineated as the area between the OHWM and non-waters of the U.S. The OHWM was identified in the Study Area based on examination of the recent physical evidence of surface flow, including but not limited to: a clear natural line impressed on the bank (or coloration), evidence of scour, recent bank erosion, destruction of vegetation, sediment deposition, and the presence of litter and debris. Identification of the OHWM within the study area generally followed the procedures outlined in the USACE's *A Field Guide to the Identification of the Ordinary High Water Mark* (OHWM) *in the Arid Western Region of the Western United States* (2008b) and Regulatory Guidance Letter No. 05-05, *Ordinary High Water Mark Identification* (2005).

Preliminary identification of potentially jurisdictional OWUS was noted in the field on Project layouts and aerial photography and later digitized to ArcGIS format, and were surveyed using a Trimble Model Geo7X sub-meter GPS unit. The acreage and length of each feature was calculated using the ArcGIS program.

5.0 EXISTING CONDITIONS

This section provides more information on environmental factors that influence wetland formation and continuity such as location and topography, climate, soils, and hydrology.

5.1 Topography

The Study Area is bounded by the Las Trampas Ridge to the east, the Gudde Ridge to the west, the Town of Moraga to the south and the City of Lafayette to the north. The Study Area is located along St. Mary's Road, with Las Trampas Creek, approximately 30 ft below the road. Elevations within the Study Area range from approximately 523 ft to 586 ft above mean sea level (MSL). See Figure 6 for a topographic map.

5.2 Climate

According to the Köppen climate classification system, the study area has a Mediterranean climate, characterized by hot, dry summers and mild, moist winters. The Study Area generally experiences precipitation between mid-October and mid-April. A climate summary for the nearest National Oceanic and Atmospheric Administration (NOAA) weather station with similar elevation and topography to the Project reports the following precipitation and temperature information (Western Regional Climate Center 2019):

Saint Mary's College Station 047661 (1942-1981)

- Average annual rainfall for Moraga is 27.48 inches (in.)
- Average temperatures range seasonally from 44.4 to 68.4 degrees Fahrenheit (ºF)

The maximum average temperature reported for the Moraga area was 81.9ºF in July, and the lowest average temperature is 53.1ºF in January. The wettest month of the year is January with an average rainfall of 6.12 in., and the driest month is July with an average of 0.05 in. Winter storms are usually of moderate duration and intensity (Western Regional Climate Center 2019).

5.3 Land Cover and Vegetation Communities

Residential housing developments with a mixture of grassland and oak woodlands surround the entire study area. Las Trampas Creek crosses below St. Mary's Road via a box culvert, flowing south to north.

5.4 Soil

Originally published by the U.S. Department of Agriculture, soil data for Contra Costa County were downloaded from the Soil Survey Geographic (SSURGO) database (USDA 2019), and the data were imported to ArcGIS, as shown in Figure 7. Additional soil information was obtained from the NRCS and Soil Conservation Service's soil surveys for the listed counties. The *Soil Survey of Contra Costa County, California* (USDA 1977) was reviewed for the Project. Two soil types are mapped in the Study Area, as described below.

Clear Lake clay, 0 to 15 percent slopes, Major Land Resource Area (MLRA) 15

This soil type is the only Clear Lake soil mapped in the Contra Costa County. Its drainage has been improved by natural stream cutting, and the water table is below a depth of 6 inches in most

places. Runoff is very slow, and there is no hazard of erosion where the soil is tilled and exposed. The soil is subject to flooding once every 7 to 10 years unless surface drainage is provided. This soil is used for dryland small grain and volunteer hay and for homesites. This soil type is hydric (USDA 1977).

Cropley clay, 2 to 5 percent slopes
This soil type is typically found on gently sloping terrain, in small upland valleys. Runoff for this soil type is slow, and the hazard of erosion is slight where the soil is tilled and exposed. This soil is used for dryland grain and range and for homesites. This soil type is hydric (USDA 1977). (USDA 1977).

Table 4 summarizes soil types and Figure 5 provides a map of the soils within the Study Area.

Table 4. Soil Types Occurring within the Study Area

Map Unit Symbol	Map Unit Name (slope)	Drainage	Land Form	Hydric Soil
Cc	Clear Lake clay, 0 to 15 percent slopes, MLRA 15	Poorly drained	Depressions	Yes
CkB	Cropley clay, 2 to 5 percent slopes	Moderately well drained	Depressions	Yes

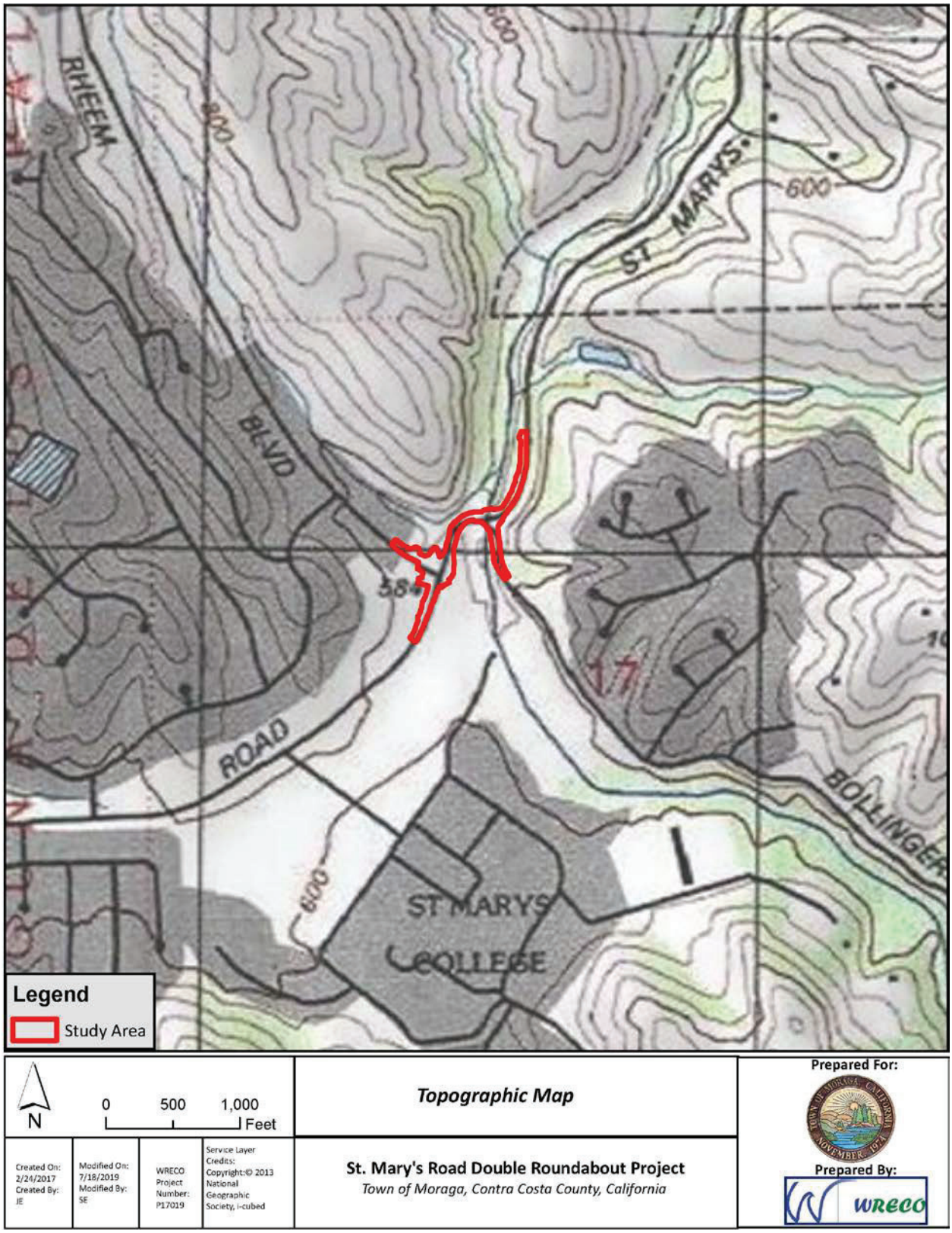


Figure 6. Topographic Map

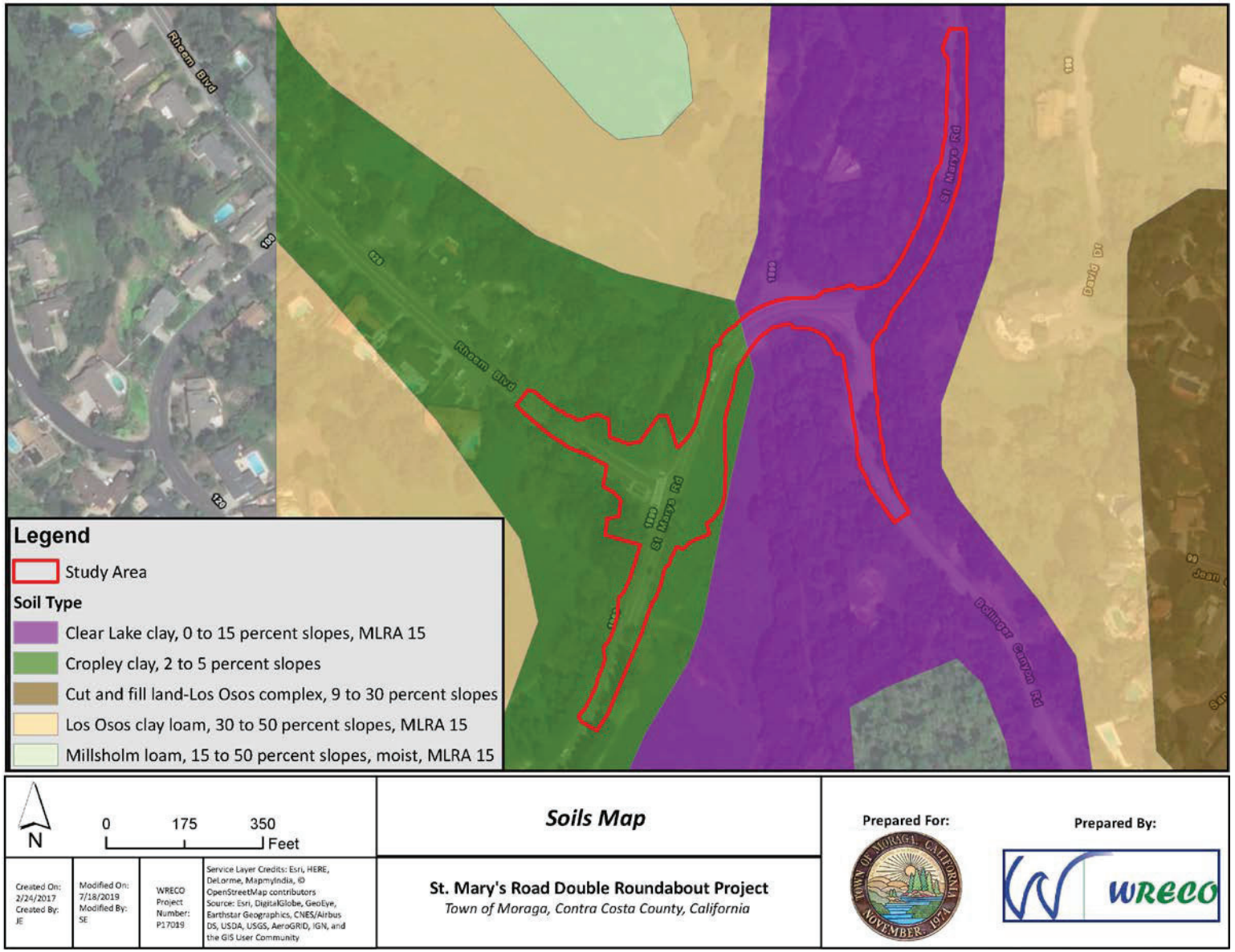


Figure 7. Soils Map

5.5 Hydrology

The Project is located within the Las Trampas watershed which originates from the hills southeast of the Town of Moraga, along Las Trampas Ridge. The watershed drains on a northerly course to the City of Walnut Creek, where it drains into Walnut Creek. The creek flows primarily in an open natural channel, with some flows through underground culverts and concrete open channels through the City of Walnut Creek until it reaches Suisun Bay, approximately 17 miles north of the Project. See Figure 8 for a hydrology map.

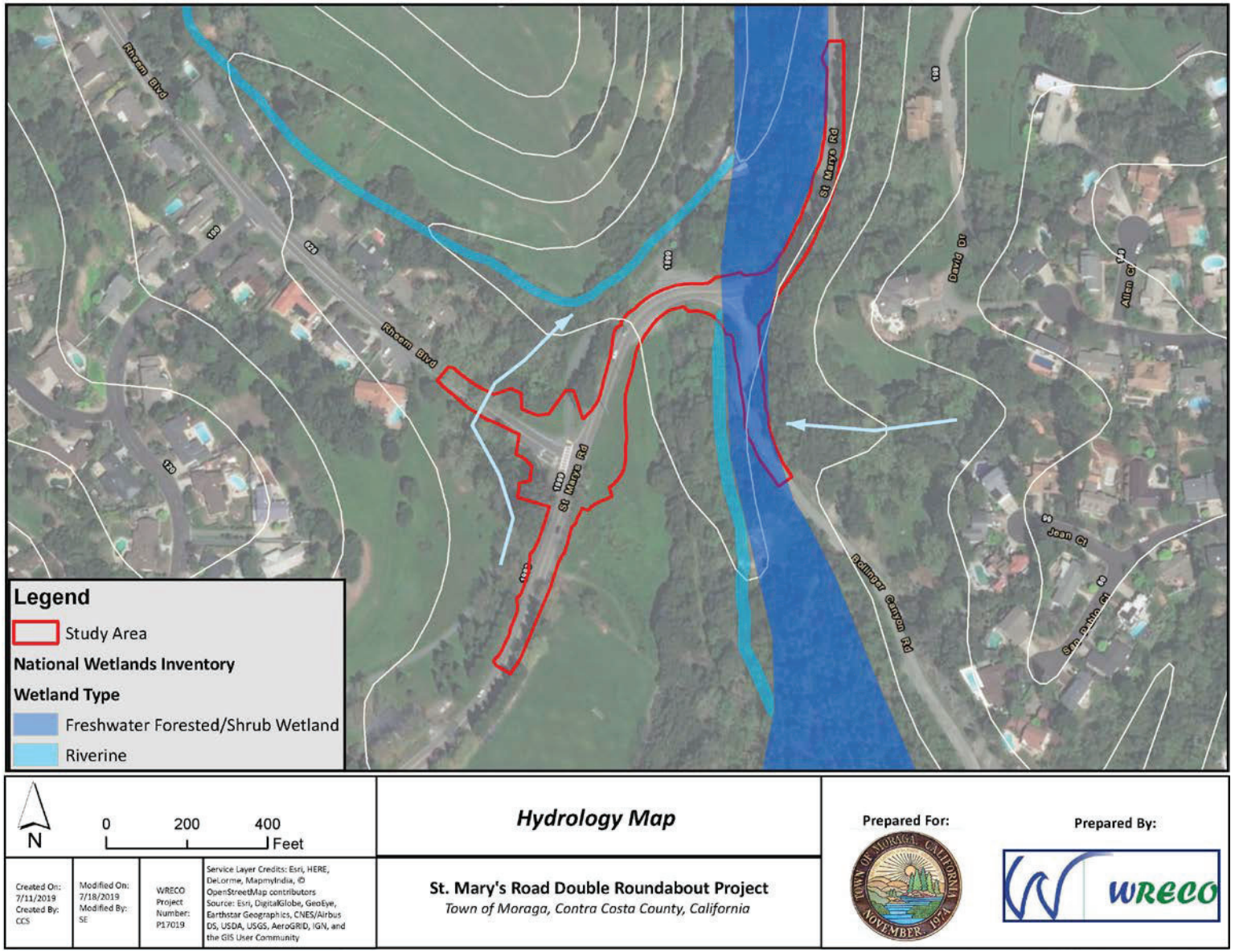


Figure 8. Hydrology Map

6.0 RESULTS

This section presents the results of the aquatic resource delineation and are detailed in this section. All estimates of resources are subject to change, pending USACE official review and final jurisdictional determination. See Figure 9 for the potential waters of the U.S. delineation map. Appendix A contains Wetland Determination Data Forms. Appendix B contains representative photographs of the Study Area.

6.1 Potential Jurisdictional Waters

This section is organized by feature type and includes a discussion of potential wetlands in Section 6.1.1 and OWUS in Section 6.1.2 that would be subject to USACE jurisdiction under Section 404 of the Clean Water Act.

6.1.1 Waters of the U.S. (Wetlands)

No potential jurisdictional waters of the U.S. (wetlands) were identified and delineated within the Study Area.

6.1.1.1 Vegetation

The streambanks of Las Trampas Creek are dominated by California blackberry (*Rubus ursinus*), periwinkle (*Vinca major*), California buckeye (*Aesculus californica*), big leaf maple (*Acer macrophyllum*), California bay trees (*Umbellularia californica*), wood fern (*Dryopteris arguta*), and non-native grasses. Vegetation along Tributary 1 included California buckeye, coast live oak (*Quercus agrifolia*), California Bay tree, Italian thistle (*Carduus pycnocephalus*), ripgut brome (*Bromus diandrus*), tall flatsedge (*Cyperus eragrostis*), field sowthistle (*Sonchus arvensis)*, burclover (*Medicago polymorpha*), and cutleaf geranium (*Geranium dissectum*). Vegetation along Tributary 2 included coast live oak (*Quercus agrifolia*) and poison oak (*Toxicodendron diversilobum*), in addition to the species mentioned above. Table 5 includes a list of all vegetation species observed during the survey, the indicator status of the plants (see Table 3), and whether the plants are native or non-native. Wetland Determination Data Forms for the Arid West Region are included in Appendix A.

Table 5. Vegetation Observed

Scientific Name	Common Name	Hydrophytic	Native/ Non-Native
Acer macrophyllum	Big leaf maple	FAC	Native
Aesculus californica	California buckeye	N/L	Native
Alnus ssp.	Alder tree	N/L	Native
Aristolochia californica	California pipe vine	N/L	Native
Baccharis pilularis	Coyote brush	N/L	Native
Bromus diandrus	Ripgut brome	N/L	Invasive non-native
Carduus pycnocephalus	Italian thistle	N/L	Invasive non-native
Claytonia perfoliata	Miner’s lettuce	FAC	Native

Scientific Name	Common Name	Hydrophytic	Native/ Non-Native
Conium maculatum	Poison hemlock	FACW	Invasive non-native
Cyperus eragrostis	Tall flatsedge	FACW	Native
Dryopteris arguta	California wood fern	N/L	Native
Equisetum arvense	Common horsetail	FAC	Native
Erodium ssp.	filaree ssp.	FACU	Non-native
Geranium dissectum	cutleaf geranium	Upland	Non-native
Medicago polymorpha	bur clover	FACU	Non-native
Plantago lanceolata	narrow leaved plantain	FAC	Invasive non-native
Phoradendron leucarpum	American mistletoe	N/L	Native
Quercus agrifolia	coast live oak	Upland	Native
Quercus lobata	valley oak	FACU	Native
Quercus ssp.	scrub oak	N/L	Native
Rosa californica	California wild rose	FAC	Native
Rubus ursinus	California blackberry	FAC	Native
Rumex crispus	curly dock	FAC	Non-native
Salix lasiolepis	Arroyo willow	FACW	Native
Solanum nigrum	Black nightshade	FACU	Non-native
Sonchus arvensis	Field sowthistle	FACU	Non-native
Symphoricarpos albus	snowberry	FACU	Native
Toxicodendron diversilobum	poison oak	FACU	Native
Umbellularia californica	California bay	FAC	Native
Urtica dioica	Stinging nettle	FAC	Native
Vicia benghalensis	Purple vetch	N/L	Non-native
Vinca major	periwinkle	N/L	Non-native

Notes:
FAC Facultative; equally found in wetlands and non-wetlands
FACU Facultative Upland; usually found in non-wetlands
FACW Facultative Wetland; usually found in wetlands
N/L Not Listed

6.1.1.2 Hydrology

Figure 8 displays wetland types using a biological definition of wetlands. To produce these maps, the USFWS makes no attempt to define the limits of proprietary jurisdiction of any federal, State, or local government, or to establish the geographical scope of the regulatory programs of government agencies (USFWS 2019).

6.1.1.3 Soil

No soil sample test pits were performed along Las Trampas Creek or Tributary 2 because the banks consisted of rocks, cobbles, concrete debris and other fill material. One soil sample test pit was performed within the bed of Tributary 1. This test pit did not contain hydric soil identifiers; however, flowing surface water 2 in. deep was present in the channel. No upland test pit was performed near Tributary 1. The data sheet for this sample point is located in Appendix B. Soil Sample Pit 1 is shown in Photo 1 and Photo 2 in Appendix B.

6.1.2 Other Waters of the U.S.

Three potential jurisdictional OWUS were identified and delineated within the Study Area: Las Trampas Creek, Tributary 1, and Tributary 2. These are shown in Figure 9. Common physical characteristics that indicate the presence of an OHWM, which were observed within the Study Area include, but are not limited to:

- A clear natural line impressed on the bank (or coloration),
- Evidence of scour,
- Recent bank erosion,
- Destruction of native terrestrial vegetation,
- Sediment deposition, and
- The presence of litter and debris.

6.1.2.1 Las Trampas Creek

Las Trampas Creek flows through the Study Area in a northerly direction, traveling below St. Mary's Road through a concrete box culvert. Upstream of the culvert, the bed of Las Trampas Creek is approximately 16 ft wide, with flowing water at a depth of approximately 2 ft. The channel is incised with steep banks, approximately 30 ft tall from the channel bed, with a 1:1 (horizontal:vertical) slope. The bed of the channel contains primarily sand and gravel. Downstream of the culvert, the bed of Las Trampas Creek is approximately 20 ft wide, with flowing water at a depth of approximately 3 ft. The bed of the channel contains primarily sand, with gravel and large rocks greater than 8 in.

Las Trampas Creek is a perennial stream (Relatively Permanent Water [RPW]) subject to USACE jurisdiction, pursuant to Section 404 of the CWA. Las Trampas Creek was determined to be an OWUS, because it meets the USACE definition under the criteria that it has a defined bed, bank, and OHWM (USACE 2015). Las Trampas Creek is considered a "water of the U.S." because it meets the USACE definition under the criteria that it is an RPW water with a defined OHWM and an indirect tributary to a Traditional Navigable Water (TNW) (USACE 2015). Las Trampas Creek has an OHWM of approximately 12.6 feet above the thalweg. Because of the clear boundaries of this RPW feature and material substrate, soil pits were not taken for this feature. See Photo 3, Photo 4 and Photo 5 in Appendix B for upstream and downstream conditions of Las Trampas Creek.

6.1.2.2 Tributary 1

Tributary 1 is located adjacent to Bollinger Canyon Road, approximately 270 feet south of the St. Mary's Road intersection. This aquatic feature originates from the hillside east of the Study

Area along Bollinger Canyon Road, which consists of a residential community. The bankfull width ranged from 8 ft wide to 3 ft wide, and flowing water was observed during the site visit conducted on March 31, 2017. Several pools were also observed, with water depths ranging from 3 to 8 in. The tributary enters an 18-in. corrugated plastic pipe and travels west below Bollinger Canyon Road, where it outlets approximately 50-ft down the embankment into Las Trampas Creek.

Tributary 1 is a non-RPW hillside drainage feature, likely subject to USACE jurisdiction as other waters of the U.S. under the significant nexus test. Tributary 1 was determined to be an OWUS, because it meets the USACE definition under the criteria that it has a defined bed, bank, and OHWM (USACE 2015). Tributary 1 failed to meet the USACE three-parameter approach for wetlands because of a lack of hydrophtic vegetation along with a lack of hydric soils at Sample Point 1. However, Tributary 1 appears to convey flowing water and possesses a significant nexus to Las Trampas Creek (RPW) and therefore, this feature is a potential other water of the U.S. It is classified as a non-RPW per EPA and USACE (2007) because it conveys flow for short durations, primarily after precipitation events. This feature is connected to Las Trampas Creek, an RPW. See Photo 6, Photo 7 and Photo 8 in Appendix B for Tributary 1 conditions.

6.1.2.3 Tributary 2

Tributary 2 is located adjacent to Rheem Boulevard, approximately 160 feet northwest of the St. Mary’s Road and Rheem Boulevard intersection. This aquatic feature originates from a roadside drainage swale south of the Study Area along St Mary’s Road. Water flows through a culvert underneath the Lafayette/Moraga Regional Trail and outlets into a naturally formed channel, with an established bed and bank. The bankfull width ranges from approximately 45 to 65 ft and minimal flowing water was observed during the site visit conducted on June 18, 2019. Tributary 2 enters a 24-in. corrugated metal pipe (CMP) and travels north below Rheem Boulevard, and continues to flow adjacent to the Lafayette/Moraga Regional Trail, until it flows into another culver and outlets into Las Trampas Creek downstream of the Study Area. For this section of Tributary 2, the bankfull width ranges from approximately 50 to 30 ft and flowing water was observed, along with a pool just downstream of the culvert outlet, approximately 1 to 2 ft deep.

Tributary 2 is an RPW subject to USACE jurisdiction, pursuant to Section 404 of the CWA. Tributary 2 was determined to be an OWUS, because it meets the USACE definition under the criteria that it has a defined bed, bank, and OHWM (USACE 2015). Tributary 2 is considered a water of the U.S. because it meets the USACE definition under the criteria that it is an RPW water with a defined OHWM (USACE 2015). Tributary 2 is also a direct tributary to Las Trampas Creek, therefore being an indirect tributary to a TNW. Tributary 2 has an OHWM that is approximately 6 ft wide. Because of the clear boundaries of this RPW feature and material substrate, soil pits were not taken for this feature. See Photo 9 in Appendix B for Tributary 2.

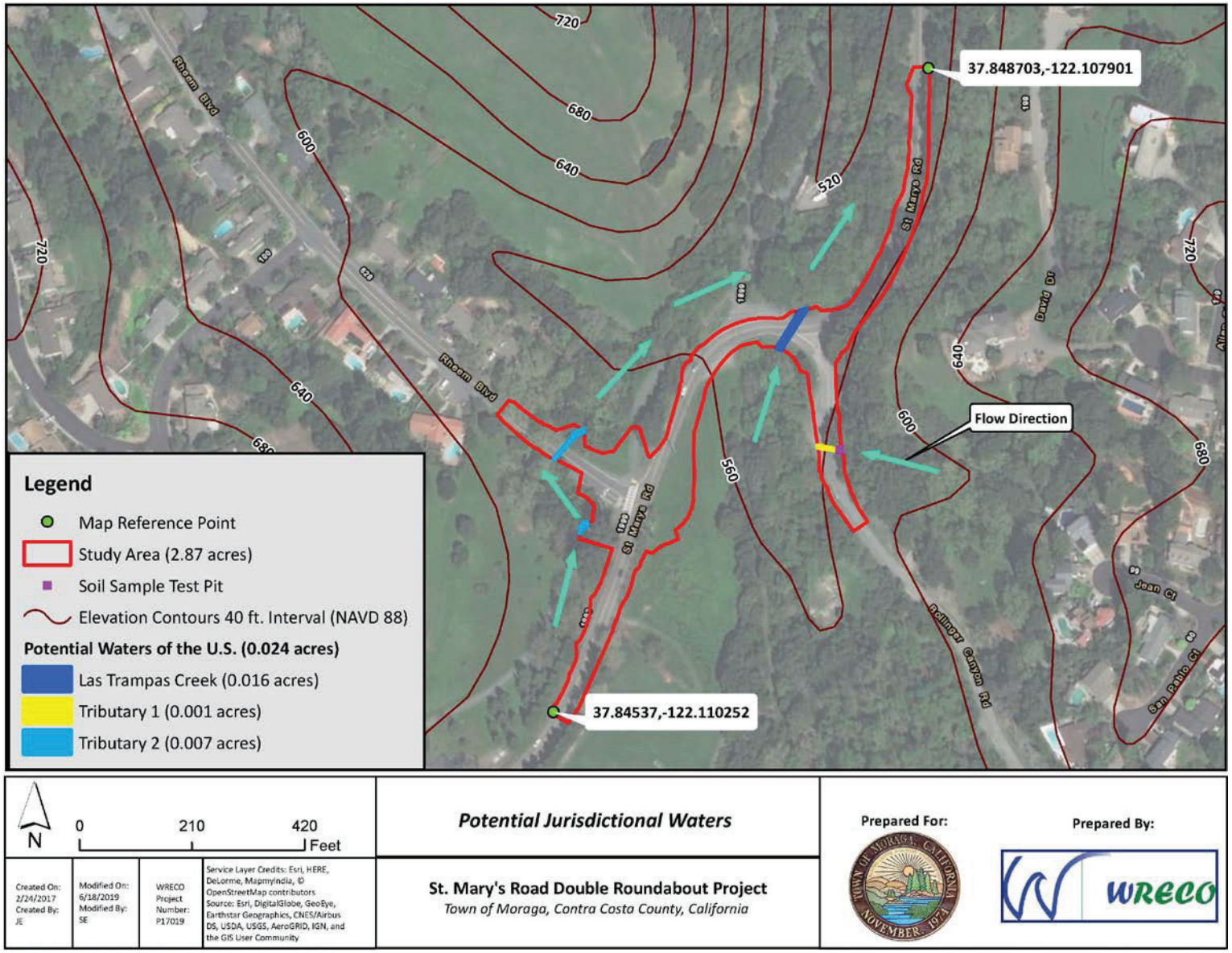


Figure 9. Potential Jurisdictional Waters

7.0 SUMMARY OF DELINEATED FEATURES

As summarized in Table 6, the approximately 2.87-acre Study Area contains approximately 0.024 acre of potentially jurisdictional OWUS.

Table 6. Summary of Potential Jurisdictional Waters in the Study Area

Potential Other Waters of the U.S.	Area (ft^2)	Area (ac)	Length (lf)
Las Trampas Creek	689	0.016	88
Tributary 1	55	0.001	44
Tributary 2	335	0.007	101
Total	**1,079**	**0.024**	**233**

No potential jurisdictional waters of the U.S. (wetlands) were identified and delineated within the Study Area.

The conclusions of this aquatic resources delineation are based on conditions observed at the time of the field surveys conducted on March 31, 2017 and June 18, 2019. The findings of this document are considered preliminary until verified by the USACE and/or until any permits are issued by these agencies authorizing or exempting activities within or near these areas.

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Appendix A **Wetland Determination Data Forms**

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: St. Mary's Rd. Double Roundabout City/County: Town of Moraga Sampling Date: 3/31/17

Applicant/Owner: Town of Moraga State: CA Sampling Point: 1

Investigator(s): J. Elia, S. Elder (WRECO) Section, Township, Range: S17, T1S, R2W

Landform (hillslope, terrace, etc.): Hillside drainage Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): Mediterranean Lat: 37.8467406628 Long: -122.108433253 Datum: WGS84

Soil Map Unit Name: Clear lake clay, 0-15% slopes NWI classification: Non-RPW

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

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

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

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Buckeye	15	Yes	NL
2. Coast live oak	20	Yes	UPL
3. CA Bay tree	15	Yes	FAC
4.			
	50	= Total Cover	

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

Herb Stratum (Plot size: 5 ft.)			
1. Italian thistle	1		NL
2. Bromus ssp.	20	Yes	NL
3. tall flatsedge	3		FACW
4. Sow thistle	1		FACU
5. Burclover	10	Yes	FACU
6. Geranium ssp.	5		UPL
7.			
8.			
	40	= Total Cover	

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

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.2 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	15	x 3 =	45
FACU species	11	x 4 =	44
UPL species	25	x 5 =	125
Column Totals:	54	(A)	220 (B)

Prevalence Index = B/A = 4.07

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

Point taken directly adjacent to the roadway. There are signs in the soil and veg, as well as pavement that the culvert might have been recently replaced.

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/4	99	10YR 4/6	1	CS	M	Sandy loam w/ gravel (angular L=8"	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

• Possibly new soil due to culvert replacement

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): ~3"

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

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

Wetland Hydrology Present? Yes ☒ No ☐

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

roadside drainage

Remarks:

Water initiates from an uphill area consisting of residential housing development. No rain within past 24 hrs.

Appendix B **Site Photographs**

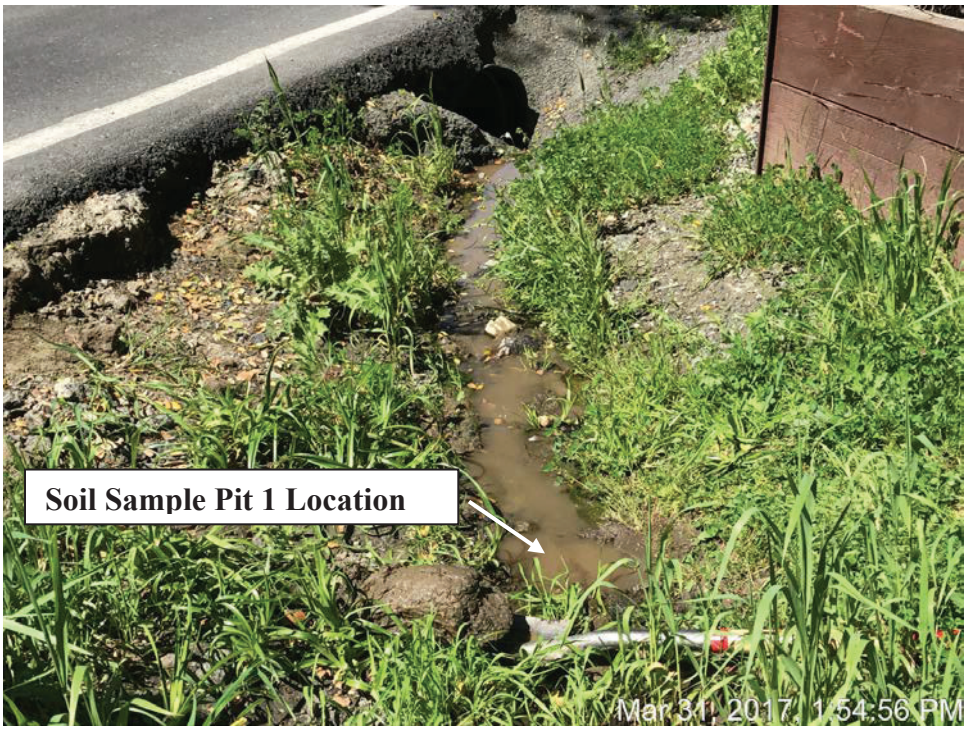

Photo 1. Soil Sample Pit 1 Location within Bed of Channel, Adjacent to Bollinger Canyon Road

Photo 2. Soil Test Pit 1 Soil Type

Photo 3. Las Trampas Creek Upstream of Culvert, Facing Downstream (North)

Photo 4. Las Trampas Creek, Upstream of Culvert, Facing Upstream (South)

Photo 5. Las Trampas Creek Downstream of Culvert, Facing Upstream (South)

Photo 6. Tributary 1 Culvert Inlet Along Bollinger Canyon Road

Photo 7. Tributary 1 Facing Downstream Toward Bollinger Canyon Road

Photo 8. Tributary 1 Culvert Outlet into Las Trampas Creek, Facing East

Photo 9. Tributary 2 Culvert Outlet, Downstream of Rheem Boulevard, Facing North.

Appendix E CNDDB, USFWS, NMFS, and CNPS Online Database Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Briones Valley (3712282) OR Walnut Creek (3712281) OR Oakland East (3712272) OR Las Trampas Ridge (3712271))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Arctostaphylos pallida pallid manzanita	PDERI04110	Threatened	Endangered	G1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Cirsium andrewsii Franciscan thistle	PDAST2E050	None	None	G3	S3	1B.2
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Clarkia franciscana Presidio clarkia	PDONA050H0	Endangered	Endangered	G1	S1	1B.1
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Eriogonum luteolum var. caninum Tiburon buckwheat	PDPGN083S1	None	None	G5T2	S2	1B.2
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Juglans hindsii Northern California black walnut	PDJUG02040	None	None	G1	S1	1B.1
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Meconella oregana Oregon meconella	PDPAP0G030	None	None	G2G3	S2	1B.1
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
Plagiobothrys diffusus San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Sanicula maritima adobe sanicle	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Stuckenia filiformis ssp. alpina slender-leaved pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 39

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Briones Valley (3712282) OR Walnut Creek (3712281) OR Oakland East (3712272) OR Las Trampas Ridge (3712271))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Anniella pulchra northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	ABNJB05035	Delisted	None	G5T3	S3	WL
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G3G4T1	S1	
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Euphydryas editha bayensis Bay checkerspot butterfly	IILEPK4055	Threatened	None	G5T1	S1	
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S3	SSC
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2?	S2S3	SSC
Microcina leei Lee's micro-blind harvestman	ILARA47040	None	None	G1	S1	
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G5T1	S1	FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Scapanus latimanus parvus Alameda Island mole	AMABB02031	None	None	G5THQ	SH	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	

Record Count: 36

CNPS California Native Plant Society

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

Plant List

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

Search Criteria

Found in Quads 3712282, 3712281 3712272 and 3712271;

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

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	1B.2	S3	G3
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	Mar-Jun	4.2	S3S4	G5?T3T4
Arctostaphylos pallida	pallid manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	1B.1	S1	G1
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S1	G2T1
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	Jul-Oct	1B.1	S1S2	G1G2
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	Apr-Jun	1B.2	S2	G2
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	4.2	S3?	G3?
Castilleja ambigua var. ambigua	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	4.2	S3S4	G4T4
Centromadia parryi ssp. congdonii	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	1B.1	S1S2	G3T1T2
Chorizanthe robusta var. robusta	robust spineflower	Polygonaceae	annual herb	Apr-Sep	1B.1	S1	G2T1
Cirsium andrewsii	Franciscan thistle	Asteraceae	perennial herb	Mar-Jul	1B.2	S3	G3
Clarkia concinna ssp. automixa	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	4.3	S3	G5?T3
Clarkia franciscana	Presidio clarkia	Onagraceae	annual herb	May-Jul	1B.1	S1	G1
Dirca occidentalis	western leatherwood	Thymelaeaceae	perennial deciduous shrub	Jan-Mar(Apr)	1B.2	S2	G2
Eriogonum luteolum var. caninum	Tiburon buckwheat	Polygonaceae	annual herb	May-Sep	1B.2	S2	G5T2

Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	Apr-Aug	1B.2	S2?	G2?
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Fissidens pauperculus	minute pocket moss	Fissidentaceae	moss		1B.2	S2	G3?
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2	G2
Gilia millefoliata	dark-eyed gilia	Polemoniaceae	annual herb	Apr-Jul	1B.2	S2	G2
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	1B.1	S2?	G2?
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	1B.1	S1	G1
Horkelia cuneata var. sericea	Kellogg's horkelia	Rosaceae	perennial herb	Apr-Sep	1B.1	S1?	G4T1?
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May	4.2	S3	G3
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	Apr-May	1B.1	S1	G1
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G1
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	1B.2	S2	G5T2
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	4.2	S4?	G4?
Meconella oregana	Oregon meconella	Papaveraceae	annual herb	Mar-Apr	1B.1	S2	G2G3
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	Mar-May	3.2	S3S4	G3G4
Monardella antonina ssp. antonina	San Antonio Hills monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	3	S1S3	G4T1T3Q
Monolopia gracilens	woodland woolythreads	Asteraceae	annual herb	(Feb)Mar-Jul	1B.2	S3	G3
Navarretia gowenii	Lime Ridge navarretia	Polemoniaceae	annual herb	May-Jun	1B.1	S1	G1
Plagiobothrys diffusus	San Francisco popcornflower	Boraginaceae	annual herb	Mar-Jun	1B.1	S1	G1Q
Polygonum marinense	Marin knotweed	Polygonaceae	annual herb	(Apr)May-Aug(Oct)	3.1	S2	G2Q
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	4.2	S3	G4
Sanicula maritima	adobe sanicle	Apiaceae	perennial herb	Feb-May	1B.1	S2	G2
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	1B.2	S2	G2T2
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	2B.2	S2S3	G5T5
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	2B.3	S3?	G4G5

Suggested Citation

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United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 08ESMF00-2019-SLI-2743
Event Code: 08ESMF00-2019-E-08780
Project Name: St. Mary's Roundabout Project

August 14, 2019

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 08ESMF00-2019-SLI-2743

Event Code: 08ESMF00-2019-E-08780

Project Name: St. Mary's Roundabout Project

Project Type: TRANSPORTATION

Project Description: Modification to St. Mary's Rd. for the proposed construction of a double roundabout project.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.84673568531866N122.10845516109566W

Counties: Contra Costa, CA

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

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

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

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

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

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

Fishes

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

Insects

NAME	STATUS
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered

Crustaceans

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

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

August 14, 2019 NMFS List

Quad Name **Las Trampas Ridge**
Quad Number **37122-G1**

ESA Anadromous Fish

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

ESA Anadromous Fish Critical Habitat

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

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

ESA Whales

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

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

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

MMPA Species (See list at left)

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

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Walnut Creek**
Quad Number **37122-H1**

ESA Anadromous Fish

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

ESA Anadromous Fish Critical Habitat

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

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

ESA Whales

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

ESA Pinnipeds

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

Essential Fish Habitat

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

MMPA Species (See list at left)

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

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Briones Valley**
Quad Number **37122-H2**

ESA Anadromous Fish

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

ESA Anadromous Fish Critical Habitat

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

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

ESA Whales

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

ESA Pinnipeds

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

Essential Fish Habitat

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

MMPA Species (See list at left)

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

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Oakland East**
Quad Number **37122-G2**

ESA Anadromous Fish

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

ESA Anadromous Fish Critical Habitat

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

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

ESA Whales

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

ESA Pinnipeds

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

Essential Fish Habitat

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

MMPA Species (See list at left)

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

MMPA Cetaceans -
MMPA Pinnipeds - **X**