

TOLAY LAKE REGIONAL PARK

MASTER PLAN

DRAFT ENVIRONMENTAL IMPACT REPORT

JANUARY 2017

State Clearinghouse Number
2015062084

Prepared for
Sonoma County Regional Parks
2300 County Center Drive, Suite 120a
Santa Rosa, CA 95403

Prepared by
MIG, Inc.
800 Hearst Avenue
Berkeley, CA 94710

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1. INTRODUCTION

1.1 PURPOSE OF THE EIR

In compliance with the California Environmental Quality Act (CEQA), this report describes the environmental effects of the proposed Tolay Lake Regional Park Master Plan (project) located in Sonoma County. This Environmental Impact Report (EIR) is designed to inform Sonoma County Regional Parks' decision-makers, responsible agencies, and the general public of the proposed project and the potential physical effects of project approval. This EIR also examines alternatives to the proposed project and recommends mitigation measures to reduce or avoid potentially significant physical impacts.

Sonoma County Regional Parks (Regional Parks) is the Lead Agency for environmental review of the proposed project. This EIR will be used by Sonoma County Regional Parks and the public in their review of the proposed project and the Sonoma County Regional Parks with its associated approvals described in Section 3, Project Description.

1.2 PROPOSED PROJECT

This EIR has been prepared to evaluate the environmental impacts of the proposed Tolay Lake Regional Park Master Plan (project). The project would result in the development of a new open space regional park facility to serve the residents of Sonoma County. The proposed Tolay Lake Regional Park would provide day use activities and permit camping and other overnight uses on a year-round basis. The Park would be open seven days a week, from dawn to dusk.

The Master Plan consists of conceptual plans for physical improvements; a resource management plan, educational and interpretive plan, trails plan, and phasing and implementation plan; Park maintenance and operation activities; and Master Plan goals, objectives, and policies that will guide implementation of Park activities and provide resource protection measures and activities.

The Master Plan includes recreational improvements for multi-use and hiking-only trails; equestrian facilities; a Park center that includes a visitor center with interpretive and educational facilities; as well as improved restrooms and parking. The Master Plan provides resource management recommendations for continued cattle operations, as well as improvements in fencing, boundaries, and exclusion zones of sensitive habitats and prehistoric cultural resources. Additionally, the Master Plan includes improvements to park access, ADA improvements, a new ranger residence, and water supply and wastewater facilities.

The Master Plan provides recommendations for habitat restoration focusing on the restoration of Tolay Lake to maximize and improve the lake ecology for native species, and restoration of 4.5 miles of Tolay Creek in the Park. In addition, the Master Plan provides recommendations for the protection and interpretation of the significant cultural and historical resources of the property, including a schedule of tasks for long-term monitoring of natural resources in the Park.

The types of recreational activities proposed for the site include: nature study and outdoor educational programs, hiking, docent led walks, horseback riding, mountain biking, group and family picnicking, bird watching and other types of passive recreation, and overnight hike-in individual and group camping on a permit basis.

The project would be located in southern Sonoma County at 5869 Cannon Lane, approximately 5 miles southeast of the City of Petaluma, 12 miles southwest of Sonoma, and 25 miles southeast of Santa Rosa (see Figure 3-1 and -2). Primary access is from Cannon Lane, a County-maintained road off Lakeville Highway. Secondary access would be provided on the southern boundary from SR 121 north of the SR 37 intersection.

A detailed description of the proposed project, including project background and history, is provided in Section 3, Project Description. The conceptual site plan for the Park is shown in Figure 3-5. The conceptual site plan for the Park Complex area is shown in Figure 3-6. The key elements of the project are summarized in Chapter 2, Executive Summary and described and illustrated fully in Chapter 3, Project Description.

1.3 CEQA PROCESS AND PUBLIC OUTREACH

1.3.1 Notice of Preparation

Regional Parks circulated a Notice of Preparation (NOP) notifying responsible agencies and interested parties that an EIR would be prepared for the project. The NOP also indicated the environmental topics anticipated to be addressed in this EIR. The NOP was received by the State Clearinghouse on June 26, 2015. In addition, the NOP was mailed to local and regional public agencies, organizations, owners of properties adjacent to project boundaries, and individuals that have requested notification regarding the project or that are likely to be interested in the potential impacts of the project. The NOP was also published on the Regional Parks' website and in the Santa Rosa Press Democrat.

A scoping session for the Draft EIR was held as a public meeting on July 21, 2015. Four (4) comment letters regarding the NOP were received. Five (5) comment cards were received at the NOP Scoping Meeting. A copy of the NOP and the comments received are included in Appendix A of this EIR.

1.3.2 Draft EIR Public Review

Regional Parks is making this document available to local, state, and federal agencies and to interested organizations and individuals that may wish to review the EIR and submit comments. Publication of this Draft EIR marks the beginning of a 45-day public review period, starting January 10, 2017 to February 23, 2017, during which individuals and agencies may direct written comments to the following address:

County of Sonoma
ATTN: Karen Davis-Brown, Project Manager
Sonoma County Regional Parks Department
2300 County Center Drive, Suite 120 A
Santa Rosa, CA 95403
Telephone: (707) 565-1359
Or via e-mail: karen.davis-brown@sonoma-county.org

Copies of the Draft EIR are available for review at the following public locations:

Petaluma Library
100 Fairgrounds Drive
Petaluma, CA 94952

Sonoma County Regional Parks Department
2300 Country Center Drive, Suite 120 A
Santa Rosa, CA 95403

Santa Rosa Library
211 E Street
Santa Rosa, CA 95404

Sonoma Valley Regional Library
755 West Napa Street
Sonoma, CA 95476

1.3.3 Comments and Responses Document and Final EIR

All written comments received within the public review period and all oral comments received at public hearings on the Draft EIR will be addressed by Regional Parks in a Comments and Responses document, which will be released for public review. The Draft EIR and the Comments and Responses document will together constitute the Final EIR. Following circulation of the Final EIR, the Board of Supervisors will certify the EIR (CEQA Guidelines, Section 15090) during a public hearing. If the Sonoma County Board of Supervisors certifies the EIR, it would then consider approval of the project.

CEQA requires the adoption of findings prior to approval of a project where a certified EIR identifies significant environmental effects (CEQA Guidelines, Sections 15091 and 15092). If Regional Parks approves the project but the EIR identifies significant impacts that cannot be mitigated, Regional Parks must prepare a Statement of Overriding Considerations (CEQA Guidelines, Section 15093[b]).

1.3.4 Mitigation Monitoring and Reporting

At the time of project approval, CEQA requires lead agencies to “adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment” (CEQA Section 21081.6; *CEQA Guidelines* Section 15097). This Draft EIR identifies and presents mitigation measures that would form the basis of such a monitoring program. Any measures adopted by the County as conditions for approval of the project will be included in the Mitigation Monitoring and Reporting Program to ensure compliance.

1.4 EIR SCOPE

This Draft EIR is a Program-level EIR. All CEQA Guidelines Appendix G topics are discussed in the Draft EIR; however, based on the initial site analyses and public scoping, the following environmental topics are addressed in separate sections of this EIR:

- Aesthetics
- Agriculture and Forestry Resources
- Biological Resources
- Cultural Resources
- Hydrology and Water Quality

- Land Use and Planning Policy
- Noise
- Public Services and Recreation
- Transportation and Circulation
- Utilities

1.5 REPORT ORGANIZATION

The purpose of this document is to evaluate the potential environmental effects of the Tolay Lake Regional Park Master Plan (project). This document is organized to provide the public and agencies with clear, direct information on the potential environmental impacts resulting from the project. This EIR is organized into the following sections:

- *Section 1 –Introduction:* Discusses the overall EIR purpose, provides a summary of the proposed project and the EIR scope, and summarizes the organization of the EIR.
- *Section 2 –Summary:* Provides a summary of the proposed project and the impacts that would result from project implementation, and describes mitigation measures recommended to reduce or avoid significant impacts. A discussion of alternatives to the proposed project is also provided.
- *Section 3 –Project Description:* Provides a description of the project history, project site, project details, project objectives, and required permits and approvals.
- *Section 4 –Setting, Impacts and Mitigation Measures:* Describes the following for each environmental technical topic: existing conditions (setting); potential environmental impacts and their level of significance; and measures to mitigate identified impacts. Potential adverse impacts are identified by levels of significance, as follows: less than significant impact (LTS), significant impact (S), and significant and unavoidable impact (SU). The significance of each impact (after mitigation) is categorized before and after implementation of any recommended mitigation measure(s).
- *Section 5 –Alternatives:* Provides an evaluation of the alternatives to the proposed project in addition to the No Project alternative.
- *Section 6 –CEQA Required Conclusions:* Provides additional specifically-required analyses of the proposed project’s cumulative impacts, growth-inducing effects, and significant irreversible changes.
- *Section 7 –Report Preparation:* Identifies EIR preparers, references used and persons and organizations contacted.

2. EXECUTIVE SUMMARY

2.1 PROJECT UNDER REVIEW

This EIR has been prepared to evaluate the environmental impacts of the proposed Tolay Lake Regional Park Master Plan (project). The project would result in the development of a new open space regional park facility to serve the residents of Sonoma County. The proposed Tolay Lake Regional Park would provide day use activities and permit camping and other overnight uses on a year-round basis. The Park would be open seven days a week, from dawn to dusk.

The Master Plan consists of conceptual plans for physical improvements; a resource management plan, educational and interpretive plan, trails plan, and phasing and implementation plan; Park maintenance and operation activities; and Master Plan goals, objectives, and policies that will guide implementation of Park activities and provide resource protection measures and activities.

The Master Plan includes recreational improvements for multi-use and hiking-only trails; equestrian facilities; a Park center that includes a visitor center with interpretive and educational facilities; as well as improved restrooms and parking. The Master Plan provides resource management recommendations for continued cattle operations, as well as improvements in fencing, boundaries, and exclusion zones of sensitive habitats and prehistoric cultural resources. Additionally, the Master Plan includes improvements to park access, ADA improvements, a new ranger residence, and water supply and wastewater facilities.

The Master Plan provides recommendations for habitat restoration focusing on the restoration of Tolay Lake to maximize and improve the lake ecology for native species, and restoration of 4.5 miles of Tolay Creek in the Park. In addition, the Master Plan provides recommendations for the protection and interpretation of the significant cultural and historical resources of the property, including a schedule of tasks for long-term monitoring of natural resources in the Park.

The types of recreational activities proposed for the site include: nature study and outdoor educational programs, hiking, docent led walks, horseback riding, mountain biking, group and family picnicking, bird watching and other types of passive recreation, and overnight hike-in individual and group camping on a permit basis.

The project would be located in southern Sonoma County at 5869 Cannon Lane, approximately 5 miles southeast of the City of Petaluma, 12 miles southwest of Sonoma, and 25 miles southeast of Santa Rosa (see Figure 3-1 and -2). Primary access is from Cannon Lane, a County-maintained road off Lakeville Highway. Secondary access would be provided on the southern boundary from SR 121 north of the SR 37 intersection.

A detailed description of the proposed project, including project background and history, is provided in Section 3, Project Description. The conceptual site plan for the Park is shown in Figure 3-5. The conceptual site plan for the Park Complex area is shown in Figure 3-6. The key elements of the project are summarized in Table 2-1 and described and illustrated fully in Chapter 3, Project Description.

Table 2-1: Summary of Key Project Components

Component	Relevant Information
Park Complex	
Cultural Gathering Area (A)	18,000 SF - Private gathering space for use by the Federated Indians of Graton Rancheria. Outdoor facilities for shade, seating, meeting, classes, and picnicking. May include traditional structures as needed for Tribal ceremonies. May include Dark-Sky-Association compliant lighting for evening ceremonial events.
Viewpoint (B)	3 short term and 1 ADA parking spaces provided on the main entry access road. Sited to provide panoramic vistas of Tolay Lake.
Interpretive Vistas	Up to 12 interpretive vistas. May include leveled area for shade structure, seating and interpretive signage.
New Equipment Shed (C)	4,000 SF, for ranch and park operations.
Screen Plantings (D)	Native vegetation planted as needed to provide screening for neighboring properties/and as needed for Park aesthetics/shade.
Ranch Manager Residence (E)	Structural and other improvements as needed, includes Dark-Sky-Association compliant outdoor lighting.
Entry Road Improvements(F)	May include minor realignment, grading, and concrete asphalt paving from property boundary to main parking lot.
Group Camping (G)	Two (2) group camping areas provided with seating, dining, and food locker storage and leveled area for up to 50 campers per campground.
Animal Pen (I)	30,000 SF – Preserve existing animal pen for housing of ranch animals including such as pigs, goats and chickens.
Historic Corral (J)	12,000 SF – Move existing historical corral near the old stone floor barn to south of the existing tractor barn.
Preserve and Interpret Historic Working Ranch (L)	Preserve historic, bunkhouse (#2), old dairy barn (#7), creamery (#8), and slaughter house (#15) for interpretation of the historic working ranch operations. Structural improvements for long term preservation and aesthetics provided only for interpretation. Interiors viewed from outside or at the entries or windows of buildings.
Bunk House (M)	4,700 SF – New bunkhouse south of the historic granary providing overnight stay facilities for groups up to 40 people. Dark-Sky-Association compliant outdoor lighting.
Park Office (N)	5,000 SF – Structural improvements and maintenance to allow continue use of historic yellow house (#5) as main park office. Dark-Sky-Association compliant outdoor lighting.
Group Picnic (O)	Large group picnic facility south of the new bunkhouse. May include shade structures, shade trees, picnic tables, food preparation facilities, and bar-b-ques.
Maintain Working Ranch Facilities (P)	Minor maintenance and structural improvements as needed to continue use of work shop (#12), Tractor Barn (# 13), equipment shed (#14), and modern barn (#17). Continued use as part of the working ranch and for Park's Department operations.

Table 2-1: Summary of Key Project Components

Component	Relevant Information
Culinary Ethno Garden (Q)	Expanded existing historical garden plus expanded composting and greenhouse areas.
Temporary Residence (Artist etc.) (1)	Structural improvements as needed to existing cottage (#1) for use as a temporary extended stay residence. Dark-Sky-Association compliant outdoor lighting.
Sales/Group Picnic Shelter (S)	5,000 SF – Concessions or group picnic area. May include shelter, shade structure, seating, food preparation area including bar-b-ques.
Visitor Center (K) and Restroom (V)	10,000 SF – New building west of the lake and north of the Old Stone Floor Barn. Ranch style and may include interpretive displays, classrooms, video room, Park store, etc. Outdoor patio or deck seating facing the lake and landscape improvements using native plants. Public restroom. Dark-Sky-Association compliant outdoor lighting.
Ranger Residence (T)	3,000 S F– Demolish existing structure. Construct new Ranger residence, two-car garage. Located on main entry drive in location of green house (#4). Dark-Sky-Association compliant outdoor lighting.
Restrooms (V) and Showers (U)	2,400 SF – Eight (8) shower and eight (8) restroom stalls in new building located south of historic granary building in association of group overnight stay improvements. Dark-Sky-Association compliant outdoor lighting.
Riparian/Wetland Restoration (W)	Tolay Creek, Cardoza Creek, un-named seasonal streams graded/improved for habitat restoration and to minimize ongoing watershed erosion.
Kitchen and Dining Area (X)	2,400 SF indoor kitchen and 1,000 SF covered outdoor dining near historic granary (#9) and in association of programs and group overnight stay improvements. Dark-Sky-Association compliant outdoor lighting.
Spray Irrigation Area (Y)	50,000 SF – Treatment plant water used to drip-irrigate restoration projects or as spray irrigation for non-food agricultural crops surrounding the treatment ponds.
Equestrian Parking (Z)	See Parking, below, for details
Boardwalk (AA)	Interpretive and permitted non-motorized boating boardwalk access constructed near and from the Lake Causeway.
Outdoor Class/Stage (BB)	Outdoor class area graded and constructed to include shade structure/shelter, formalized group seating, group fire-pit, stage, and/or amphitheater.
Electric Vehicle Charging Stations	Installation of up to three (3) electric vehicle charging stations in Visitor Center parking area
Southern Park Area	
Host Camp Site	Southern entrance near Tolay Creek. Dark-Sky-Association compliant outdoor lighting
Trails	
Hiker Only	Ten (10) miles of natural surface trail for use for pedestrians only. Grading, retaining walls, drainage crossings, etc. as needed.
Multi-Use (Hike, Bike, Equestrian)	Twenty-two (22) miles of natural and/or rocked surface equestrian, cyclist, and pedestrian trails. Includes creek crossings/bridges, retaining walls,

Table 2-1: Summary of Key Project Components

Component	Relevant Information
	drainage structures, and surface improvement including rock-paving.
Decommission roads/trails	Decommission 8.5 miles of existing trails or roads on too steep or otherwise poor alignments by grading, seeding, planting, exclusionary signage or fencing, and/or other restoration improvements.
Camping/Overnight Areas	
Backcountry Sites	Two (2) single-family backcountry hike in camp sites near Park center, west of Tolay Creek. Minor grading for leveled area for tent, picnic table and food storage, portable restroom, minor grading. Wood screen for aesthetics.
Picnic Areas	
Picnic Areas	Informal picnic areas at Park center and various locations along trails. One to several tables, minor grading improvements made for placement.
Parking	
<i>Auto</i>	
-Daily Parking Area	Up to eighty (80) daily use parking spaces near Visitors Center and Old Stone Floor Barn. Grading and rock-paving, accessible parking for ADA compliance, surface drainage, and native landscaping. Dark-Sky-Association compliant outdoor lighting.
-South Entrance	Up to twenty-five (25) parking spaces, including ADA compliant spaces. Graded and rock-paved surface. Parking lot open regular Park hours only; sunrise to sunset.
-Events Parking, additional at Tolay Lake	Event parking just south of the ranch (located where current Tolay Fall Festival event parking). Approximately 1,000 vehicles. Open grassland area would continue use as no-till hay field or left fallow and harvested and/or mowed when needed for event parking.
-Events Parking, additional north	Two additional areas north of ranch may be used for event parking (spaces for up to 300 vehicles): grass field normally mowed used as event parking and other area within the historical rock quarry.
<i>Equestrian Parking</i>	
- North Entrance	Equestrian staging area developed above and west of the ranch near the historic dairy barn for up to thirty (30) vehicles. Existing ranch road to, and staging at the barn minimally graded, widened for parallel parking, and rock-paved. Equestrian facilities (manure bunkers and water troughs) may be installed.
-South Entrance	Equestrian staging for up to eight (8) vehicles. Area graded and rock-paved. May include manure bunker and water trough.
Infrastructure	
Water Supply/Wells	Install potable water well on eastside of lake within a few hundred yards of Causeway Trail and Pond Trail Intersect. Public use potable water and as needed for Park and ranch functions. Water alignment to the North Park Core using existing ranch roads and trails (mostly along the Causeway Trail). Solar power supply developed and/or augmented with power drop from extension

Table 2-1: Summary of Key Project Components

Component	Relevant Information
	of power line nearby from neighboring property in northeast corner of the Park.
Wastewater Treatment Plant	New wastewater treatment plant with Combined Single-Stage Trickling Filter and Natural Wastewater Treatment System. Two wetland treatment ponds. Treated water used to drip irrigate restoration projects or to spray non-food producing agricultural fields.
Cannon Lane Improvements	Minor road widening, grading, road shoulder drainage improvements, and asphalt overlay and/or paving for the entire length of the road from Lakeville Road to the Park entry road.
Hydrology & Lake Restoration (W)	
Restore and improve lake hydrology and associated wetland meadows	Restoration of Tolay Creek and irrigation channels surrounding the Lake and areas of agricultural fields to the east of the lake to a pre-agricultural conditions. Intermittently dammed or filled. Entirety of Lake may be graded to improve lake hydrology to a more natural condition. Increase water flow to the Lake north of the causeway and restore wet meadow habitat east of, and surrounding, the lake.
Causeway Culvert	Replace causeway culvert with up to ten (10) high capacity culverts across the lake, raise the causeway by up to 4.75 feet at the center of the causeway.
Farm Bridge	Grade outlet at farm bridge on Tolay Creek to widened channel and establish final lake elevation. Remove or replace farm bridge.
Levee and Bypass Culvert Removal	Remove horseshoe culvert, all bypass culverts, and associated agricultural levees. Grade lake to remove levees and restore the lake bottom to a more natural condition.
<i>Native Vegetation Restoration</i>	Plant native trees, shrubs, and perennial including grasses, surrounding the lake and throughout the wetland meadow.

**Parking and camping are also included under those topics.*

Source: Tolay Lake Regional Park Master Plan, 2016.

2.2 SUMMARY OF IMPACTS AND MITIGATION MEASURES

This summary provides an overview of the analysis contained in Section 4, Setting, Impacts and Mitigation Measures. CEQA requires a summary to include discussion of: 1) potential areas of controversy; 2) significant impacts; 3) recommended mitigation measures; and 4) alternatives to the proposed project.

2.2.1 Potential Areas of Controversy

Potential areas of controversy were raised by the public during the scoping period. Issues include:

- Decreases in agricultural productivity for adjacent properties due to restoration activities at Tolay Lake;

- Park users being exposed to noise, dust, chemicals, and odors from adjacent agricultural uses;
- Land use and funding conflicts from Measures A, C, and F;
- Traffic/congestion on Cannon Lane;
- Increase in fire hazard;
- Light pollution;
- Signage/broadcasting equipment; and
- Potential increase of mosquitos/other vectors due to restoration activities.

Other topics that were raised by the public relate to improving equestrian uses/experience at the park, reducing the size of the visitor center, banning watercraft, restrictions on organized night time activities, dog policies, smoking policies, and trail improvements.

Topics that public agencies addressed during the scoping period include:

- Following new policies and methodologies for evaluating flow impacts outlined in the Policy for Maintaining Instream Flows in Northern California Coastal Streams, adopted by the Water Board in 2014 (State Water Resources Control Board);
- Needing an encroachment permit to proceed with any work that encroaches onto the state right of way (Caltrans); and
- Ensuring that mitigation requirements are upheld per the contract between Caltrans and Sonoma Land Trust (Caltrans).

2.2.2 Significant and Less-than-Significant Impacts

As described in CEQA Section 21060.5 and 21068, a significant effect on the environment is defined as: a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance.

As discussed in Section 4 of this EIR, project implementation has the potential to result in adverse environmental impacts in several areas. Impacts associated with the following environmental topics would be significant without the implementation of mitigation measures, but would be reduced to a less than significant level if the mitigation measures recommended in this EIR are implemented:

- Aesthetics
- Biological Resources
- Cultural Resources
- Transportation

Impacts associated with the following environmental topics would be considered less than significant and would not require any mitigation measures based on the identified criteria of significance:

- Air Quality
- Agricultural and Forestry Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gases
- Hazards and Hazardous Materials
- Mineral Resources
- Noise
- Population and Housing
- Public Services

2.2.3 Significant and Unavoidable Impacts

As discussed in Section 4 of this EIR, the project would result in a significant unavoidable impact from:

- Traffic
- Noise
- Public Services and Recreation

2.2.4 Alternatives to the Project

The following alternative to the project is considered in this EIR:

- Alternative A: No Project/Interim Management Plan

2.3 SUMMARY TABLE

Table 2-2 identifies impacts and mitigation measures associated with the proposed project. This information is organized to correspond with environmental issues discussed in Section 4. The table is arranged in four columns: 1) environmental impacts; 2) level of significance prior to mitigation measures; 3) mitigation measures; and 4) level of significance after mitigation. For a complete description of potential impacts and recommended mitigation measures, refer to Section 4.

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Table 2-2: Summary of Significant Environmental Impacts and Mitigation Measures

Significant Environmental Impact	Mitigation Measure	Level of Impact After Mitigation
Aesthetics		
<p>Impact AES-4: Project construction and implementation would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.</p>	<p>MM AES-4: Construction or reconstruction of buildings may require the installation of new lighting. As part of the project design process, Sonoma County Parks shall specify and install night-lighting consistent with Dark Sky Association BMPs. This type of lighting shall meet the following standards:</p> <ul style="list-style-type: none"> a. Use fixtures recommended by the International Dark Sky Association b. Provide adequate light for the intended task – do not “over-light” an area c. Use fully-shielded lighting fixtures that control the light output in order to keep the light in the intended area and reduce spillover 	<p>LTS</p>
Biological Resources		
<p>Impact BIO-6: The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.</p>	<p>MM BIO-6a: Prior to project implementation, a qualified arborist would inventory trees in areas proposed for development and determine whether they are protected.</p> <p>MM BIO-6b: Valley oak trees removed would be replaced at the ratios detailed in Table 4.4-3.</p>	<p>LTS</p>
Cultural Resources		
<p>CULT-4: The project would cause a substantial adverse change in the significance of an historical resource as defined in §15064.5 [§15064.5 generally defines historical resource under CEQA.</p>	<p>Mitigation Measure CULT-4: Document by way of historic narrative, photographs and architectural drawings any built environment historic resources that are slated for removal, demolition or would be the focus of modifications and management approaches that significantly alter the resource.</p>	<p>LTS</p>
<p>CULT-5: The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.</p>	<p>MM CULT 5: Cease Ground-Disturbing Activities and Implement Treatment Plan if Paleontological Resources Are Encountered. In the event that paleontological resources and or unique geological features are unearthed during ground-disturbing activities, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. A buffer area of at least 60 feet shall be established around the find where construction activities shall not be allowed to continue until appropriate paleontological treatment plan has been approved by the County. Work shall be allowed to continue outside of</p>	<p>LTS</p>

Table 2-2: Summary of Significant Environmental Impacts and Mitigation Measures

Significant Environmental Impact	Mitigation Measure	Level of Impact After Mitigation
	the buffer area. The County shall coordinate with a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, to develop an appropriate treatment plan for the resources. Treatment may include implementation of paleontological salvage excavations to remove the resource along with subsequent laboratory processing and analysis or preservation in place. At the paleontologist’s discretion and to reduce construction delay, the grading and excavation contractor shall assist in removing rock samples for initial processing.	
<p>CULT-6: The project would disturb any human remains, including those interred outside of formal cemeteries.</p>	<p>MM CULT-6: Unknown Human Remains. In the event of accidental discovery of cultural resources, such as structural features or unusual amounts of bone or shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.), work shall be suspended and Sonoma County Regional Parks staff would be contacted (do not touch or remove the cultural material or human remains). A qualified cultural resource specialist and tribal representative, as appropriate, would be retained and would perform any necessary investigations to determine the significance of the find. The Parks would then implement the measures deemed necessary for the recordation and/or protection of the cultural resources. In addition, pursuant to Sections 5097.97 and 5097.98 of the California PCR and Section 7050.5 of the CHSC in the event of the discovery of human remains, all work shall be halted and the Sonoma County Coroner shall be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission would be adhered to in the treatment and disposition of the remains.</p>	<p>LTS</p>
<p>Noise</p>		
<p>Impact NOI-5: The proposed Master Plan would result in a substantial and permanent increase in ambient noise levels from increased traffic levels on Cannon Lane.</p>	<p>There are no feasible mitigation measures available to reduce this significant increase in traffic noise this impact would be considered <i>Significant and Unavoidable</i>.</p>	<p>SU</p>

Table 2-2: Summary of Significant Environmental Impacts and Mitigation Measures

Significant Environmental Impact	Mitigation Measure	Level of Impact After Mitigation
Public Services and Recreation		
<p>Impact PUB/REC-3: The project includes recreational facilities that would require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment</p>	<p>Impacts to and traffic and noise would remain significant, with no mitigation measures available to reduce their impacts. Therefore, impacts from the project for these environmental topics would be <i>significant and unavoidable</i>.</p>	<p>SU</p>
Transportation		
<p>Impact TRAF-1: Lakeville Highway (SR 116)/Stage Gulch Road: Phase A of the project would expect to increase average side street delay by more than five seconds, which would be considered significant and cumulatively considerable. However, the intersection currently warrants the installation of a traffic signal or roundabout based on traffic signal warrants and existing traffic volumes.</p>	<p>Since there is no adopted plan or funding mechanism for these improvements, the impact of the project would be considered <i>significant and unavoidable</i>.</p>	<p>SU</p>
<p>Impact TRAF-2: Lakeville Highway/Cannon Lane: Phase A of the project would be expected to increase average side street delay by more than five seconds resulting in a LOS E condition which would be considered significant and cumulatively considerable.</p>	<p>Mitigation Measure TRAF-2: The project should provide widening of Cannon Lane near throat of the intersection with Lakeville Highway. Specifically, at least 24 feet of width should be provided on Cannon Lane for 100 feet of length. Since the first 50 feet of Cannon Lane, east of Lakeville Highway, is already 24 feet wide or more, the mitigation would result in widening for approximately the remaining 50 feet. This widening would allow right-turning vehicles to travel around vehicles queued for westbound left-turn movements. Since the westbound left-turn traffic is less than 30 vehicles per hour, Level of Service criteria would not apply to this movement.</p>	<p>LTS</p>
<p>Impact TRAF-3: Lakeville</p>	<p>Mitigation Measure TRAF-3: The project should provide manual traffic control officers at the</p>	<p>LTS</p>

Table 2-2: Summary of Significant Environmental Impacts and Mitigation Measures

Significant Environmental Impact	Mitigation Measure	Level of Impact After Mitigation
<p>Highway/Cannon Lane: Project traffic volumes would be expected to increase queues in the southbound left-turn lane during the Fall Festival weekend conditions. The queues would be expected to extend well beyond the capacity of the existing left-turn lane on Lakeville Highway which would be considered significant.</p>	<p>intersection between the hours of 11:00 a.m. and 3:00 p.m. on Saturdays and Sundays during the Fall Festival.</p>	
<p>Impact TRAF-6: Cannon Lane: The County intends to provide improvements to Cannon Lane based on recommendations from the Cannon Lane Roadway Concept, April 17, 2015, Fehr & Peers. However, these improvements will not be completed prior to the opening of the project. Therefore, based on potential safety issues, this would be considered a significant impact.</p>	<p>Mitigation Measure TRAF-6: As an added safety measures for both vehicles and bicycles, the County should provide additional road safety signage such as Reduced Speed Ahead, Share the Road (bicycles), 15 mph advisory, and Narrow Road advisory signs.</p>	<p>LTS</p>
<p>Impact TRAF-7: Lakeville Highway (SR 116)/Stage Gulch Road: Phase B of the project would expect to increase average side street delay by more than five seconds and would be expected to result in a drop in operation from acceptable LOS D to unacceptable LOS E during the weekend midday peak hour, which would be</p>	<p>Since there is no adopted plan or funding mechanism for these improvements, the impact of the project would be considered <i>significant and unavoidable</i>.</p>	<p>SU</p>

Table 2-2: Summary of Significant Environmental Impacts and Mitigation Measures

Significant Environmental Impact	Mitigation Measure	Level of Impact After Mitigation
<p>considered significant and cumulatively considerable. However, the intersection currently warrants the installation of a traffic signal or roundabout based on traffic signal warrants and existing traffic volumes.</p>		
<p>Impact TRAF-8 - Lakeville Highway/Cannon Lane: Phase B of the project would be expected to increase average side street delay by more than five seconds resulting in an LOS E condition which would be considered significant and cumulatively considerable.</p>	<p>See Mitigation Measure TRAF-2.</p>	<p>LTS</p>
<p>Impact TRAF-9 - Lakeville Highway/Cannon Lane: Project traffic volumes would be expected to increase queues in the southbound left-turn lane during the Fall Festival weekend conditions. The queues would be expected to extend well beyond the capacity of the existing left-turn lane on Lakeville Highway which would be considered significant.</p>	<p>See Mitigation Measure TRAF-3.</p>	<p>LTS</p>
<p>Impact TRAF-12: Arnold Drive (SR 121)/Ram’s Gate-South Park Entrance: Phase B of the project would result in LOS F operation on the eastbound (Park exit) approach of the intersection, however, since</p>	<p>Mitigation Measure TRAF-12: When the project opens its access to SR121, a northbound left-turn lane with a storage of at least 100 feet and appropriate transition meeting Caltrans standards should be installed and operational. The left-turn lane would require widening of SR121 and would also require a Caltrans encroachment permit.</p>	<p>LTS</p>

Table 2-2: Summary of Significant Environmental Impacts and Mitigation Measures

Significant Environmental Impact	Mitigation Measure	Level of Impact After Mitigation
the approach volume totals less than 30 vehicles, it is less-than-significant by Sonoma County standards. The project would warrant the addition of a northbound left-turn lane on SR 121.		

LTS= Less Than Significant
 SU= Significant Unavoidable

3. PROJECT DESCRIPTION

This chapter describes the Tolay Lake Regional Park Master Plan (project) that is evaluated in this Environmental Impact Report (EIR). A description of the project's background, location, components, implementation schedule, and objectives is followed by a summary of required approvals.

3.1 PROJECT BACKGROUND

Tolay Lake Regional Park (Park) is comprised of two properties. The first property is Tolay Lake Ranch, a roughly 1,737-acre area that was purchased by the Sonoma County Agricultural Preservation and Open Space District (District) and its partners on September 27, 2005. At the close of escrow, the District transferred title to Sonoma County Regional Parks (Regional Parks) and retained a Conservation Easement. Sonoma County Board of Supervisors in November of 2005 approved the Tolay Lake Regional Park Interim Public Use and Resource Management Plan allowing limited public access through a Day-Use Permit Program.

The second property is the approximately 1,665-acre Tolay Creek Ranch, currently owned by the Sonoma County Land Trust (SLT), which is protected by a separate Conservation Easement retained by the District. This property abuts the southern boundary of the Tolay Lake Ranch property on the north, and SR 121 on the south. The property is fenced and used for limited grazing and is not open to the public as part of the park facility subject to the Day-Use Permit Program. The Tolay Creek Ranch includes 2.5 miles of Tolay Creek, which flows into San Pablo Bay. The SLT will transfer the Tolay Creek Ranch to Regional Parks in 2016. This property will become open to the public upon approval and adoption of the Master Plan project.

The 3,400 acres of land that comprises Tolay Lake Regional Park are the territorial lands of the Federated Indians of Graton Rancheria (Tribe), which is a federally recognized tribe made up of families from many distinct Coast Miwok and Southern Pomo communities. The diverse habitat, abundant wildlife, lush valley lakebed, and panoramic vistas made it a desired location for Coast Miwok tribal activity including ceremonial gathering and celebration. The pre-historic cultural resources of the site date back thousands of years and add a significant component of preservation, protection and interpretation that impacts all elements of Park development. Parks and the Tribe are working in partnership to collaboratively manage the Park, particularly regarding protection and interpretation of the Park's pre-historic resources.

3.1.1 Master Plan Process

The Tolay Lake Regional Park master planning process includes three major phases: Phase 1 Discovery; Phase 2, Plan Development; and Phase 3, Environmental Impact Report (EIR).

Phase 1, Discovery took place between January and June 2013 and included a variety of public engagement activities designed to solicit stakeholder and community input regarding desired future activities in the Park.

Using this public input, the project team developed the Master Plan during Phase 2, Plan Development, which took place between July 2013 and March 2015. The first step in Phase 2 was to develop conceptual plan alternatives for park development. The conceptual plan alternatives were evaluated for consistency with existing Regional Parks' policies; impacts on

health and safety; impacts to neighbors; costs to build, operate, and maintain; and consistency with federal, state and local environmental laws and Conservation Easement. Regional Parks refined the Master Plan based on the above referenced evaluation process and the Master Plan that is the subject of this EIR. The EIR reflects the chosen project components, implementation phasing, and goals and guidelines deemed most suitable for accomplishing Regional Parks' objectives for the Park.

Phase 3 includes preparation of this EIR to evaluate the environmental impacts of implementing the Master Plan. The EIR will also identify all the necessary steps required to implement actions in the Master Plan, such as obtaining environmental permits, required Conservation Easement approvals, and public access easements. Once the EIR process is complete, the Master Plan will be adopted by Regional Parks as the guiding instrument for development of the Park.

3.2 PROJECT LOCATION AND SURROUNDINGS

3.2.1 Project Location

The Park is located in southern Sonoma County, at 5869 Cannon Lane, approximately 5 miles southeast of the City of Petaluma, 12 miles southwest of Sonoma, and 25 miles southeast of Santa Rosa (see Figure 3-1 and -2). Primary access is from Cannon Lane, a County-maintained road off Lakeville Highway. Secondary access would be provided on the southern boundary from State Route (SR) 121 north of the SR 37 intersection.

The Park is located in a valley between two ridgelines, with terrain characterized by rolling hills, moist grasslands, wetlands, riparian and upland habitat, and remnant stands of oak trees. The Park is named for the approximately 200-acre shallow lake that sits in the center of the valley. Streams and artificial ponds form other water features on site. The valley is drained by Tolay Creek, which flows south through the Park towards San Pablo Bay. The Park ranges between 100 and 800 feet above sea level and is mainly vegetated with native and non-native grasslands, forbs, and tree groves.

3.2.2 Existing Land Uses

The Park is divided into two areas: the Tolay Lake Ranch property and the Tolay Creek Ranch property. The Tolay Lake Ranch property includes Tolay Lake and the Park Complex. The Tolay Creek Ranch property is the southern end of the Park and includes the Tolay Creek riparian zone (see Figure 3-3).

The Tolay Lake Ranch property includes the Park Complex, Tolay Lake, Willow Pond, Duck Pond, Fish Pond, Vista Pond, Cardoza Creek, the northern end of Tolay Creek, the East and West Ridge Zone, and a variety of trails. The Park Complex is located in the northwest corner of the Tolay Lake Ranch property, just west of Tolay Lake. The Tolay Lake Ranch property and the Park Complex are accessed via Cannon Lane.

The Park Complex consists of the Cardoza Ranch and associated buildings, including the John Cardoza Sr. house (now a ranger residence), John Jr. and Beatrice Cardoza House (now the Park office), the Bunkhouse (now a ranger residence), a cottage; an old dairy barn, hay barn, tractor barn, granary, and creamery; various shacks and storage sheds; slaughterhouse; cattle scale, corrals; and gardens. The main park entry access road provides the community access to a

variety of Park trails including ranch/operational roads that provide a circulation network within the site (see Figure 3-4 and 3-5). Emergency access/egress is provided by easements at the end of Cardoza Lane and Spolini Road. A historical quarry site will continue to be used by Park staff for Park projects and is located in the Park Complex, north of the Park entry road and the bulk of ranch buildings.

The southern portion of the Park is comprised of a portion of the historic Roche Ranch and is referred to as Tolay Creek Ranch. This area is undeveloped and includes Tolay Creek, Middle Reach, and several unnamed ponds. The area is currently leased as grazing land, and includes a large restoration project, the Tolay Creek Riparian Enhancement Plan. The enhancement strategy is to replicate a natural riparian ecosystem and floodplain riparian oak woodland. Thousands of native sedges, shrubs and trees have been planted by youth, often working through partner organizations such as Students and Teachers Restoring a Watershed (STRAW). This area is accessed from the southern entry road on the north side of SR 121.

Streams, springs and artificial ponds form other water features on the project site. The Park's southern entry access road would provide the public access to a variety of Park trails including ranch/operational roads that provide a circulation network within the Park. There is an operations access easement as well as emergency access/egress to the park at the end of Mangel Ranch Road. Park circulation is through various pastures includes associated features such as gates, fences, and bridges that relate primarily to the site's agricultural use.

3.2.3 Surrounding Land Uses

The Park is surrounded by private lands, primarily under agricultural uses or cultivation. Land uses in the areas surrounding the northern portion of the Park include wineries, dairies, grazing lands, lands under agricultural cultivation, and the CDFW Petaluma Marsh Wildlife Area. Land uses in the area surrounding the southern portion include wineries, grazing lands, lands under agricultural cultivation, the Sonoma Raceway, and the USFWS San Pablo Bay National Wildlife Refuge.

Parcels sizes in the area are large, which is commensurate with these types of land uses. Although the area is sparsely developed, residential, farm, and winery buildings are developed on many of the parcels.

3.3 PROJECT COMPONENTS

3.3.1 Project Components Overview

The proposed project includes development of a new open space Regional Park facility to serve the residents of Sonoma County. The proposed Tolay Lake Regional Park would provide day use activities and permit camping and other overnight uses on a year-round basis. The Park would be open seven days a week, from dawn until dusk.

The Master Plan consists of conceptual plans for physical improvements; a resource management plan, educational and interpretive plan, trails plan, and phasing and implementation plan; Park maintenance and operation activities; and Master Plan goals, objectives, and policies that will guide implementation of Park activities and provide resource protection measures and activities.

The Master Plan includes recreational improvements for multi-use and hiking-only trails; equestrian facilities; a Park Complex that includes a visitor center with interpretive and educational facilities; as well as improved restrooms and parking. The Master Plan provides resource management recommendations for continued cattle operations, as well as improvements in fencing, boundaries, and exclusion zones of sensitive habitats and prehistoric cultural resources. Additionally, the Master Plan includes improvements to Park access, ADA improvements, a new ranger residence, and water supply and wastewater facilities.

The Master Plan provides recommendations for habitat restoration focusing on the restoration of Tolay Lake to maximize and improve the lake ecology for native species, and restoration of 4.5 miles of Tolay Creek in the Park. In addition, the Master Plan provides recommendations for the protection and interpretation of the significant cultural and historical resources of the property, including a schedule of tasks for long-term monitoring of natural resources in the Park.

The types of recreational activities proposed for the site include: nature study and outdoor educational programs, hiking, docent led walks, horseback riding, mountain biking, group and family picnicking, bird watching and other types of passive recreation, and overnight hike-in individual and group camping on a permit basis.

The project would include a General Plan Amendment to revise the Sonoma County General Plan land use designation for the site from Land Extensive Agriculture and Land Intensive Agriculture to Public-Quasi Public/Park. The project would also include a roadway easement agreement with an adjacent landowner to allow access to the Park entry at the end of Cannon Lane. The Tolay Lake Regional Park Master Plan is provided in Appendix B of the DEIR.

The conceptual site plan for the Park is shown in Figure 3-5. The conceptual site plan for the Park’s Park Complex area is shown in Figure 3-6.

Table 3-1 shows a summary of the physical project components. Details on these project components are presented on the following pages.

Table 3-1: Summary of Key Project Components

Component	Relevant Information
Park Complex*	
Cultural Gathering Area (A)	18,000 SF - Private gathering space for use by the Federated Indians of Graton Rancheria. Outdoor facilities for shade, seating, meeting, classes, and picnicking. May include traditional structures as needed for Tribal ceremonies. May include Dark-Sky-Association compliant lighting for evening ceremonial events.
Viewpoint (B)	3 short term and 1 ADA parking spaces provided on the main entry access road. Sited to provide panoramic vistas of Tolay Lake.
Interpretive Vistas	Up to 12 interpretive vistas. May include leveled area for shade structure, seating and interpretive signage.
New Equipment Shed (C)	4,000 SF, for ranch and park operations.
Screen Plantings (D)	Native vegetation planted as needed to provide screening for neighboring properties/and as needed for Park aesthetics/shade.

Table 3-1: Summary of Key Project Components

Component	Relevant Information
Ranch Manager Residence (E)	Structural and other improvements as needed, includes Dark-Sky-Association compliant outdoor lighting.
Entry Road Improvements(F)	May include minor realignment, grading, and concrete asphalt paving from property boundary to main parking lot.
Group Camping (G)	Two (2) group camping areas provided with seating, dining, and food locker storage and leveled area for up to 50 campers per campground.
Animal Pen (I)	30,000 SF – Preserve existing animal pen for housing of ranch animals including such as pigs, goats and chickens.
Historical Corral (J)	12,000 SF – Move existing historical corral near the old stone floor barn to south of the existing tractor barn.
Preserve and Interpret Historic Working Ranch (L)	Preserve historic, bunkhouse (#2), old dairy barn (#7), creamery (#8), and slaughter house (#15) for interpretation of the historic working ranch operations. Structural improvements for long term preservation and aesthetics provided only for interpretation. Interiors viewed from outside or at the entries or windows of buildings.
Bunk House (M)	4,700 SF – New bunkhouse south of the historic granary providing overnight stay facilities for groups up to 60 people. Dark-Sky-Association compliant outdoor lighting.
Park Office (N)	5,000 SF – Structural improvements and maintenance to allow continue use of historic yellow house (#5) as main park office. Dark-Sky-Association compliant outdoor lighting.
Group Picnic (O)	Large group picnic facility south of the new bunkhouse. May include shade structures, shade trees, picnic tables, food preparation facilities, and bar-b-ques.
Maintain Working Ranch Facilities (P)	Minor maintenance and structural improvements as needed to continue use of work shop (#12), Tractor Barn (# 13), equipment shed (#14), and modern barn (#17). Continued use as part of the working ranch and for Park's Department operations.
Culinary Ethno Garden (Q)	Expanded existing historical garden plus expanded composting and greenhouse areas.
Temporary Residence (Artist etc.) (1)	Structural improvements as needed to existing cottage (#1) for use as a temporary extended stay residence. Dark-Sky-Association compliant outdoor lighting.
Sales/Group Picnic Shelter (S)	5,000 SF – Concessions or group picnic area. May include shelter, shade structure, seating, food preparation area including bar-b-ques.
Visitor Center (K) and Restroom (V)	10,000 SF – New building west of the lake and north of the Old Stone Floor Barn. Ranch style and may include interpretive displays, classrooms, video room, Park store, etc. Outdoor patio or deck seating facing the lake and landscape improvements using native plants. Public restroom. Dark-Sky-Association compliant outdoor lighting.

Table 3-1: Summary of Key Project Components

Component	Relevant Information
Ranger Residence (T)	3,000 S F– Demolish existing structure. Construct new Ranger residence, two-car garage. Located on main entry drive in location of green house (#4). Dark-Sky-Association compliant outdoor lighting.
Restrooms (V) and Showers (U)	2,400 SF – Eight (8) shower and eight (8) restroom stalls in new building located south of historic granary building in association of group overnight stay improvements. Dark-Sky-Association compliant outdoor lighting.
Riparian/Wetland Restoration (W)	Tolay Creek, Cardoza Creek, un-named seasonal streams graded/improved for habitat restoration and to minimize ongoing watershed erosion.
Kitchen and Dining Area (X)	2,400 SF indoor kitchen and 1,000 SF covered outdoor dining near historic granary (#9) and in association of programs and group overnight stay improvements. Dark-Sky-Association compliant outdoor lighting.
Spray Irrigation Area (Y)	50,000 SF – Treatment plant water used to drip-irrigate restoration projects or as spray irrigation for non-food agricultural crops surrounding the treatment ponds.
Equestrian Parking (Z)	See Parking, below, for details
Boardwalk (AA)	Interpretive and permitted non-motorized boating boardwalk access constructed near and from the Lake Causeway.
Outdoor Class/Stage (BB)	Outdoor class area graded and constructed to include shade structure/shelter, formalized group seating, group fire-pit, stage, and/or amphitheater.
Electric Vehicle Charging Stations	Installation of up to three (3) electric vehicle charging stations in Visitor Center parking area
Southern Park Area	
Host Camp Site	Southern entrance near Tolay Creek. Dark-Sky-Association compliant outdoor lighting
Trails	
Hiker Only	Ten (10) miles of natural surface trail for use for pedestrians only. Grading, retaining walls, drainage crossings, etc. as needed.
Multi-Use (Hike, Bike, Equestrian)	Twenty-two (22) miles of natural and/or rocked surface equestrian, cyclist, and pedestrian trails. Includes creek crossings/bridges, retaining walls, drainage structures, and surface improvement including rock-paving.
Decommission Roads/Trails	Decommission 8.5 miles of existing trails or roads on too steep or otherwise poor alignments by grading, seeding, planting, exclusionary signage or fencing, and/or other restoration improvements.
Camping/Overnight Areas	
Backcountry Sites	Two (2) single-family backcountry hike in camp sites near Park center, west of Tolay Creek. Minor grading for leveled area for tent, picnic table and food storage, portable restroom, minor grading. Wood screen for aesthetics.
Picnic Areas	
Picnic Areas	Informal picnic areas at Park center and various locations along trails. One to several tables, minor grading improvements made for placement.

Table 3-1: Summary of Key Project Components

Component	Relevant Information
Parking	
<i>Auto</i>	
-Daily Parking Area	Up to eighty (80) daily use parking spaces near Visitors Center and Old Stone Floor Barn. Grading and rock-paving, accessible parking for ADA compliance, surface drainage, and native landscaping. Dark-Sky-Association compliant outdoor lighting.
-South Entrance	Up to twenty-five (25) parking spaces, including ADA compliant spaces. Graded and rock-paved surface. Parking lot open regular Park hours only; sunrise to sunset.
-Events Parking, additional at Tolay Lake	Event parking just south of the ranch (located where current Tolay Fall Festival event parking). Approximately 1,000 vehicles. Open grassland area would continue use as no-till hay field or left fallow and harvested and/or mowed when needed for event parking.
-Events Parking, additional north	Two additional areas north of ranch may be used for event parking (spaces for up to 300 vehicles): grass field normally mowed used as event parking and other area within the historical rock quarry.
<i>Equestrian Parking</i>	
- North Entrance	Equestrian staging area developed above and west of the ranch near the historic dairy barn for up to thirty (30) vehicles. Existing ranch road to, and staging at the barn minimally graded, widened for parallel parking, and rock-paved. Equestrian facilities (manure bunkers and water troughs) may be installed.
-South Entrance	Equestrian staging for up to eight (8) vehicles. Area graded and rock-paved. May include manure bunker and water trough.
Infrastructure	
Water Supply/Wells	Install potable water well on eastside of lake within a few hundred yards of Causeway Trail and Pond Trail Intersect. Public use potable water and as needed for Park and ranch functions. Water alignment to the North Park Core using existing ranch roads and trails (mostly along the Causeway Trail). Solar power supply developed and/or augmented with power drop from extension of power line nearby from neighboring property in northeast corner of the Park.
Wastewater Treatment Plant	New wastewater treatment plant with Combined Single-Stage Trickling Filter and Natural Wastewater Treatment System. Two wetland treatment ponds. Treated water used to drip irrigate restoration projects or to spray non-food producing agricultural fields.
Cannon Lane Improvements	Minor road widening, grading, road shoulder drainage improvements, and asphalt overlay and/or paving for the entire length of the road from Lakeville Road to the Park entry road.
Hydrology & Lake Restoration (W)	
Restore and improve lake hydrology and associated wetland meadows	Restoration of Tolay Creek and irrigation channels surrounding the Lake and areas of agricultural fields to the east of the lake to a pre-agricultural

Table 3-1: Summary of Key Project Components

Component	Relevant Information
	conditions. Intermittently dammed or filled. Entirety of Lake may be graded to improve lake hydrology to a more natural condition. Increase water flow to the Lake north of the causeway and restore wet meadow habitat east of, and surrounding, the lake.
Causeway Culvert	Replace causeway culvert with up to ten (10) high capacity culverts across the lake, raise the causeway by up to 4.75 feet at the center of the causeway.
Farm Bridge	Grade outlet at farm bridge on Tolay Creek to widened channel and establish final lake elevation. Remove or replace farm bridge.
Levee and Bypass Culvert Removal	Remove horseshoe culvert, all bypass culverts, and associated agricultural levees. Grade lake to remove levees and restore the lake bottom to a more natural condition.
<i>Native Vegetation Restoration</i>	Plant native trees, shrubs, and perennial including grasses, surrounding the lake and throughout the wetland meadow.

**Parking and camping are also included under those topics.*

Source: Tolay Lake Regional Park Master Plan, 2016.

3.3.2 Park Complex

The Park Complex includes the original Cardoza Ranch and associated buildings. These buildings include the original ranch residences, bunkhouse, equipment barns and sheds, creamery, granary, slaughterhouse, and corrals. The Park Complex also includes facilities added by Regional Parks in the last few years during the interim public access period, including a viewing platform on the lake edge, picnic sites on the historical lawns, minor maintenance and improvements to the historical garden, ranch associated barns and sheds, entry road, and trails.

As listed in Table 3-1, proposed facilities for the Park Complex would include a cultural gathering area, viewpoint, new buildings (equipment shed, ranch manager residence, bunkhouse, park office, temporary residence, ranger residence, visitor center, and showers and restroom), restoration and plantings for aesthetic and habitat improvements, picnic and kitchen/dining areas, waste water treatment and associated wetlands, boardwalk, class areas/stage, and parking, including overflow parking. Figure 3-6 shows the conceptual location of these facilities. Due to the conceptual nature of these facilities, detailed construction drawings would be prepared closer to construction of each facility.

3.3.3 Camping

As shown in Figure 3-5 and -6, the Master Plan includes the construction of camping areas. With the exception of the Group Bunkhouse in the Park Complex, all sites would be hike-in camping sites. The Master Plan includes the Group Bunkhouse, potentially holding up to sixty (60) campers, two (2) backcountry single-family type sites; and two (2) group sites (approximately 50 people each site). All development outside the Park Complex require District approval per the Conservation Easement prior to development. this includes all structural features outside the Park Complex and any signs larger than 32 square feet in size.

3.3.4 Informal Picnic Areas

As shown in Figure 3-5 and -6, the Master Plan includes installation of five informal picnic areas outside the Park Complex with tables grouped in appropriate locations along trails.

3.3.5 Trails

The Master Plan trail system would be the principal means for providing comprehensive public access to Tolay Lake Regional Park. The trail system was conceived after extensive public input and consideration of the site's many unique opportunities and natural resource constraints. The Park would include two basic trail classifications: multiple use and single use trails.

The Master Plan includes improvements to existing trails, new trails, and the decommissioning of trails that are unsuitable due to terrain and soil types, sensitive resources, or habitat degradation. Some trail segments would also require the installation of bridges. Trail alignments are shown in Figure 3-5.

3.3.5.1 Multiple Use Trails

The Master Plan includes two types of multiple use trails:

- **12-Foot Wide Trail.** These rocky or unpaved trails would be open to emergency and Regional Parks operation/maintenance vehicles in addition to all allowed trail users.
- **5-Foot Wide Trail.** The Master Plan would include segments of 5-foot wide trails, which would be the predominant trail type in the Park, and would comfortably accommodate hikers walking two abreast.

3.3.5.2 Hiker Only Trails

The Master Plan features a select number of trails that would be limited to pedestrian use only. Hiker-only trails would be similar in construction techniques to multi-use trails and with minimized widths; they would be signed at key locations alerting users to the trail use limitations. Additionally, certain segments of the pedestrian-only trails would be designed to meet the criteria for an "educational nature trail" as defined in Section 41 of the California State Parks Accessibility Guidelines.

Trails would be designed and constructed using trail design guidelines and standards as shown in Chapter 8 of the Master Plan. These guidelines and standards were crafted to guide general trail design; multiple-use, educational nature, and accessible types of trails; and emergency access roads. Chapter 8 also includes trail maintenance guidelines and an implementation schedule for trail construction.

Table 3-2 shows a list of existing trails under the Master Plan. Proposed trails would be constructed in phases with phases extending from Phase 1 (1 to 5 years), Phase 2 (5 to 10 years), Phase 3 (10 to 20 years) and Phase 4 (20 and beyond).

Table 3-2: Trails on Existing Alignments

Trail Name	Mileage*	Description
Cardoza Road	0.40	Trail has a slight grade and follows a historic route lined with eucalyptus trees.
Ranch Interpretive	0.20	Gentle grade trail that uses internal ranch circulation paths to enable visitors to view historic structures within the Park Complex.
Duck Pond	0.20	Gentle grade trail that uses internal ranch circulation paths to enable visitors to view spring fed ponds in the Park Complex.
Causeway	1.3	Trail has a gentle to slight grade and crosses Tolay Lake. Offers views of the lake, and opportunities to view waterfowl and other birds.
Historic Lakeville Road	2.7	Trail on the historic alignment of Lakeville Road is a gentle grade to and along Tolay Creek, passes through rock cairns that form a gate.
West Ridge	3.6	Trail has a gentle grade, offers outstanding views of San Pablo Bay and the Petaluma River.
East Ridge	1.6	Trail has a gentle to moderate grade and passes through an oak woodland area to 3-Bridge Vista providing outstanding views of the Tolay Watershed.
Pond	0.80	Trail has a gentle to slight grade, connecting the Causeway Trail to the upland ponds.
Upland Pond Loop	0.90	Trail has a slight grade and provides access to a unique portion of the Park with its own micro-topography, springs, and spring wildflowers.
South Creek	0.30	Spur trail off the West Ridge Trail that provides views of the Petaluma River and South Creek.
Middle Reach	0.50	Existing section of ranch road on moderate grade from Upland Pond Loop Trail along the east side of the park.
Coyote	0.3	Trail begins on an existing ranch road alignment and extends from West Ridge Trail to Tolay Creek near in camp sites.
Total Miles	12.8	

*Mileages are rounded.

Source: Tolay Lake Regional Park Master Plan, 2016.

Table 3-3 shows the proposed trails and phasing. The Master Plan would also require the construction of four trail bridges. These trail bridges are part of proposed trails, and would be constructed at the time the associated trail segment is constructed. Table 3-4 shows the trail bridges and proposed phasing plan.

Table 3-3: Proposed Trails and Phasing

Trail Name	Mileage	Description
Phase 1: 1 to 5 Years		
Tolay Creek Ranch Entry to West Ridge (m)	1.8	Moderate grade trail starts at the southern park entry road creek crossing and connects to the existing section of West Ridge Trail.
South Entry (n)	0.30	Switchback ADA compliant trail from southern parking area across bridge #1 to the intersection of Tolay Creek Ranch Entry and Meadow Trail.
Lake Vista (o)	0.10	Short multi-use trail connects the Historic Lakeville Trail to an overlook of southern Tolay Lake
Fish Pond (b)	0.60	Multi-use trail has a slight grade and extends trail south of Cardoza Creek to the Historic Lakeville Trail
Oak Knoll (c)	0.40	Hike-only trail has a slight grade wandering through the only oak woodlands in the north area of the park, opening to picnic area and views of the Tolay watershed.
West Ridge Interpret (d)	1.20	Hike-only trail has a slight grade and offers outstanding views of the Petaluma River and San Pablo Bay
South Creek (e)	0.60	Multi-use trail extends the existing trail down to south creek on a moderate grade and provides a quiet area to rest or picnic along the creek.
Burrowing Owl (new alignment) (a)	0.70	Multi-use trail has a moderate grade trail on a new alignment from Historic Lakeville Road Trail to the intersection of West Ridge Trail and South Creek Trail. Creating a shorter loop walk, approximately three miles round-trip from the park center.
Ghost Rock (p)	0.20	Hike-only trail has a gentle grade and offers views of Tolay Lake from the northwest end of Tolay Lake.
Equestrian(q)	0.40	Short segment of multi-use trail connects the equestrian parking area to the Park Complex.
Phase 2: 5 to 10 years		
Middle Reach Loop (f)	1.50	Hike-only trail has a moderate grade and offers panoramic views of the region.
East Ridge South (r)	1.30	Extension of Middle Reach multi-use trail on moderate to steep grades to connect the Upland Pond Loop Trail with southern end of the Historic Lakeville Road Trail.
Historic Lakeville Eastside Link (s)	0.40	Short segment of multi-use trail to link existing northern and southern segments of the Historic Lakeville Trail
East Ridge Canyon (k)	1.20	Multi-use trail has moderate to steep grade through secluded canyon along upper Cardoza Creek.
Group Picnic (Park Complex)	0.10	Short hike-only trail has moderate grade and connects Equestrian and Group Camp Trails in Park Complex.
Group Camp (Park Complex)	0.21	Short hike-only trail has a moderate grade and connects group camping area to group picnic area in Park Complex.

Trail Name	Mileage	Description
Group Camp (Park Complex)	0.10	Multi-use trail connecting equestrian parking area to group camp at Park Complex.
Kayne (j)	1.10	Hike-only trail has a gentle grade and runs parallel well above Tolay Creek and connects the Coyote Trail to Meadow Trail.
Phase 3: 10 to 20 Years		
Coyote (t)	0.40	Multi-use trail on moderate grade to connect the Historic Lakeville Road Trail to the Coyote Campground and West Ridge Trail.
Coyote Camp (i)	0.20	Internal circulation trail to backcountry campsites.
Tolay Creek East (u)	0.90	Hike-only trail has a gentle grade, starting in the south entry and follows Tolay Creek to Historic Lakeville Road Trail.
Meadow (u)	0.90	Multi-use trail has a gentle grade starting at the southern park entry through open meadow to Historic Lakeville Road Trail.
Middle Reach Connect (f)	0.80	Hike only trail connecting the Middle Reach Loop Trail to the Historic Lakeville Road Trail.
Toe of Slope (v)	1.0	Hike-only trail with gentle grade follows the base of the East Ridge from the Causeway Trail to the Upland Pond Loop Trail. Provides unique perspective of Park just above the valley floor.
Tolay Lake Boardwalk (Park Complex-Causeway)	0.10	Hike-only boardwalk trail connecting Visitor Center to Causeway Trail in Park Complex.
Phase 4: 20 to 35 Years		
Assess Additional Trail Needs	n/a	n/a
One Tree Knoll	n/a	These trails are tentatively proposed. Specific trail alignments would be determined only if sufficient demand and no impacts to cultural resources and only minor impacts that are mitigated for natural resources. These trails would not exceed three miles in length combined.
Tolay Creek South	n/a	
East Ridge Connect	n/a	
Boardwalk Boat Access	n/a	

Table 3-4: Proposed Trail Bridges

Bridge	Implementation Phase
Bridge #1/TCR Entry – Vehicle Bridge	Phase 1 (1 to 5 years)
Bridge #4/Lakeville Road – Vehicle Bridge	Phase 2 (5 to 10 years)
Bridge #2 – Near Mangel Road (trail bridge)	Phase 3 (10 to 20 years)
Bridge #3 – Replacement (trail bridge)	Phase 3 (10 to 20 years)

Source: Tolay Lake Regional Park Master Plan, 2016.

3.3.6 Interpretive Plan

The Interpretive Master Plan comprises one element of the Tolay Lake Regional Park Master Plan. The Park Master Plan’s purpose is to develop a framework allowing Tolay Lake Regional Park to provide a spectrum of outdoor recreation and environmental education benefits to Sonoma County residents and other visitors, while protecting sensitive habitats and cultural resources. A conceptual diagram, including the location of “story zones” associated with the Interpretive Master Plan is shown in Figure 3-7.

The Interpretive Master Plan identifies and prioritizes potential opportunities to interpret cultural and natural elements of the Tolay Lake Regional Park for visitors. Interpretive programs take a holistic approach lacing the relationship of people with the land throughout its history including but not limited to geology, hydrology, regional significance, land management practices, conservation, restoration, agriculture, and human culture.

As noted above, the Interpretive Master Plan includes self-guided and staff-guided media for interpreting features in the Park offering visitors a range of experiences from overt to subtle, from technologically connected to contemplative and quiet, and from easy to requiring thought and understanding to access. Education and interpretive elements are described fully in Chapter 7 of the Master Plan.

The Interpretive Plan includes concepts for twelve Park zones including the Ranch/Visitor Center, Lake Vista, Petaluma Marsh, Agriculture, Oak Woodland, East Ridge Viewpoints, the Central Ponds, Middle Reach, Historical Route, Tolay Creek, Bay View Point, and the South Entrance. The stories of the people and the land will be told throughout the site through these story zones. The zones and concepts are shown in Table 3-5.

Table 3-5: Tolay Lake Regional Park Interpretive Zones

Zone	Concept
Ranch/Visitor Center	Regional Overview, Site Overview, Native American Story – (prehistoric, historic, living tribe, significance of archeology, culture, land and lake) Vaquero’s Story, Portuguese Farmers’ Story, Present Agricultural Use, Duck Pond and Waste Water System. Comprehensive story of the Tolay Valley throughout history and the possibilities of its future.
Lake Vista	Native American Significance, History, Values, Ethnobotanical Uses, Living Tribe, Story of the Lake, Hydrology, Birds, ecosystems and native flora and fauna.
Petaluma Marsh	Views, Regional Overview, Site Overview, Natural Marsh, Wetland Habitat, Marsh, Wetland Restoration, Native American (ethno-botanical, importance to prehistoric people and living tribe), Climate Change and Local Effects, Lakeville Town Story, Geology and Geomorphology
Agriculture	Restoration, Native American Significance, changes to way of life with Euro-American invasion), Ethnobotanical Uses, Living Tribe, Ranchers’ Story, Vaqueros’ Story
Oak Woodland	Native American Significance and life ways, Ranchers’ Story, Restoration, Bay Oak Woodland
East Ridge View Point	Views, Regional Overview, Site Overview Geology and Geomorphology, Native American relationship of Tolay to surrounding communities and locations. Ancient place names.
Central Ponds	Natural Habitat, Fresh Water Springs, Historical Route, Birds, Fishing Destination, Native American relationship with the land, changes to the environment because of Euro-American agricultural practices.
Middle Reach	Views, Crash Site Memorial, Native Americans, relationship to the land and the living tribe, ancient burning practices and living tribe interest in burning, native grasslands and wildflowers, grazing practices and relationship with managing the land, burning as a land management tool.
Historical Route	Historical Route, Natural Habitat, Riparian, Restoration – Creek Riparian Areas, Native American, relationship of creek to native life, living tribe use of native plants and value of willow burning
Tolay Creek	Historical Route, Natural Habitat, Riparian, Bay Oak Woodland, Restoration – Creek Riparian, Bay Oak Woodland, Native American ethnobotany, willow burning, basket weaving etc., living tribe work and interests, relationship with the land.
Bay View Point	Views, Natural Habitat, Bay Ecosystem, Serpentine Ecosystem, Climate Change and Local Effects, Regional Overview, Native American neighboring tribe locations and relationship, living tribe and climate change.
Southern Entrance	Regional Overview, Site Overview, Native American overall story and significance of the Park historically and living, Visitor Kiosk, Signage

Source: Tolay Lake Regional Park Master Plan, 2016.

3.3.7 Habitat Restoration and Enhancement

The Master Plan includes restoration and enhancement activities for developed and disturbed areas, native habitat areas, stream and riparian habitats, Tolay Lake and other wetland areas, woodlands, grasslands, meadows, and grazing areas. These activities include restoration/enhancement activities, invasive species management, fire management, resource protection guidelines and standards, and adaptive management strategies. As shown on Figure 3-8, the Master Plan would also implement proposed restoration in areas. These activities include native grassland monitoring, riparian and woodland plantings, and wetland and meadow plantings.

More detail on these activities is included in Chapter 6 of the Master Plan for details of the Resource Management Plan.

3.3.8 Lake Restoration

Tolay Lake is a shallow lake, averaging between 4 to 8 feet in depth and filling in the winter and draining in the spring, with a surface area of approximately 200 acres during the rainy season. Tolay Lake would be restored to its original hydrology within the Lake and original wet meadow, and improved to reduce flooding to upstream properties. Restoration activities would maintain an elevation at the lake outlet of 215 feet (msl). The restoration would establish a stable water elevation and high quality wetland habitat on both sides of the Causeway, increase water movement, and return the lake to a more natural, pre-agricultural condition, and reduce upstream flooding.

The goal of the restoration would be to restore, enhance, and increase seasonal wetland habitat, and habitat for shorebirds, dabbling ducks, and waterfowl. This includes providing water depths that range from 0 to 1.5 feet deep for shallow and deeper seasonal wetlands, which would provide foraging habitat for dabbling ducks during annual migrations.

The restoration would include: filling or intermittently damming Central Lakebed Channels A and B and Drainage Channel 2, removing or intermittently damming hillside drainage ditches (North Creek, Eagle Creek, East-West, Pumpkin Patch, and Drainage Channel 1), raising the elevation of the causeway by as much as 4.75 feet at its center and replacing the Causeway Culvert with ten (10) high capacity culverts, removing the Horseshoe Culvert and associated levees, enlarge the outlet at the Farm Bridge, and replacement of the farm bridge. The proposed lake restoration is shown in Figure 3-9.

3.3.9 Cultural Resource Conservation

The Tolay Creek watershed and its surrounding landscape represent a long continuum of significant cultural prehistoric and historic traditional Native American practices, and diverse and numerous archaeological sites.

The Master Plan project components have been developed to avoid, protect and monitor sensitive cultural resources in the Park. The Master Plan includes objectives and standards developed allowing for adaptive management to best protect cultural and tribal resources within the Park. See Chapter 6 of the Master Plan for details of the Cultural Resource Management Plan.

3.3.10 Circulation and Access Improvements

Northern park access via Cannon Lane would be improved to serve the anticipated annual average daily vehicle traffic following buildout of the Park in 2035. Currently, the paved width of Cannon Lane ranges from 14 to 24 feet, with degraded edges and potholes. Improvements would include repaving, establishing uniform road width, and improved shoulders for bicycle use. In order to accommodate projected visitor increases as well as high traffic volumes during the Fall Festival, Cannon Lane would be paved to a 22-foot standard road width, with two nine-foot travel lanes, two 2-foot shoulders for bicycle travel, and an additional three feet of graded shoulder as feasible along both sides. These improvements would apply to the entire roadway length, where feasible. Figure 3-10 shows conceptual improvements to travel lanes on Cannon Lane.

Circulation and access improvements also include vehicle bridges needed on trails that would provide access for emergency and maintenance vehicles. These vehicle bridges are shown in Table 3-4: Trail Bridges.

3.3.11 Environmental, Cultural, and Agricultural Study and Education

The mission of Regional Parks is to create healthy communities and contribute to the economic vitality of Sonoma County by acquiring, developing, managing and maintaining parks and trails county-wide. Regional Parks preserves irreplaceable natural and cultural resources, and offers opportunities for recreation and education to enhance the quality of life and well-being of residents and visitors to Sonoma County.

The Master Plan includes environmental, cultural, and agricultural study and education activities, including programs. Programs would be an important interrelated aspect of the Park and vital to its operation. Interpretation of the Park's rich cultural and natural history is fundamental to a full understanding and appreciation of all the Park has to offer. Through program run school field trips an opportunity for learning in context and showcasing the value of the Park in the community is realized.

Existing exciting education programs are successfully being implemented at the Park now, Healthy Earth, Healthy Bodies, Acorn to Oaks, and the Tolay Fall Festival. Park programs would be based on but necessarily limited to the region and Parks history, cultural, agricultural, and natural resources. Programs at the Park may include; specialist led interpretive hikes and outings including group overnight stay opportunities, Native American interpretive historical culture, Native American ceremonies, teaching garden, historical and modern agricultural practices, climate and geology, and incorporating programs with the Tolay Fall Festival throughout the month of October. Regional Parks will continue in its endeavor to enhance quality of life and well-being to residents and park visitors with a broad outlook on interpretive and educational opportunities through innovative program development.

3.3.12 Special Events

The Park would also host special events. Some events, like the Tolay Fall Festival, are currently held at the Park under the Interim Public Access and Resource Management Plan. These events would continue under the Master Plan. Events like the Tolay Fall Festival integrate aspects of both an event and program. The event occurs exclusively in the month of October in alignment

with the Cardoza Pumpkin Festival, which was historically held by the previous land owners. Organized school groups attend Monday through Friday facilitated by educational programs through the week. The event is opened to the public on weekends. The Fall Festival includes a strong element of education throughout the family oriented event, but includes an aspect of celebration and entertainment. The Fall Festival includes games and events, food, music and miscellaneous vendors on site throughout the event. No events would be staged outside of the Park Complex.

Although events in the park may be based on the Parks cultural and natural resources; most events would be more celebratory, fund raising, or entertainment oriented. Events may include, but not be exclusive to; the Tolay Fall Festival held in October, run race events, equestrian focused events, and all may also include live entertainment and vendors.

As shown in Table 3-6, the Master Plan would allow for scheduled special events and would be scaled to accommodate the number of attendees shown below.

Table 3-6: Tolay Lake Regional Park Special Events

Activity/Program	Occurrence	Estimated Attendees	Day	Time	Hours
Tolay Fall Festival (TFF)– Park Center	October	Not to exceed 30,000/event	6-24 days	M-F Sat & Sun	8a – 4p 8a – 10p
Large Event not TFF – Park Center	Nov-Sept	Not to exceed 1,200/day	4 days	Sat &Sun only	8a – 10p
Medium Event	Nov-Sept	Not to exceed 500/day	10 days	M-F Sat & Sun	3p-10p 8a-10p
Small Event	Nov-Sept	Not to exceed 150/day	20 days	Sun - Sat	8a-10p

3.3.13 Infrastructure

The Master Plan includes the construction and installation of water supply and wastewater infrastructure to accommodate the increase in visitation and proposed project components and programming.

The Park currently does not include potable water for public day use. A spring is currently located on the east side of the Lake, which was developed for the ranger residence and employees of the park. The spring has the capacity to produce 18 gallons per minute. To accommodate potable water for public use a new source of potable water would be established as part of the project. In the course of the Master Plan preparation, Regional Parks considered two options for potable water: developing a surface water source or a groundwater source of potable water.

From a water quality standpoint, and to minimize operational and maintenance requirements, Regional Parks chose to develop a new well as the best method to meet the Park’s future potable water requirements. A waterline would be required to convey water from the well heads to the

service areas of the Park. The proposed well location and water line route are shown in Figure 3-11.

Construction of new visitor facilities, including flush toilets and showers, would require waste and wastewater treatment facilities. The wastewater system would include a dual chamber septic tank, a duplex pump system, grease trap, trickling filter, treatment wetland, and potential spray irrigation area. The system would use passive aeration, clarifier tanks, and wetlands to provide the aerobic and anaerobic environments for treatment of the wastewater. The system would remove suspended solids and organic loading to the final wetland.

The treatment plant would have a 19,460-gallon treatment capacity during peak use of the system. The septic tank and duplex pump system would be located within the Park Complex area, located northeast of the Old Stone Floor Barn and adjacent to the proposed visitor center. The grease trap would be located near the proposed kitchen building. The trickling filter, treatment wetland and irrigation area would be located on the north and east sides of the Duck Pond. Treated water from the ponds would be used to drip irrigate restoration projects or used to spray non-food producing agricultural fields. The proposed wastewater facilities are shown in Figure 3-12.

A camp host site would be constructed at the southern entrance. The camp host site would be located within the District Approved Conservation Easement 5-acre Residential Envelope. The camp host would help with daily maintenance at the south entrance and help to secure the south entrance, monitor daily activity and protect the sites sensitive archeological resources. A leveled area for a trailer or other RV type would be graded and parking surface area rock-paved, picnic table and storage will be included in the site development. Outdoor lighting would be motion sensor Dark-Sky-Association compliant and associated with only the camp host site.

3.3.14 Operations and Management

The Master Plan O&M Plan includes a Business Plan, Operations and Maintenance Element, and an Implementation and Phasing Strategy. Regional Parks anticipates that visitation to the Park would increase as public access and attractions increase. Regional Parks' staff would monitor changes in visitation in terms of demand and specific timing for proposed new facilities; costs of developing, operating and maintaining those facilities; and revenues and potential funding sources to offset new costs associated with Park build-out. The Master Plan includes Operations and Maintenance (O&M) guidelines to address changes in use and associated costs. The O&M includes a business plan, O&M guidelines and standards, a phasing plan for new development, and a list of potential funding sources.

The business plan for Tolay Lake Regional Park includes an estimate of expenditures and revenue stream to offset as much of the operational costs as possible. The Operations and Maintenance (O&M) element would provide guidelines and standards for the Park. These guidelines and standards were designed for flexibility to accommodate potential legal, regulatory, and social changes in the future. Guidelines provide general direction about how particular actions would be completed. Standards are more specific and in some cases include a quantifiable action. Guidelines and standards were developed from review of other similar Master Plans and based on current management practices at Regional Parks. The Master Plan O&M Plan is included in Chapter 9 of the Master Plan.

The Master Plan would be implemented in phases over the course of the next 35 years. Within the Master Plan area there are a number of distinct project areas that can be implemented in both the near and long term. Some of these improvements can be completed independently as stand-alone projects, while others are dependent on other projects or project areas being completed or constructed concurrently. The main project type categories, followed their respective examples, include:

- Trail Network, Camping and Picnic Areas: new trails construction, trail bridges for creek crossings, decommissioning trails, viewpoints, picnic areas and tent camping areas
- Buildings and Utilities: visitor center, wastewater treatment plant, spray irrigation, restrooms, showers, historic buildings (i.e., Creamery/wine storage building)
- Interpretive Features: story zone locations
- Traffic and Circulation Improvements: Cannon Lane improvements, traffic signal additions, parking facilities improvements
- Tribal Projects: cultural gathering area
- Environmental Restoration: Tolay Lake, native grassland, and riparian/wetland restoration

Development of any components identified in the Master Plan may be done as one project or in multiple sub-phases, based on numerous factors including but not limited to funding sources and availability, capital improvement plan priorities, available infrastructure, cultural and other environmental constraints, and community volunteerism and support. Overall project phasing and implementation is shown in Table 3-7.

Table 3-7: Tolay Lake Regional Park Master Plan Phasing

Type of Project	Project Name
Phase 1 – First 5 Years	
Trails/Camping/Picnic	TCR Entry to West Ridge (Multi-Use Trail)
	Bridge #1/TCR Entry – Vehicle Bridge
	South Springs (Service road)
	Lake Vista (Story Zone 2)
	Burrowing Owl (New alignment Multi-Use Trail)
	Fish Pond (Multi-Use Trail)
	Equestrian (Multi-Use Trail)
	Oak Knoll (Hiking Trail)
	West Ridge Interpret (Hiking Trail)
	South Creek (Multi-Use Trail)
	Ghost Rock (Hiking Trail)
	Coyote Trail (Multi-Use Trail)

Type of Project	Project Name
	Picnic Tables and Benches
Buildings and Utilities	New Equipment Shop
	Screen Plantings
	Old Dairy Barn – Partial Preserve
	Park Complex Landscape and Culinary Garden
	Well and Water System
Traffic and Circulation	Signage improvements for wayfinding, Maintain existing conditions for opening
	Equestrian Parking
	Overflow Parking
	Park Complex Service Yard Road
	Equestrian Entry Road and Viewpoint
	Cannon Lane Improvements
	Pave Park Center Entry Road
Interpretive Features	Park Complex
	Lake Vista (Story Zone 2)
Environmental Restoration	Various wetland restoration areas
Phase 2 - 5-10 years	
Trails/Camping/Picnic	Middle Reach Hike (Hiking Trail)
	East Ridge South (Multi-Use Trail)
	Group Camping & Trail Park Center (Group Site Facility)
	Historic Lakeville Eastside Link (Multi-Use Trail)
	Bridge #4/Lakeville Road – Vehicle Bridge
	East Ridge Canyon (Multi-Use Trail)
	Tolay Creek West Creek (Hiking Trail)
	Group Picnic & Trail (Facilities Park Center)
Buildings and Utilities	Move Historical Corral
	Additional Overflow Parking
	Sales/Group Picnic Shelter
	Park Office
	Vera/Green House Demolition
	New Ranger Residence
	John Sr. House – Range Manager Residence
Traffic and Circulation	South Entry Road – A/C Pave

Type of Project	Project Name
	South Parking Lot
Interpretive Features	Comprehensive Plan
	Entry Road Vista
	East Ridge View Point (Story Zone 6)
	Oak Woodland (Story Zone 5)
	Park Center Interpretive Programs (Story Zone 1)
	Ghost Rock
	Agriculture (Story Zone 4)
	Petaluma Marsh (Story Zone 3)
	South Entrance
Environmental Restoration	Lake Restoration (Design and Initial Activities)
FIGR Projects	Cultural Gathering Area
Phase 3 – 10-20 Years	
	Coyote Camp & Trail (Individual hike in backpack camp sites)
	Bridge #2 – Near Mangel Road (trail bridge)
	Bridge #3 – Replacement (trail bridge)
	Meadow (Multi-Use Trail)
	Toe of Slope (Hiking Trail)
	Tolay Creek East (Hiking Trail)
	Middle Reach Connect (Hiking Trail)
	Group Camping Ponds
Buildings and Utilities	Waste Water Facility
	Visitor Center with Restroom
	Boardwalk
	Visitor Center Parking and Stormwater/Drainage for Parking
	Outdoor Class Stage
Interpretive Features	Central Ponds (Story Zone 7)
	Middle Reach (Story Zone 8)
	Historical Route (Story Zone 9)
	Tolay Creek (Story Zone 10)
	Bayview Point (Story Zone 11)
	Portable Interpretation Display
Environmental Restoration	Lake Restoration
Phase 4 – 20-35 Years	

Type of Project	Project Name
Trails/Camping/Picnic	Parkwide Assessment of Additional Trail Needs
	One Tree Knoll (Hiking Trail)
	Tolay Creek South (Hiking Trail)
	East Ridge South Connect (Hiking Trail)
Buildings and Utilities	Hay Barn/Stone Floor Barn – preserve
	Animal Pen
	Temporary Residence/Artist Residence
	Kitchen and Dining
	New Bunk House
	Showers
	Restroom
	Creamery – preserve
	Old shop – preserve
	Equipment shed – preserve
	Slaughter house – preserve
	Ranch Manager Residence

Source: Tolay Lake Regional Park Master Plan, 2016.

3.3.15 Fire Safety and Emergency Access

The Master Plan includes an emergency evacuation plan. The overall Park and Park Complex emergency evacuation plans are shown in Figures 3-13 and -14, respectively. Emergency access routes include primary and secondary emergency evacuation routes, emergency vehicle access routes using existing roads and existing and proposed trails, fire suppression water sources, and helicopter landing zones.

3.4 PROJECT OBJECTIVES

The objectives of the project include:

- Preserve a land that is sacred with deep spiritual significance;
- Preserve a land that reflects California’s long and storied heritage;
- Create an outdoor destination in the region for all ages and cultures;
- Create a recreation resource to inspire;
- Restore and preserve a thriving, ecologically rich landscape;
- Create a place for innovative and interactive education and experiences;
- Preserve a landscape to experience and learn about its natural and cultural history; and
- Create a space to find peace and respite.

3.5 REQUIRED PERMITS AND APPROVALS

For the proposed project, Sonoma County Regional Parks is the Lead Agency. Approvals that may be required for implementation of the project include the following.

Table 3-8: Potential Permits and Approvals

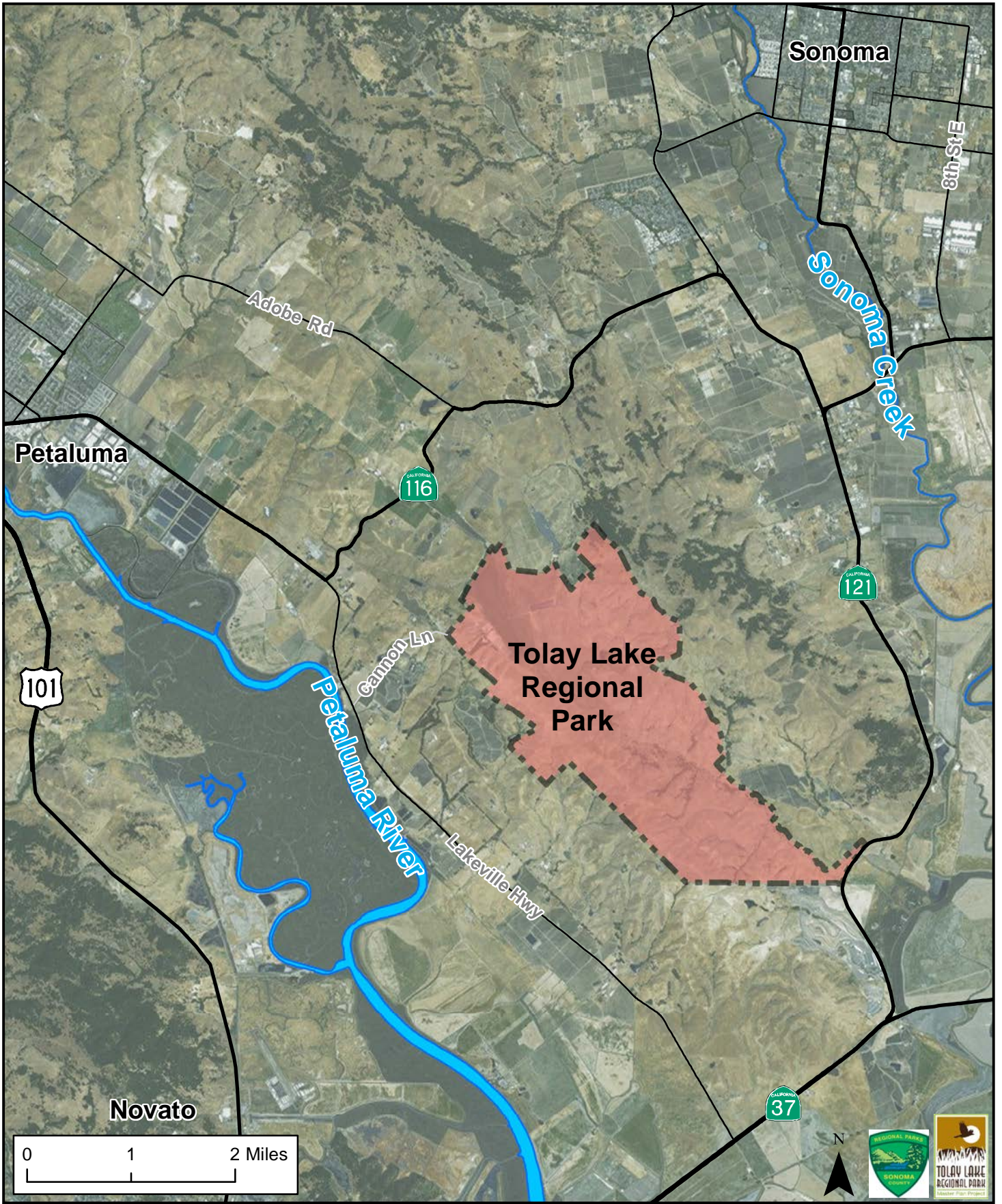
Lead Agency	Permit
Sonoma County	Project approval, EIR certification, General Plan Amendment
Sonoma County Agricultural Preservation and Open Space District	Master Plan approval (per Tolay Lake Conservation Easement and Tolay Creek Conservation Easement)
California Department of Transportation (Caltrans)	Encroachment Permit for Southern Entrance
U.S. Army Corps of Engineers (Corps)	Wetland Delineation Approvals and Permit
United States Fish and Wildlife Service (USFWS)	Consultation with USFWS regarding fish and wildlife resources
California Regional Water Quality Control Board, North Coast Region (RWQCB)	National Pollution Discharge Elimination System (NPDES) Permit Section 401 certification for water quality
California Department of Fish and Wildlife (CDFW)	Section 1602 Streambed Alteration Agreement Review and comment on wetlands impacts and sensitive species
Marin-Sonoma Mosquito and Vector Control District	Mosquito abatement monitoring and abatement coordination

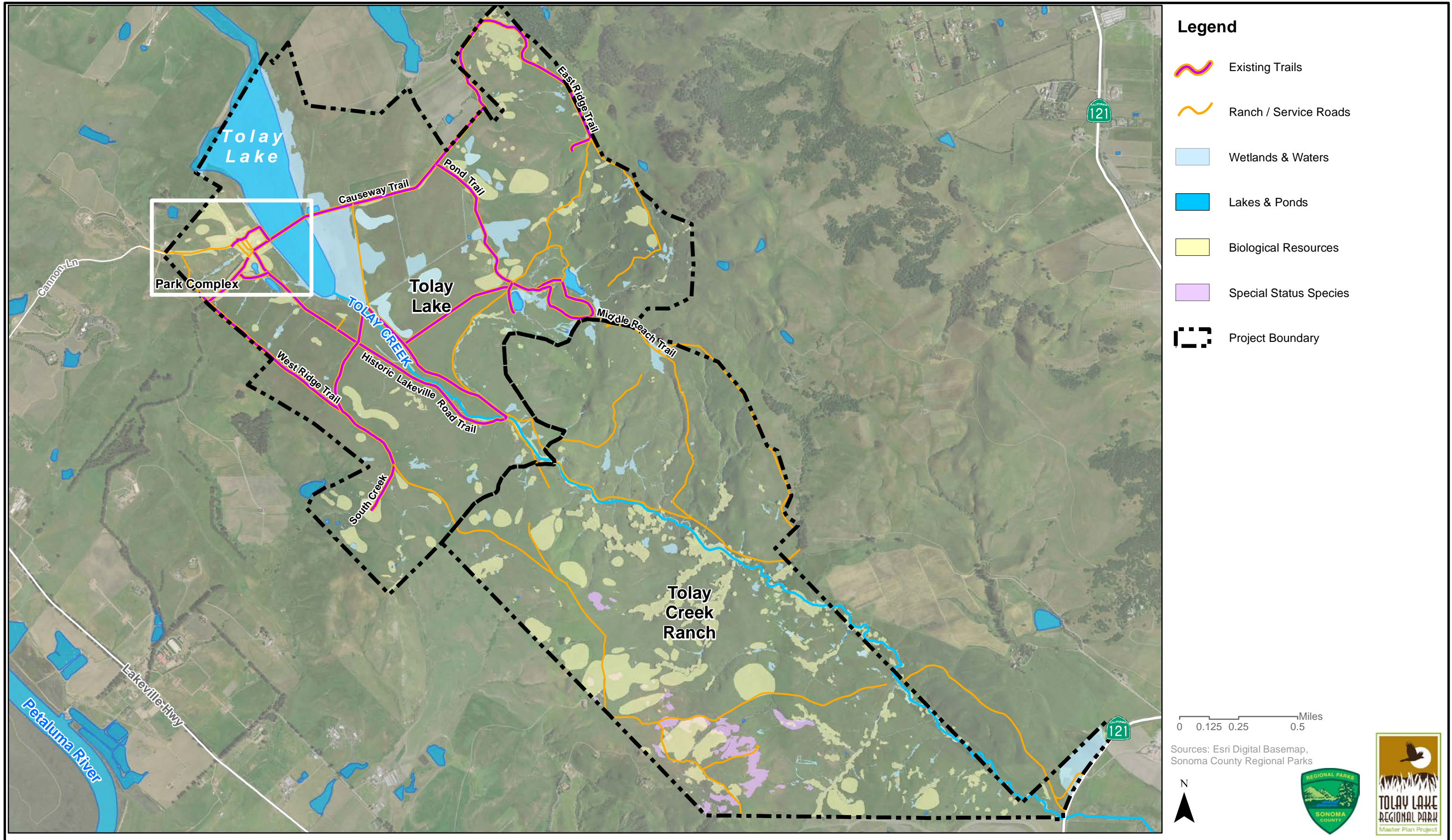
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M I G Tolay Lake Regional Park Master Plan
 Sonoma County, CA

Figure 3-1
 Regional Location

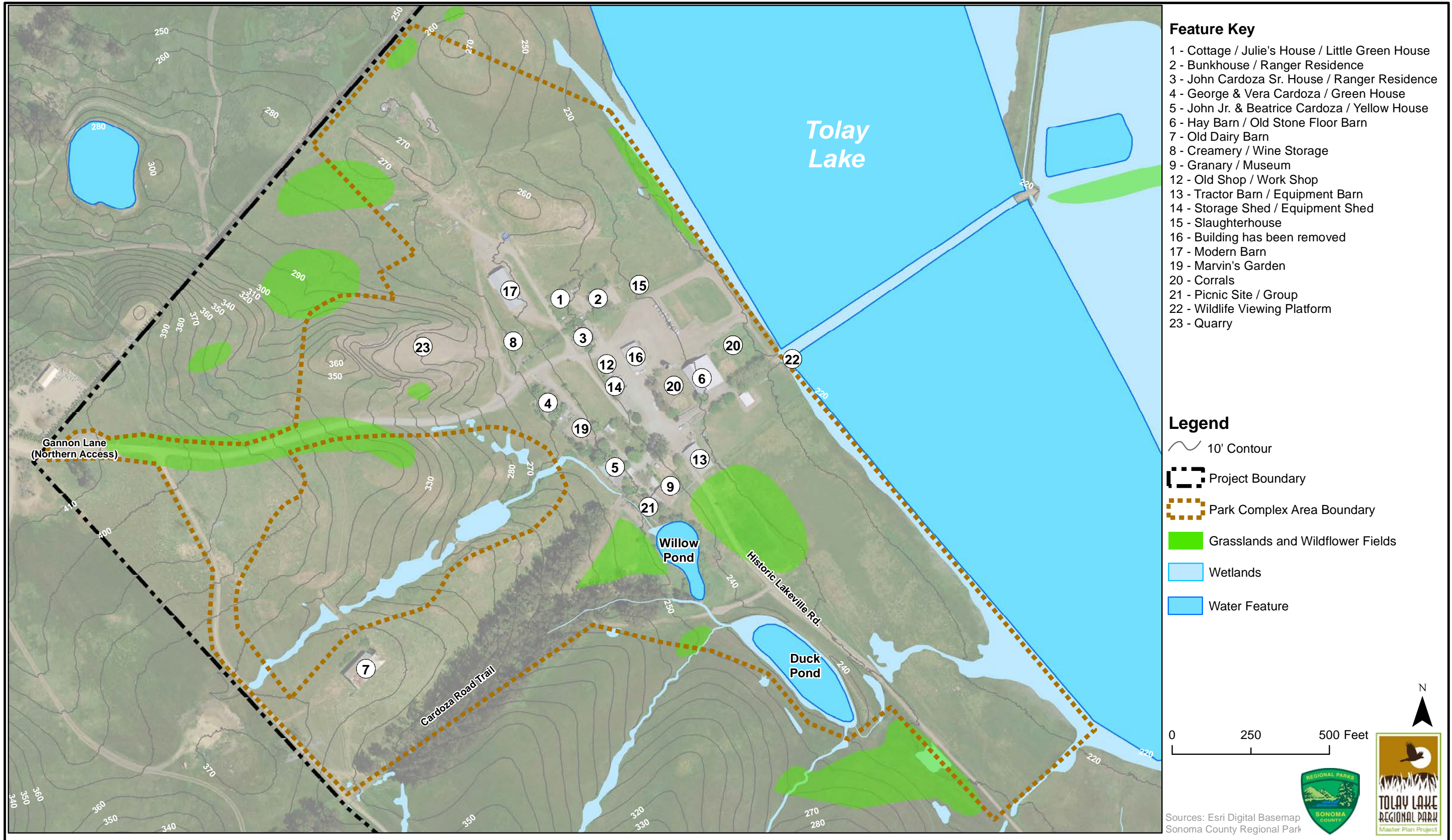




Tolay Lake Regional Park Master Plan
Sonoma County, CA

Figure 3-3
Project Site





- Feature Key**
- 1 - Cottage / Julie's House / Little Green House
 - 2 - Bunkhouse / Ranger Residence
 - 3 - John Cardoza Sr. House / Ranger Residence
 - 4 - George & Vera Cardoza / Green House
 - 5 - John Jr. & Beatrice Cardoza / Yellow House
 - 6 - Hay Barn / Old Stone Floor Barn
 - 7 - Old Dairy Barn
 - 8 - Creamery / Wine Storage
 - 9 - Granary / Museum
 - 12 - Old Shop / Work Shop
 - 13 - Tractor Barn / Equipment Barn
 - 14 - Storage Shed / Equipment Shed
 - 15 - Slaughterhouse
 - 16 - Building has been removed
 - 17 - Modern Barn
 - 19 - Marvin's Garden
 - 20 - Corrals
 - 21 - Picnic Site / Group
 - 22 - Wildlife Viewing Platform
 - 23 - Quarry

- Legend**
- 10' Contour
 - Project Boundary
 - Park Complex Area Boundary
 - Grasslands and Wildflower Fields
 - Wetlands
 - Water Feature

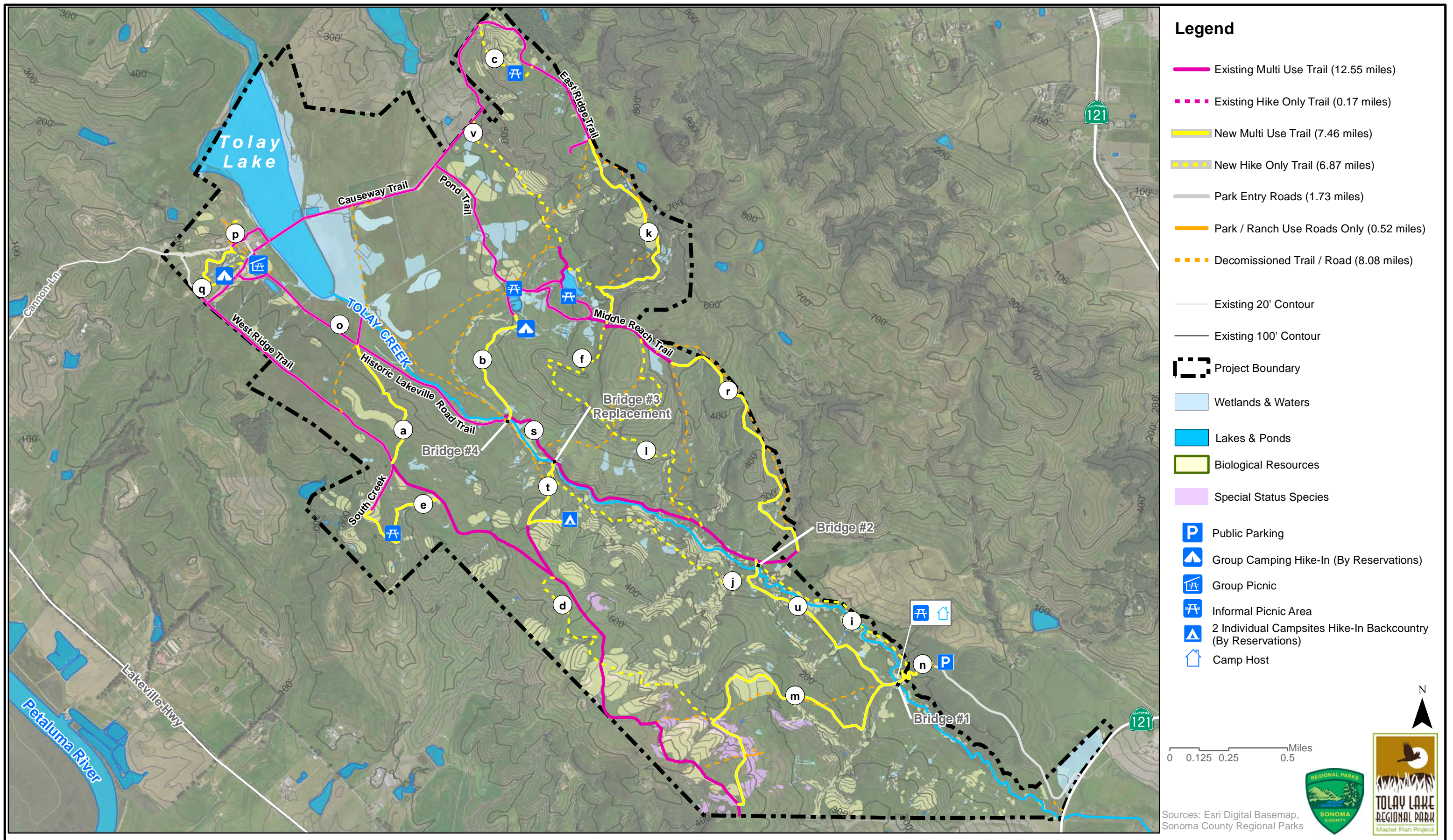
Sources: Esri Digital Basemap
Sonoma County Regional Park

0 250 500 Feet



Tolay Lake Regional Park Master Plan
Sonoma County, CA

Figure 3-4
Existing Park Complex

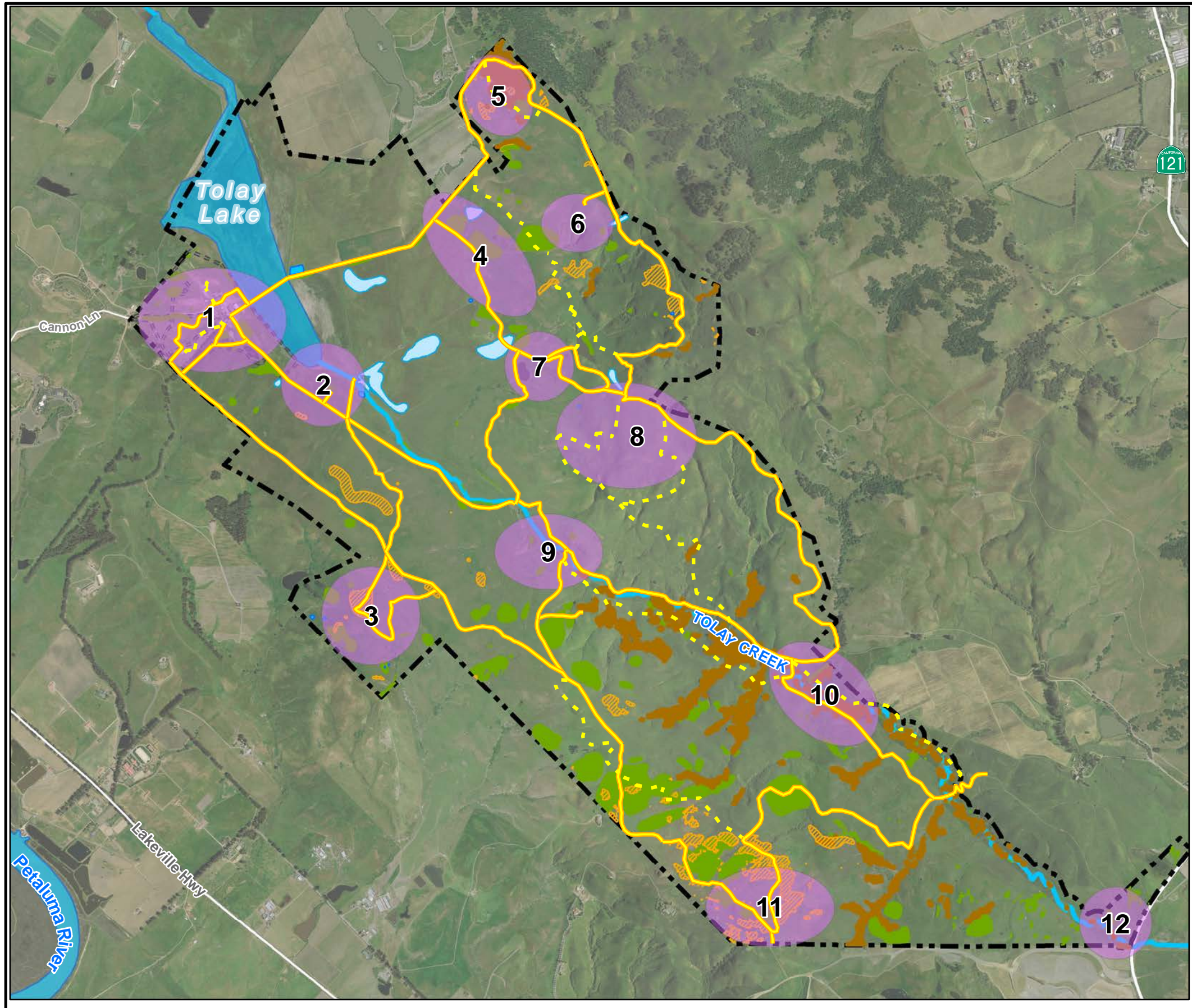


Tolay Lake Regional Park Master Plan
Sonoma County, CA

NOTE: Letter labels correspond to Table 3.3

Figure 3-5
Conceptual Site Plan





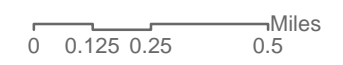
STORY FIELDS AND THEMES

- 1 - RANCH / VISITOR CENTER**
 - Regional Overview
 - Site Overview (from turnout near entry gate)
 - Native American Comprehensive Story of Tolay Valley
 - Vaqueros story
 - Portuguese farmers story
 - Present agricultural use
 - Duck pond and wastewater system
- 2 - LAKE VISTA**
 - Native American significance
 - history & values
 - ethnobotanical uses - Living Tribe
 - Story of the Lake
 - Hydrology
 - Birds
 - Ecosystem of native flora / fauna
- 3 - PETALUMA MARSH**
 - Natural habitat - marsh/wetland
 - Restoration - marsh/wetland
 - Climate change and local effects
 - Native American prehistoric tribal values
 - Lakeville town story
 - Geology / geomorphology
- 4 - AGRICULTURE**
 - Restoration - ag ditching and diking
 - Native American significance - land changes
 - ethnobotanical uses - Living Tribe
 - Ranchers story
 - Vaqueros story
- 5 - OAK WOODLANDS**
 - Native American significance
 - history and values
 - ethnobotanical uses - Living Tribe
 - Ranchers story
 - Restoration - Bay oak woodland
- 6 - EAST RIDGE VIEW POINT**
 - Views
 - Native American surrounding community
 - Regional overview
 - Site overview
 - Geology / geomorphology
- 7 - CENTRAL PONDS**
 - Natural habitat - fresh water springs
 - Native American changes through time
 - Historical route
 - Birds
 - Fishing destination
- 8 - MIDDLE REACH**
 - Views
 - Native American land management
 - Crash site memorial
- 9 - HISTORICAL ROUTE**
 - Historical route
 - Natural habitat - riparian
 - Restoration - creek riparian areas
- 10 - TOLAY CREEK**
 - Historical route
 - Natural habitat / Restoration
 - riparian, Bay oak woodland
- 11 - BAYVIEW POINT**
 - Native American regional tribe land uses
- 12 - SOUTH ENTRANCE**
 - Native American overview of story
 - history of Living Tribe

POTENTIAL MEDIA TYPES

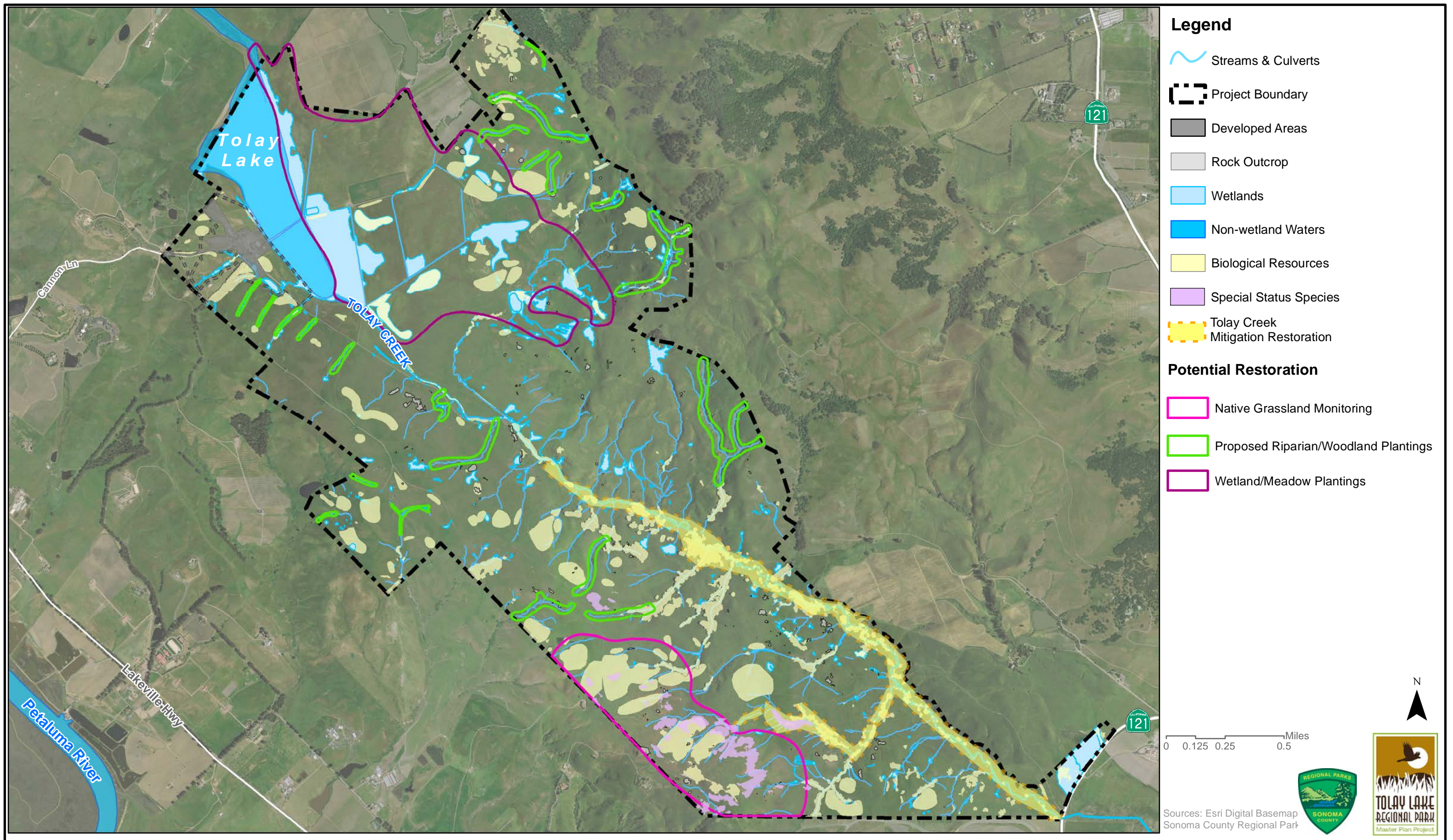
- | | |
|---|--|
| <ul style="list-style-type: none"> Trail maps or site maps Interior interpretive signage / displays Laminated story books Use of #hashtags on social media sites Embedded and/or etched interpretive elements Artifact display Static or multi-media dioramas Soundscapes Film and theatre space | <ul style="list-style-type: none"> Audio tours Place-based, cutting-edge art installations Farm to table educational program Horse drawn cart tours Kiosks Roving bird blind Authentic boat paddle Smart-phone storytelling app Restoration and demonstration areas |
|---|--|

- | | |
|---|--------------------------------|
| Hiking Only Trail | Woodlands |
| Multi Use Trail | Sensitive Biological Resources |
| Upland Grasslands and Wildflower Fields | Water Feature / Wetland |



Sources: Esri Digital Basemap, Sonoma County Regional Parks



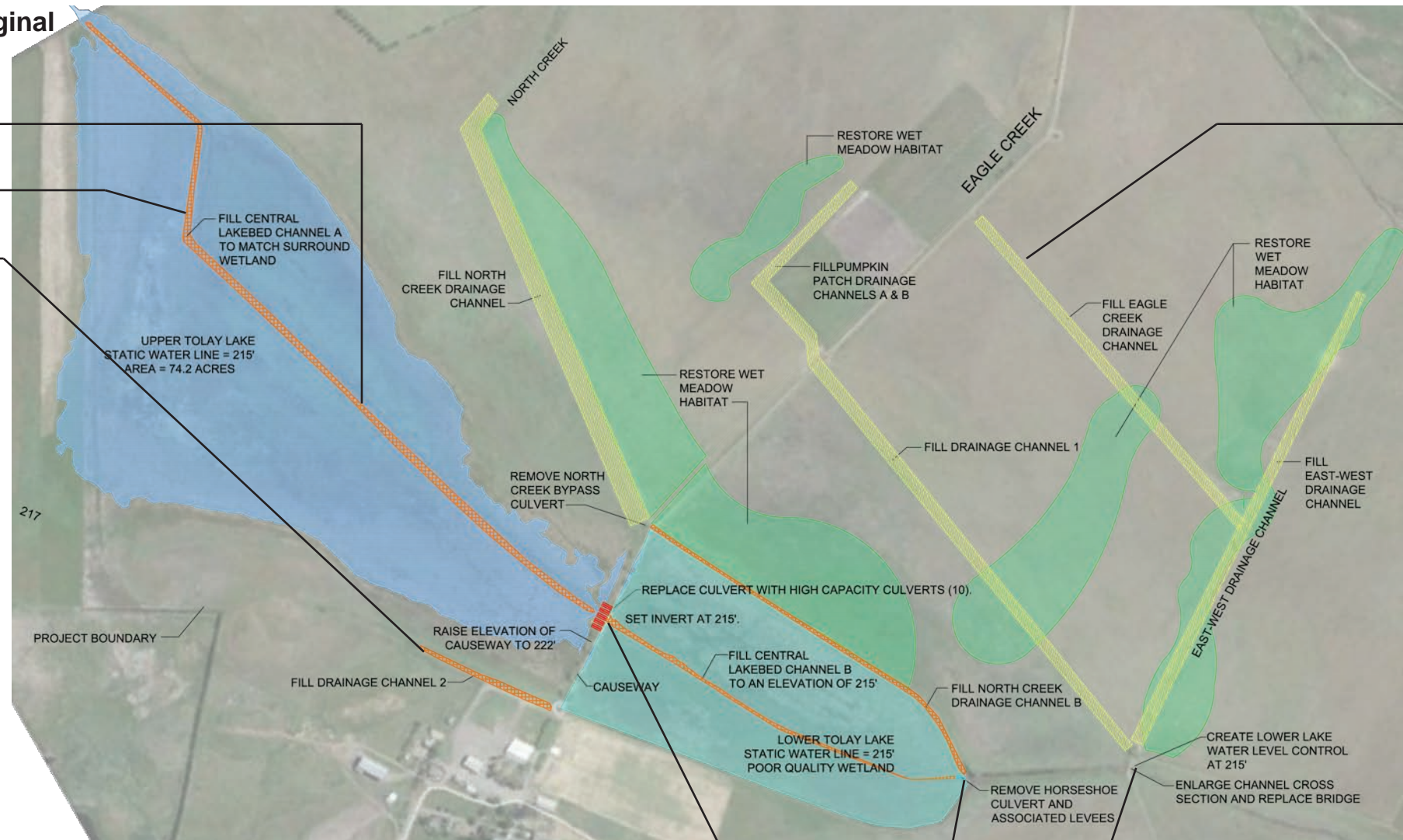


Tolay Lake Regional Park Master Plan
Sonoma County, CA

Figure 3-8
Proposed Restoration Areas and Existing Biological Communities

Restoration Activities to Restore Original Hydrology Within the Lake:

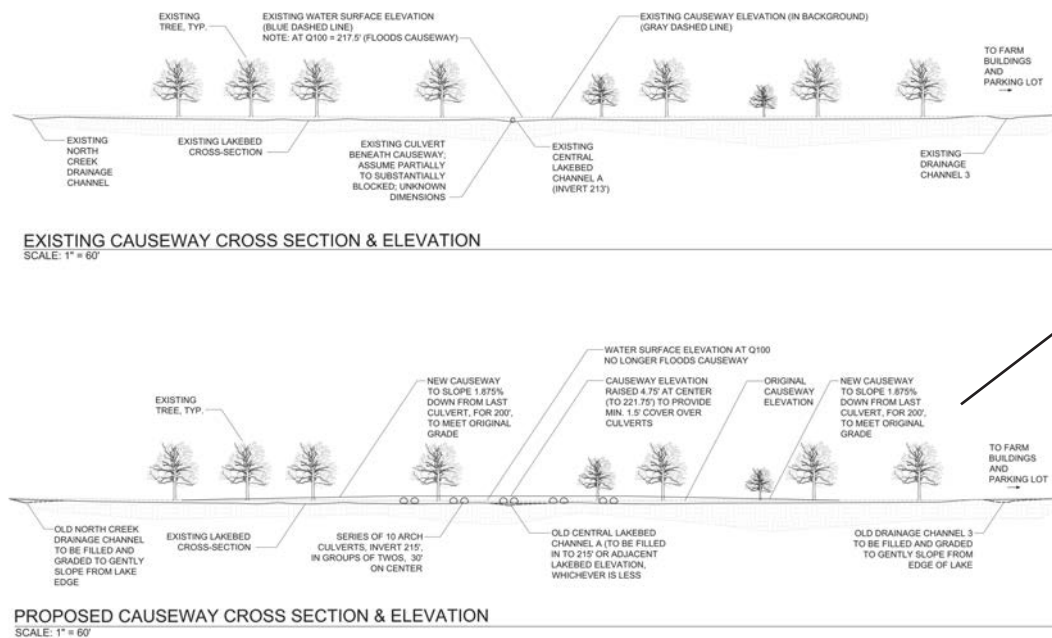
- Fill Central Lakebed Channel B
- Fill Central Lakebed Channel A
- Fill Drainage Channel 2



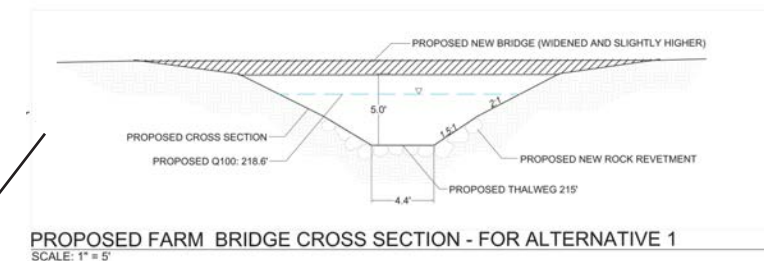
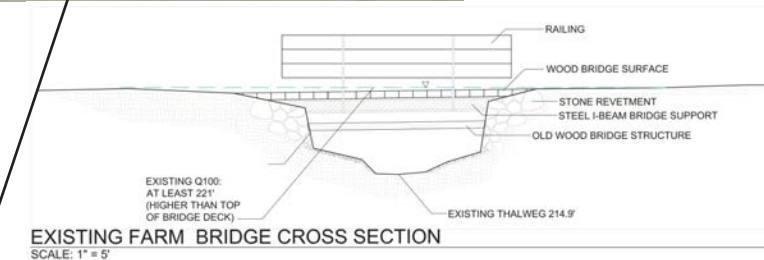
Restoration Activities to Restore Wet Meadow:

- Eliminate hillside drainage ditches as listed below, to keep water on-site; wet meadows will form where topography allows:
- Remove North Creek Drainage Channel and Culvert
- Remove Eagle Creek Drainage Channel
- Fill the East-West Drainage Channel
- Fill Pumpkin Patch Drainage Channels A & B
- Fill Drainage Channel 1

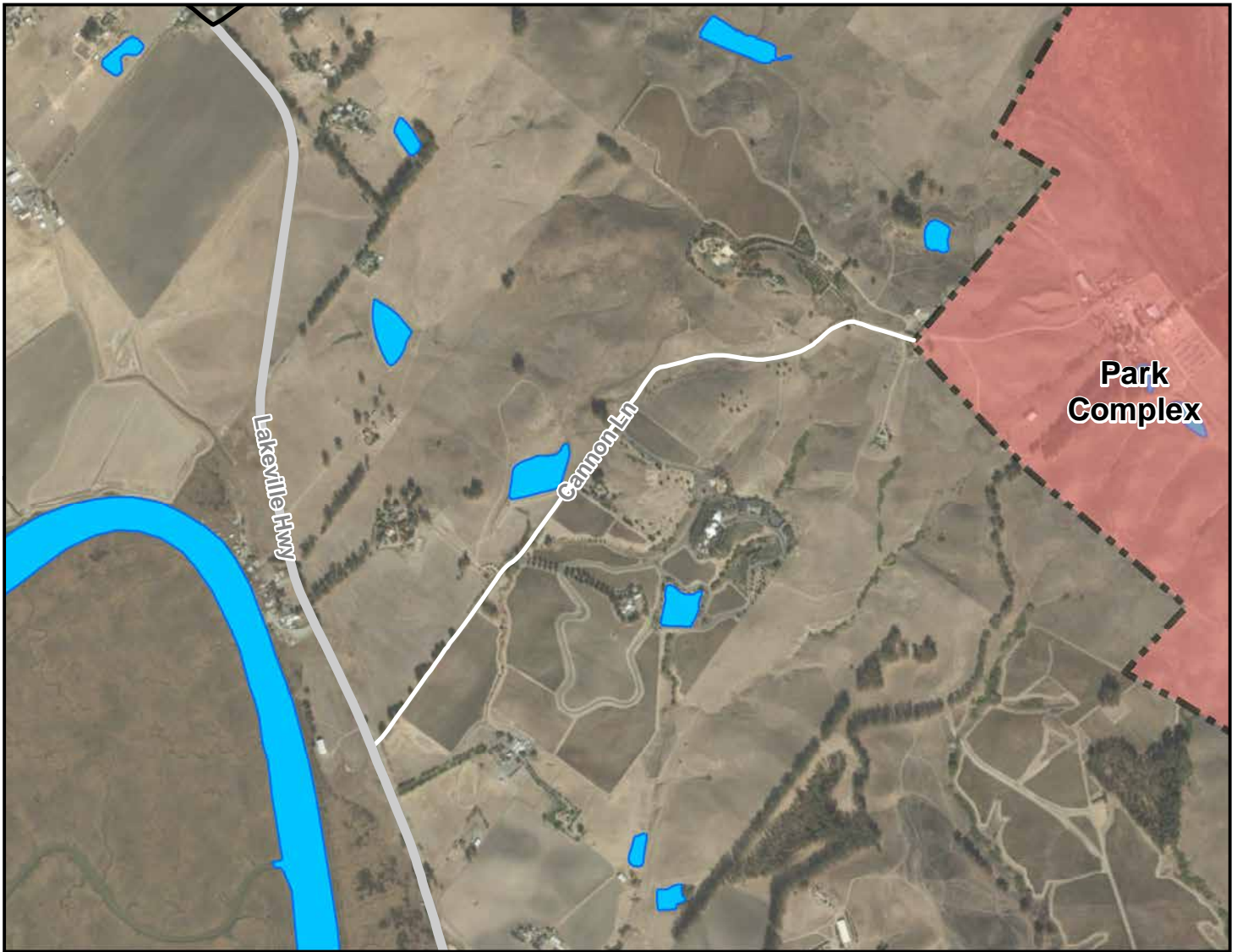
Restoration Activities to Reduce Flooding of Upstream Properties:



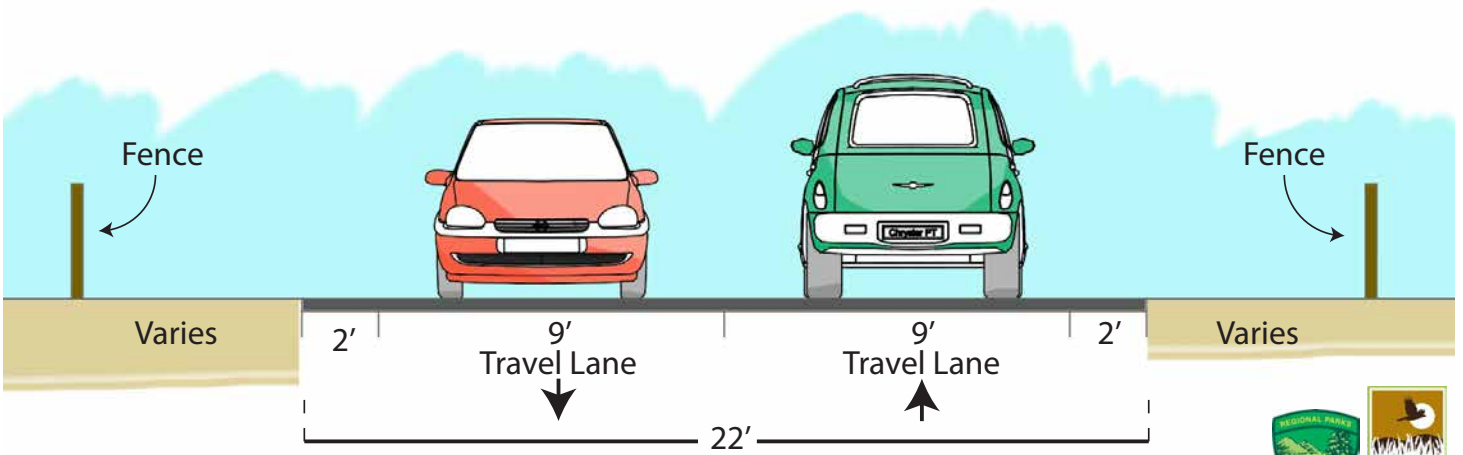
- Replace Causeway Culvert (Raise Causeway to 222')
- Remove Horseshoe Culvert
- Increase outlet cross-sectional area at Farm Bridge



Back of Figure 3-9



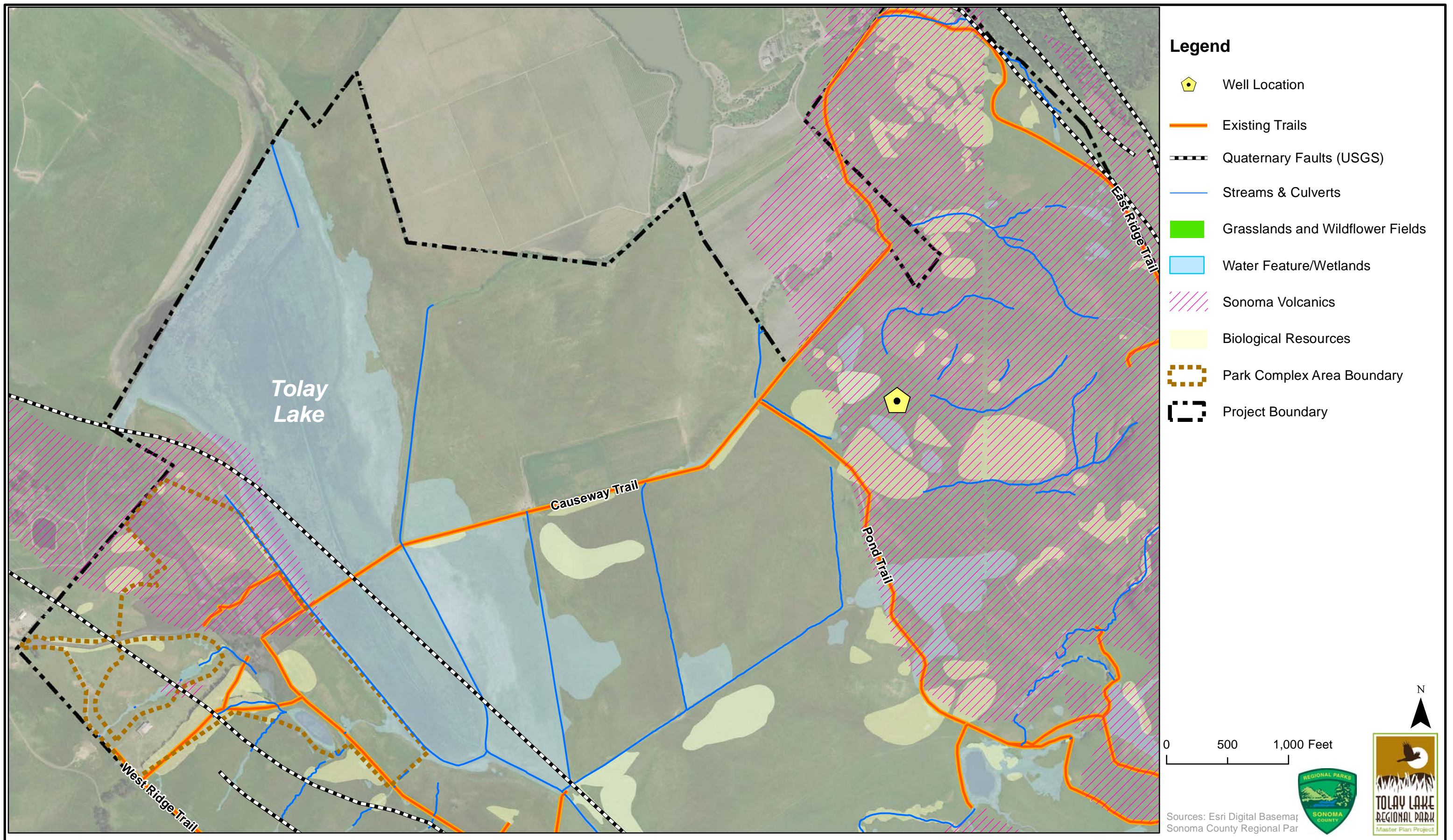
0 0.25 0.5 Miles



Tolay Lake Regional Park Master Plan
Sonoma County, CA

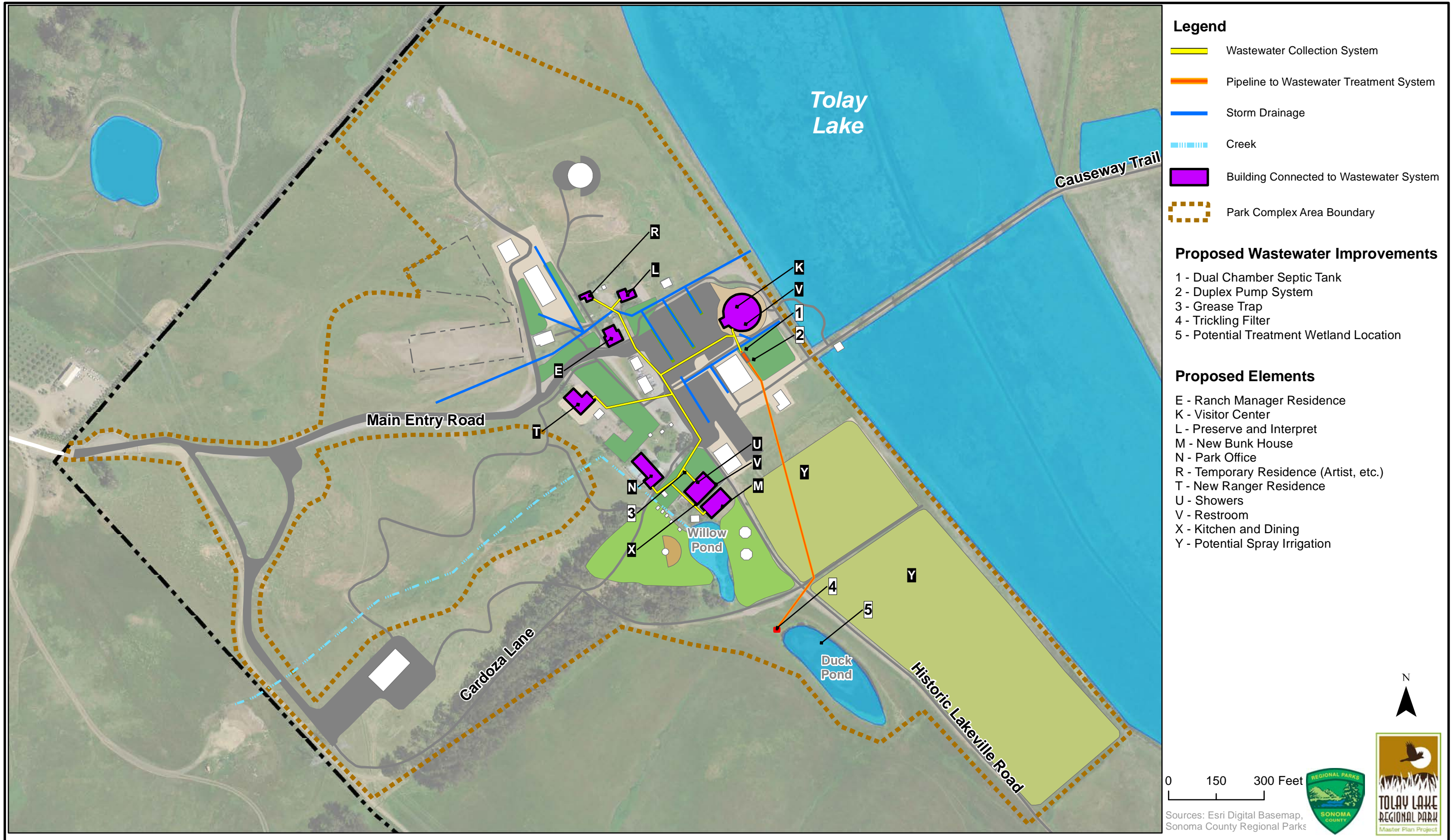
Figure 3-10
Proposed Cannon Lane Roadway Improvements

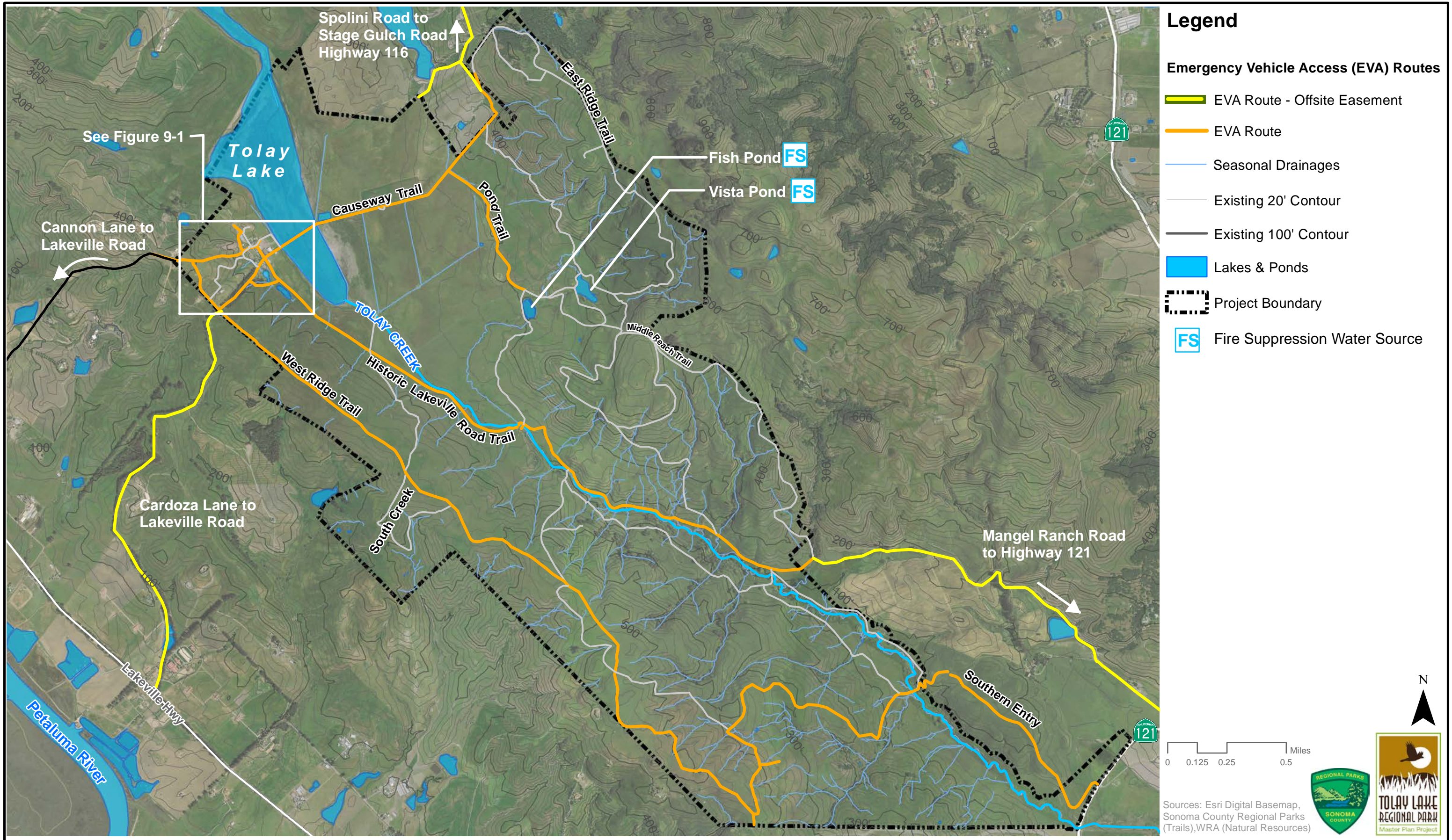
Back of Figure 3-10



Tolay Lake Regional Park Master Plan
Sonoma County, CA

Figure 3-11
Well Location





Legend

Emergency Vehicle Access (EVA) Routes

- EVA Route - Offsite Easement
- EVA Route
- Seasonal Drainages
- Existing 20' Contour
- Existing 100' Contour
- Lakes & Ponds
- Project Boundary
- Fire Suppression Water Source

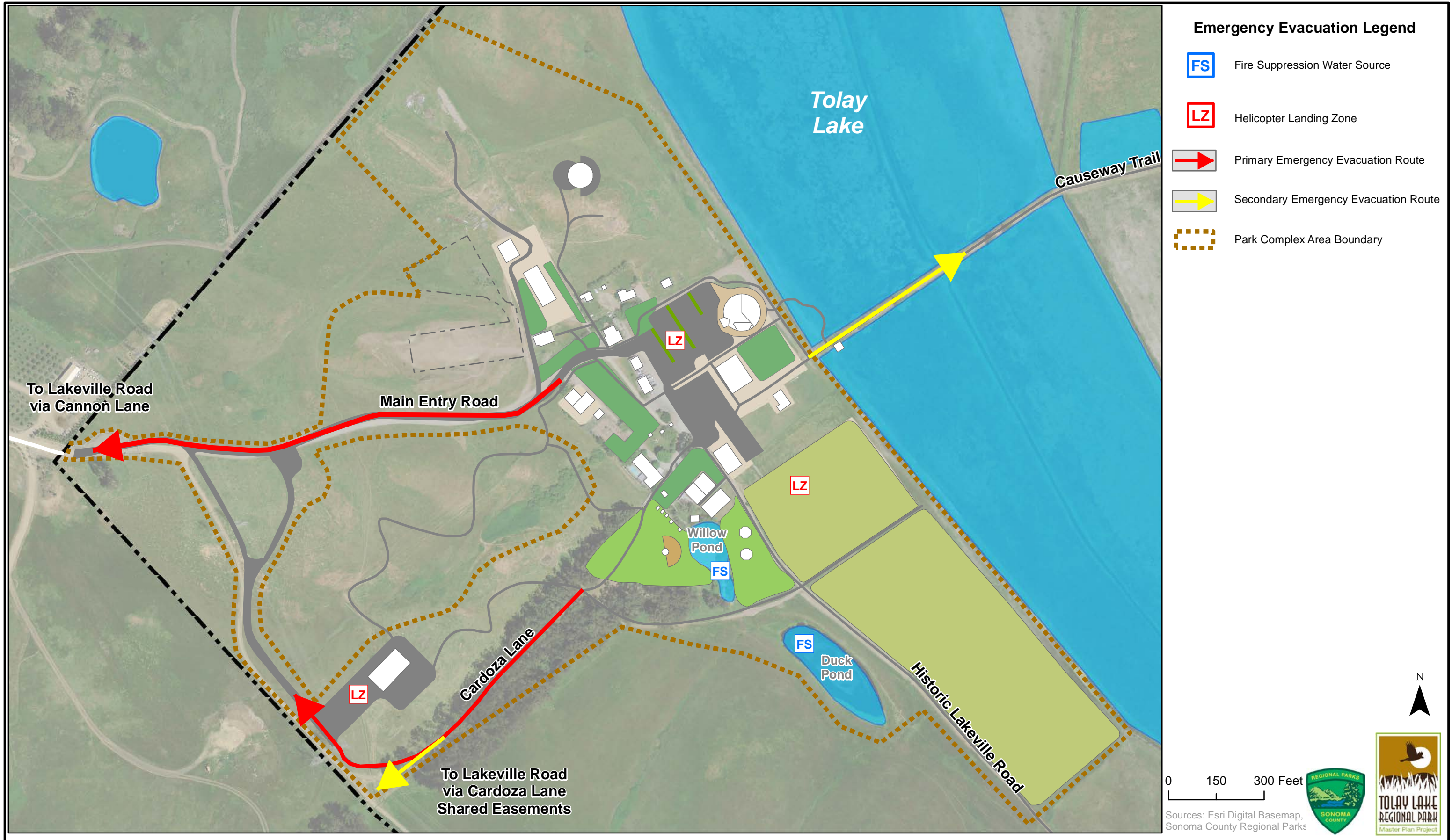
0 0.125 0.25 0.5 Miles

Sources: Esri Digital Basemap, Sonoma County Regional Parks (Trails), WRA (Natural Resources)

REGIONAL PARKS
SONOMA COUNTY

TOLAY LAKE
REGIONAL PARK
Master Plan Project





4. ENVIRONMENTAL IMPACT ANALYSIS

This chapter contains an analysis of each issue that has been identified through preliminary environmental analysis and the public scoping session for the Tolay Lake Regional Park Master Plan EIR.

Chapters 4.1 through 4.10 of this section describe the environmental setting of the project as it relates to each specific environmental issue evaluated in the EIR and the impacts resulting from implementation of the project. Proposed mitigation measures to reduce potential impacts are recommended where appropriate.

DETERMINATION OF SIGNIFICANCE

As defined by CEQA (Public Resources Code 21068), a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment. Guidelines implementing CEQA direct that this determination be based on scientific and factual data. Each impact and mitigation measure section of this chapter is prefaced by a summary of criteria of significance.

ISSUES ADDRESSED IN THE DRAFT EIR

The following environmental issues are addressed in this Draft EIR:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources and Tribal Cultural Resources
- Geology, Soils and Seismicity
- Greenhouse Gas
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning Policy
- Mineral Resources
- Noise
- Population and Housing
- Public Services and Recreation
- Transportation and Circulation
- Utilities

FORMAT OF ISSUE SECTIONS

The discussion of each environmental topic considered in this chapter is comprised of two primary sections: (1) setting, and (2) impacts and mitigation measures. An overview of the general organization and the information provided in the two sections is provided below:

- **Setting.** The setting section for each environmental topic generally provides a description of the applicable physical setting for the project site and its surroundings at the beginning of the environmental review process (e.g., existing land uses, existing soil conditions, existing traffic conditions). An overview of regulatory considerations that are applicable to the specific environmental topic is also provided.
- **Impacts and Mitigation Measures.** The impacts and mitigation measures section for each environmental topic presents a discussion of the impacts that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of the section presents the impacts from the proposed project and mitigation measures, if required. The impacts of the proposed project are organized into separate categories based on their significance according to the criteria listed in each topical section: less-than-significant impacts, which do not require mitigation measures, and significant impacts, which do require mitigation measures. Lastly, cumulative impacts are discussed.

Significant impacts are numbered and shown in bold type, and the corresponding mitigation measures are numbered and indented. Impacts and mitigation measures are numbered consecutively within each topic and begin with an acronymic reference to the impact section (e.g., LU, for Land Use).

These notations are found following each impact and each mitigation measure to identify its significance before and after mitigation:

- LTS: Less than Significant
- S: Significant
- SU: Significant and Unavoidable

4.1 IMPACTS FOUND TO BE LESS THAN SIGNIFICANT

Section 15128 of the CEQA Guidelines states:

“An EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR.”

As discussed below, it has been determined that there is no substantial evidence that the project would cause significant environmental effects in the following areas: Geology and Soils, Hazards and Hazardous Materials, Mineral Resources, and Population/Housing. Therefore, no further environmental review of these issues is necessary beyond the discussion below.

It was determined that some issues may have potential adverse impacts on the environment, including: Aesthetics, Agricultural Resources, Biological Resources, Cultural Resources, Hydrology and Water Quality, Land Use/Planning, Noise, Public Services and Recreation, Transportation and Traffic, and Utilities. Analyses of these issues are not included below, as each issue is analyzed in greater depth in other sections of Section IV (Environmental Impact Analysis) of this Draft EIR.

4.1.1 Air Quality

The Tolay Lake Regional Park Master Plan would not conflict with or obstruct implementation of the San Francisco Bay Area Air Quality Management District’s (BAAQMD) Clean Air Plan.

The implementation of the Tolay Lake Regional Park Master Plan would not conflict with or obstruct implementation of the BAAQMD’s 2010 Clean Air Plan. The 2010 Clean Air Plan contains 55 control strategies that describe specific measures and actions that the BAAQMD and its partners will implement to improve air quality, protect public health, and protect our climate. These measures focus and are grouped into five categories: Stationary Source Measures, Transportation Control Measures, Mobile Source Measures, Land Use and Local Impact Measures, and Energy and Climate Measures. The 2010 Clean Air Plan anticipates increases in emissions from stationary and mobile sources of emissions, including construction equipment, associated with growth and development in the Bay Area. The Clean Air Plan’s control strategies are intended to reduce emissions in the San Francisco Bay Area Air Basin over time such that attainment of air quality standards would be achieved. Most of the Clean Air Plan’s 55 emissions control strategies either do not directly apply to the project or are implemented at the local and regional level by municipal government and the BAAQMD;¹ however, some are relevant to the proposed Master Plan (see Table 4.1 1).

¹ The proposed Master Plan potentially includes development of a wastewater treatment plant. BAAQMD Regulation 8, Organic Compounds, Rule 8, Wastewater (oil-water) separators, regulates wastewater collection and separation systems that handle liquid organic compounds from industrial processes; however, publicly owned municipal wastewater handling facilities are exempt from the standards of this rule. A wastewater treatment plant installed by Parks at Tolay Lake Regional Park would be a private plant, and therefore, may be subject to BAAQMD permitting regulations, including limitations on dry and wet-weather flows and recordkeeping requirements. The BAAQMD permit process would ensure emissions of volatile organic compounds and other potential pollutants from this source would be less than significant.

Table 4.1-1: Plan Consistency with BAAQMD 2010 Clean Air Plan

2010 Clean Air Plan Control Strategy	Project Consistency
<u>Stationary Source Control Measures (SSM)</u>	
<u>SSM-11 Residential Fan Type Furnaces</u> <u>SSM-15 GHG Permitting</u> <u>SSM-16 New Source Review Addressing PM2.5</u> <u>SSM-17 New Source Review for Toxic Air Contaminants</u>	The proposed Master Plan is not anticipated to involve stationary sources of equipment that would require a permit to operate from the BAAQMD. Nonetheless, should, the proposed Plan result in stationary or other sources of emissions that require such a permit, the Sonoma County Regional Parks Department would comply with all applicable BAAQMD permitting requirements. As feasible, the Sonoma County Regional Parks Department would install central furnaces and water heaters equipped with low NOx burners capable of meeting a 14 nanogram/joule NOx emission standard in new buildings constructed as part of the proposed Plan.
<u>Transportation Control Measures (TCM)</u>	
TCM C-3: Ridesharing Services and Incentives TCM C-4: Public Outreach and Education	The Sonoma County Regional Parks Department would encourage ridesharing and carpooling to Tolay Lake Regional Park, especially during events such as the Tolay Fall Festival, which already includes a bus program for school students.

As shown in Table 4.1-1, the Master Plan would be consistent with relevant strategies from the BAAQMD's 2010 Clean Air Plan. Therefore, this impact would be *less than significant*.

The Tolay Lake Regional Park Master Plan would not cause or contribute substantially to an existing or projected air quality violation.

The implementation of the Tolay Lake Regional Park Master Plan would generate short- and long-term criteria air pollutant emissions from construction and operational activities; however, as described below, these emissions would not exceed BAAQMD CEQA significance thresholds and would, therefore, not cause or contribute to an existing or project air quality violation.

The air quality analysis presented below was prepared using information regarding the improvements identified to occur in Phases 1 through 4 of the Master Plan, as well as information contained in the Traffic Impact Analysis (TIA) prepared by W-Trans. The air quality analysis presented below does not evaluate emissions that would be subject to additional air quality and / or biological permitting requirements that would require more detailed environmental review, including the wastewater treatment plant and lake restoration activities. The air quality analysis also does not include emissions related to the Tolay Fall Festival, as implementation of the Master Plan would not alter the physical nature of air quality emissions related to the existing, annual event.

Short-Term Construction Emissions

The Tolay Lake Regional Park Master Plan could result in a series of park improvements (e.g., new trails, traffic and circulation improvements, building improvements, etc.) that would

generate short-term construction emissions. Planned park improvements are grouped by chronological phases, as follows:

- Near-term Phase 1 improvements are planned to occur over the first 5 years of the proposed Master Plan, or approximately 2017 to 2021.
- Intermediate-term Phase 2 improvements are planned to occur during years 6 to 10 of the proposed Master Plan, or approximately 2022 to 2026.
- Long-range Phase 3 improvements are planned to occur during years 11 to 20 of the proposed Master Plan, or approximately 2027 to 2036.
- Future Phase 4 improvements are planned to occur and would not begin for approximately 20 years, or 2036 and beyond.

The actual implementation of the improvements identified in the proposed Master Plan would be subject to funding and may or may not occur as planned; for the purposes of this air quality analysis, the potential emissions associated with the proposed Master Plan were modeled for several different types of projects and construction scenarios, as shown in Table 4.1-2.

Table 4.1-2: Modeled Construction Scenarios

Master Plan Phase	Construction / Improvements
Phase 1 (Scenario 1)	Equipment Shop (4,000 square feet), plus Cannon Lane / Park Entrance Road Improvements
Phase 1 (Scenario 2)	Building Development (up to 4,000 square feet), plus two miles of trails, two acres of grading for parking lots or camping areas, and approximately 0.1 miles of paving
Phase 2	Building Development (up to 4,000 square feet), plus two miles of trails, two acres of grading for parking lots or camping areas, and causeway road improvements
Phases 3 / 4	Phase 3 Building Development (up to 15,000 square feet), plus two miles of trails, two acres of grading for parking lots or camping areas, and up to 750 heavy duty truck trips for soil/material hauling with off-road construction equipment for distribution

The four potential construction scenarios shown in Table 4.1-2 were developed for modeling to provide a flexible, worst-case analysis of emissions associated with the potential implementation of Master Plan projects. For example, potential annual construction emissions were estimated based on the largest potential building structure associated with Master Plan Phases 1 and 2 (the 4,000 square foot equipment shed) and Phases 3 and 4 (the 15,000 square foot wastewater treatment plant)². Similarly, potential annual construction emissions were estimated for trail development (two miles) and other grading activities (two acres) at levels estimated to be nearly twice the average development envisioned by the Master Plan³. Finally, potential emissions are

² Modeling emissions associated with the largest potential structure is considered a conservative estimate (i.e., overestimate) of potential emissions because construction of a smaller building would require less equipment and produce less emissions.

³ The Master Plan envisions 6.3 miles of trails development over five years during Phase 1 (1.3 miles per year), 5.9 miles of trail development over five years during Phase 2 (1.2 miles per year), 4.3 miles of trail development over ten years during Phase 3 (0.4 miles per year), and 3 miles of trail development over five years during Phase 4 (0.6 miles per year).

estimated for the earliest possible calendar year associated with the Phases described in the Master Plan, i.e., potential construction emissions were estimated for Year 2017 (Phase 1), Year 2022 (Phase 2), and Year 2027 (Phases 3 and 4). Selecting Year 2017 as opposed to Year 2021 for modeling Phase 1 emissions results in higher emission estimates because as time advances the emissions generated by construction equipment would be reduced by new technology and /or regulatory requirements.

The Sacramento Metropolitan Air Quality Management District's (SMAQMD) Roadway Construction Emissions Model (Version 7.1.5.1) was used to estimate emissions from planned roadway and trail improvements, and the California Emissions Estimator Model (CalEEMod, Version 2016.3.1) was used to estimate emissions from planned building, camping, and parking lot improvements. The modeling assumed:

- Cut and fill associated with the improvements to Cannon Lane and the Park Entrance Road (Phase 1, Scenario 1) would be balanced on-site, avoiding the need for soil hauling activities.
- Construction activities would occur in the same calendar year, over an approximately 6-month construction period (approximately April through October)⁴. Construction activities were assumed to be concurrent, meaning building construction was assumed to occur at the same time as other trail development activities, road improvements, etc. Construction activities were presumed not to occur during the rainy season (November through March).
- Construction activities would require the use of standard construction equipment, such as an excavator, a tractor / loader / backhoe, a grader, a scraper, a roller, a paver, and /or construction signal boards. Please refer to Appendix B for detailed modeling information, including equipment assumptions for each modeled scenario.
- Improvements to the causeway road could require up to 750 heavy-duty truck trips to import up to 6,000 cubic yards of soil from a source up to 20 miles away.

The potential emissions associated with four modeled construction scenarios described above area are shown in Table 4.1 3. None of the four construction scenarios modeled for the proposed Master Plan would result in emission levels that exceed the threshold of significance recommended for use by the Bay Area Air Quality Management District (BAAQMD). It is important to note the modeled emissions likely overestimate the potential emissions associated with construction of the improvements identified in the proposed Master Plan because the analysis presumes different types of improvements (i.e., building construction, trail development, and grading for park amenities) would occur at the same time, in the same year – which may not occur due to funding, staffing resources, and other logistical limitations. Thus, actual daily average construction emissions could be substantially lower than that presented below in Table 4.1 3.

⁴ The trail development, two acres of grading, and equipment shop, as a worst-case scenario, were all assumed to be constructed at the same time, thereby capturing potential, maximum daily averages during this time.

Table 4.1-3: Modeled Construction Emissions

Construction Scenario ^(A)	Pollutant Emissions (Average Pounds per Day) ^(B)						
	ROG	NOx	CO	PM10		PM2.5	
				Dust ^(C)	Exhaust	Dust ^(C)	Exhaust
Phase 1 (Scenario 1)							
Equipment Shop, Cannon Lane and Park Entry Road Improvements	5.5	39.1	36.5	6.2	2.1	1.5	1.9
<i>BAAQMD CEQA Threshold</i>	<i>54</i>	<i>54</i>	<i>--</i>	<i>BMPs</i>	<i>82</i>	<i>BMPs</i>	<i>54</i>
<i>Potentially Significant Impact?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Phase 1 (Scenario 2)							
Building Development (up to 4,000 square feet), two miles of trails, two acres of grading, and minor paving (0.1 miles)	3.8	35.7	20.6	2.9	1.9	0.8	1.7
<i>BAAQMD CEQA Threshold</i>	<i>54</i>	<i>54</i>	<i>--</i>	<i>BMPs</i>	<i>82</i>	<i>BMPs</i>	<i>54</i>
<i>Potentially Significant Impact?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Phase 2							
Building Development (up to 4,000 square feet), two miles of trails, two acres of grading, and restoration activities (causeway road improvement)	3.2	29.3	19.9	7.4	1.6	2.2	1.4
<i>BAAQMD CEQA Threshold</i>	<i>54</i>	<i>54</i>	<i>--</i>	<i>BMPs</i>	<i>82</i>	<i>BMPs</i>	<i>54</i>
<i>Potentially Significant Impact?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Phases 3 and 4							
Building Development up to 15,000 square feet, two miles of trails, two acres of grading, and restoration activities (causeway road improvement)	3.2	18.9	18.3	2.7	0.8	0.7	0.7
<i>BAAQMD CEQA Threshold</i>	<i>54</i>	<i>54</i>	<i>--</i>	<i>BMPs</i>	<i>82</i>	<i>BMPs</i>	<i>54</i>
<i>Potentially Significant Impact?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Source: MIG 2016 (see Appendix B)							
(A) Refer to Table 4.1-2 for a description of modeled construction scenarios.							
(B) Average daily emissions are spread over 129 days for Phase 1 (Scenario 1), and 122 days for Phase 1 (Scenario 2), Phase 2, Phase 3, and Phase 4.							
(C) For all projects, the BAAQMD recommends implementing eight basic construction best management practices (BMPs) to control fugitive dust from construction activities. These BMPs are included in the project and are not mitigation measures.							

For all projects, the BAAQMD recommends implementation of eight “Basic Construction Mitigation Measures” to reduce construction fugitive dust emissions levels⁵; these basic measures are also used to meet the BAAQMD’s best management practices (BMPs) threshold of significance for construction fugitive dust emissions (i.e., the implementation of all basic construction measures renders fugitive dust impacts a less than significant impact). Accordingly, the Sonoma County Regional Parks Department would require all construction contractors to incorporate the following BMPs into all appropriate construction-related bid, design, and engineering documents:

- Water all exposed surfaces (e.g., staging areas, soil piles, graded areas, and unpaved access roads) two times per day during construction and adequately wet demolition surfaces to limit visible dust emissions.
- Cover all haul trucks transporting soil, sand, or other loose materials off the project site.
- Use wet power vacuum street sweepers at least once per day to remove all visible mud or dirt track-out onto adjacent public roads (dry power sweeping is prohibited) during construction of the proposed project.
- Vehicle speeds on unpaved roads/areas shall not exceed 15 miles per hour.
- Complete all areas to be paved as soon as possible and lay building pads as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time of diesel powered construction equipment to five minutes and post signs reminding workers of this idling restriction at access points and equipment staging areas during construction of the proposed project.
- Maintain and properly tune all construction equipment in accordance with manufacturer’s specifications and have a CARB-certified visible emissions evaluator check equipment prior to use at the site.
- Post a publicly visible sign with the name and telephone number of the construction contractor and Sonoma County Regional Park staff person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours. The publicly visible sign shall also include the contact phone number for the Bay Area Air Quality Management District to ensure compliance with applicable regulations. With the implementation of the above BMPs for fugitive dust control, all short-term construction emissions associated with implementation of the proposed Master Plan would be less than significant.

Long-Term Operational Emissions

The proposed Master Plan improvements would increase visitation and use of the park above existing conditions and, therefore, result in an increase in long-term emissions associated with staff and visitor vehicle trips to and from the park. Emissions associated with vehicle travel were

⁵ BAAQMD CEQA Air Quality Guidelines, pg. 8-3.

estimated using CalEEMod, Version 2016.3.1 (see Appendix B). The modeling incorporated information provided in the Traffic Impact Analysis prepared by W-Trans, as follows:

- Existing 2016 traffic volumes on Cannon Lane were determined to be 30 vehicle trips per weekday (Monday through Friday) and 60 vehicle trips per weekend day (Saturday and Sunday).
- Near-term trip generation rates (referred to in the TIA as Phase A) were evaluated for year 2022 conditions. The TIA estimates Tolay Lake Regional Park would, with implementation of the proposed Master Plan, generate 255 vehicle trips per weekday (Monday to Friday) and 689 vehicle trips per weekend day (Saturday and Sunday) in 2022.
- Long-term, or build-out, trip generation rates (referred to in the TIA as Phase B) were evaluated for year 2040 conditions. The TIA estimates Tolay Lake Regional Park would, with implementation of the proposed Master Plan, generate 340 vehicle trips per weekday (Monday to Friday) and 919 vehicle trips per weekend (Saturday and Sunday).

To estimate potential vehicle trip emissions, a weighted average trip distance was derived using the trip origin information contained in the TIA and determined to be 14.4 miles per trip in Year 2022 and 14.6 miles per trip in Year 2040^{6,7}. This results in a total of approximately 1,988,500 vehicle miles travelled (VMT) annually by park visitors in 2022 and approximately 2,687,000 VMT annually in 2040. Long-term vehicle emissions are summarized in Table 4.1-5 and presented in detail in Appendix B.

Table 4.1-4: Modeled Vehicle Trip Emissions

Scenario	Pollutant Emissions (Tons Per Year)				
	ROG	NOx	CO	PM10	PM2.5
Year 2022					
Master Plan Vehicle Trip Emissions	0.19	0.34	1.95	0.74	0.20
Existing 2016 Trip Emissions	0.02	0.05	0.28	0.08	0.02
Net Master Plan Trip Emissions	0.17	0.29	1.67	0.66	0.18
<i>BAAQMD CEQA Threshold</i>	10	10	NA	15	10
<i>Potentially Significant Impact?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Year 2040					
Master Plan Vehicle Trip Emissions	0.14	0.30	1.26	0.99	0.27

⁶ Based on the TIA prepared by W-Trans, Phase A has 70% of trips originating from Petaluma, 15% from San Francisco, 5% from Vallejo, and 10% from Sonoma. Phase B has distribution has 65% of the trips originating from Petaluma, 15% from San Francisco, 5% from Vallejo, and 15% from Sonoma.

⁷ Modeled emissions for existing trips in 2016 presumed the same fleet mix as accounted for in the 2022 modeling, and utilized the distribution as presented in the TIA Phase A (i.e., 70% of the trips from Petaluma, 15% from San Francisco, 5% from Vallejo, and 10% from Sonoma).

Table 4.1-4: Modeled Vehicle Trip Emissions

Existing 2016 Trip Emissions	0.02	0.05	0.28	0.08	0.02
Net Master Plan Trip Emissions	0.12	0.25	0.98	0.91	0.25
<i>BAAQMD CEQA Threshold</i>	10	10	N/A	15	10
<i>Potentially Significant Impact?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Source: MIG 2016 (see Appendix B)					

As seen in Table 4.1-4, modeled vehicle trip emissions under Year 2022 and Year 2040 conditions would not exceed the threshold of significance recommended for use by the Bay Area Air Quality Management District (BAAQMD) and, therefore, would not result in a significant air quality impact. In fact, despite an increase of almost 700,000 annual VMT from 2022 to 2040, emissions for ROG, NO_x and CO would all decrease due to newer emission control technologies. Other criteria air pollutants are minor in nature and do not substantially change the overall emissions generated from park operation, as presented below in “*Combined Emissions.*”

Combined Emissions

Since the Tolay Lake Regional Park would be in operation at the same time that the proposed Master Plan improvements would be constructed, the project’s total combined emissions (operational and construction) were summed and compared against the BAAQMD’s CEQA significance thresholds. As discussed above, long-term operational emissions were estimated for Year 2022 and Year 2040 (and net out existing vehicle emissions related to the Park’s current operation). As a conservative approach, the vehicle trip emissions from Year 2022 were combined with the worst-case construction emissions modeled for Phases 1 and 2 and Phases 3 and 4 of the Master Plan (see Table 4.1-3). Modeled emissions for Year 2022 are higher than those modeled for 2040 and thus represent the highest combined emissions scenario. Since Phases 1 through 4 all would occur between 2022 and 2040, it is appropriate and conservative to use the higher traffic scenario’s emissions when evaluating potential impacts related to all sources of emissions generated by the Regional Park over the course of a year. The project’s worst-case total combined emissions are shown in Table 4.1-5.

Table 4.1-5: Total Combined Criteria Air Pollutant Emissions Estimates

Year / Emissions Source	Pollutant Emissions (Average Pounds per Day) ^(A)						
	ROG	NO _x	CO	PM10		PM2.5	
				Dust ^(B)	Exhaust	Dust ^(B)	Exhaust
Phases 1 / 2							
Construction ^(C)	5.5	39.1	36.5	7.4	2.1	2.2	1.9
Net Vehicle Trip Emissions ^(D)	0.2	0.3	1.7	4.0	<0.0	1.1	<0.0
Other Sources ^(E)	0.3	<0.0	<0.0	<0.0	<0.0	<0.0	<0.0
Total Combined Yearly Emissions	6.0	39.4	38.2	11.4	2.1	3.3	1.9

Table 4.1-5: Total Combined Criteria Air Pollutant Emissions Estimates

<i>BAAQMD Threshold</i>	<i>54</i>	<i>54</i>	<i>--</i>	<i>BMPs</i>	<i>82</i>	<i>BMPs</i>	<i>54</i>
<i>Potentially Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Phases 3 / 4							
Construction ^(C)	3.2	18.9	18.3	2.7	0.8	0.7	0.7
Net Vehicle Trip Emissions ^(D)	0.1	0.3	1.0	4.0	<0.0	1.1	<0.0
Other Sources ^(E)	0.3	<0.0	<0.0	<0.0	<0.0	<0.0	<0.0
Total Combined Yearly Emissions	3.6	19.2	19.3	6.7	0.8	1.8	0.7
<i>BAAQMD Threshold</i>	<i>54</i>	<i>54</i>	<i>--</i>	<i>BMPs</i>	<i>82</i>	<i>BMPs</i>	<i>54</i>
<i>Potentially Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Source: MIG 2016 (see Appendix B)							
(A) Average daily emissions are spread over 122 construction work days.							
(B) For all projects, the BAAQMD recommends implementing eight basic construction best management practices (BMPs) to control fugitive dust from construction activities. These BMPs are included in the project and are not mitigation measures.							
(C) See Table 4.1-2 and Table 4.1-3. Emissions represent the maximum daily construction emissions expected to occur in Phases 1 / 2 and Phase 3 / 4.							
(D) See Table 4.1-4. Vehicle trip emission are provided for Year 2022 as a conservative (worst-case) estimate.							
(E) Other sources include emissions from area sources, such as standard yard upkeep (mowing lawns, pruning trees), and repainting buildings.							

As seen in Table 4.1-5, combined yearly construction and operational emissions would not exceed the BAAQMD's thresholds of significance. The proposed Master Plan's combined emissions, therefore, would not result in significant air quality impacts

The Tolay Lake Regional Park Master Plan would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal, state, or regional ambient air quality standard.

As discussed above, implementation of the Master Plan would not result in short-term construction, long-term operational emissions, or combined short- and long-term emissions levels that exceed the BAAQMD's thresholds of significance. In developing its CEQA significance thresholds, the BAAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable. The BAAQMD considers project's that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant⁸. The proposed project would not exceed any BAAQMD CEQA significance thresholds. Therefore, this impact would be less than significant.

The Tolay Lake Regional Park Master Plan would not expose sensitive receptors to substantial pollutant concentrations or odors.

⁸ BAAQMD CEQA Air Quality Guidelines, pg. 2-3

Tolay Lake Regional Park is located in a rural, residential area with few permanent sensitive receptors located close to park facilities. Rural surroundings allow for greater air flow at and around sources of emissions and odors, thereby increasing the dispersion of pollutants and odors as compared to urban settings.

Construction activities associated with improvements to Cannon Lane would occur within 200 feet of the closest residence located on Cannon Lane). These construction activities would be temporary (occurring for only six months), intermittent (equipment would operate a few hours each day), and would move along the road as construction progresses (i.e., get farther away from sensitive receptor locations as the road is finished). Therefore, these activities would not expose sensitive receptors to substantial pollutant concentrations.

Most proposed Master Plan improvements would take place in the Park Core, which is more than 2,100 feet west of the closest residence off of Cannon Lane. Nonetheless, implementation of some of the proposed Master Plan improvements would result in construction throughout various portions of the park that could expose sensitive receptors to pollutants and odors from diesel equipment operations, asphalt paving and surfacing, etc. This impact would be less than significant for the reasons described below.

Some other planned improvements located to the west of the park core (e.g., renovations to the Old Dairy Barn, and construction of the Equestrian Parking) could result in construction activities within 1,000 feet of residential receptors on Cannon Lane. The potential for nearby residents to be exposed to pollutants or odors produced during construction activities would be temporary, intermittent, and not substantial given the distance between work areas and residences. Similarly, Park visitors would not be subject to prolonged exposure to pollutants or odors because they would be temporary receptors that would move throughout the park (i.e. away from construction activities).

The BAAQMD's CEQA guidelines identify wastewater treatment plants as a potential odor source. As explained above, the wastewater treatment plant would be subject to additional environmental review and permitting to ensure compliance with BAAQMD regulations. Nonetheless, the treatment is not anticipated to result in odors that would affect a substantial number of people given the rural nature of the Park and the distance between the treatment plant and residences (approximately 2,200 feet from the closest residence).

4.1.2 Geology and Soils

The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: (i) rupture of a known earthquake fault, (ii) strong seismic ground shaking, (iii) seismic-related ground failure, including liquefaction, or (iv) landslides?

Small portions of the northeastern and southeastern Tolay Lake Regional Park are located within an Alquist-Priolo Fault Zone for the Rodgers Creek Fault. The Alquist-Priolo Earthquake Fault Zoning Act (P.R.C. Section 2621 et seq.) prohibits the location of most types of structures for human occupancy across the active traces of faults in earthquake fault zones. A portion of the East Ridge Trail would be within the Rodgers Creek Fault Zone, but no structures are proposed within the Alquist-Priolo zone.

The intensity of shaking depends on distance to fault rupture zone, earthquake magnitude, earthquake duration, and specific geology of the site. The Association of Bay Area Governments (ABAG) Resilience Program identifies the Park as being subject to Very Strong (MMI 8) or Violent (MMI 9) ground shaking in the event of a 7.2 magnitude earthquake from the Rodgers Creek Fault. Other major active faults in the vicinity include Northern Hayward Fault (10 miles southeast), San Andreas Fault (18 miles southwest), West Napa Fault (12 miles east), and Mayacama Fault (28 miles northwest); a 6.7+ magnitude earthquakes from these faults would subject visitors to Moderate (MMI 6) to Strong (MMI 7) ground shaking. Visitors to the Park would potentially be subject to moderate to violent ground-shaking during an earthquake, depending on the fault rupture zone. However, for the most part, visitors would be on open land, resulting in minor exposure to adverse seismic conditions. Historic structures that would have human occupancy would incorporate seismic upgrades and retrofits identified in the Historic Structures Report (Architectural Resources Group, 2012) to ensure that these buildings would be up-to-code.

The ABAG Resilience Program and the Sonoma County 2020 General Plan indicates that the site is located in an area with varying liquefaction susceptibility: there is Moderate to Very High liquefaction susceptibility in areas within and adjacent to Tolay Creek and Tolay Lake, and Very Low liquefaction susceptibility elsewhere.

The project area includes locations with varying landslide susceptibilities; generally, steep terrain in the northwestern portion of the Park is subject to Very High landslide susceptibility, according to the Sonoma County General Plan 2020, Figure PS-1d. Flat areas (e.g. area surrounding Tolay Lake) and the southeastern portion of the park are less susceptible to landslides.

Potential risks to life and property from these seismic hazards would be adequately mitigated by existing law, regulations, and policies, including the California Buildings Code⁹ and the County's development review procedures, which require a site-specific geotechnical investigation be prepared by a licensed professional for proposed developments for seismic design categories C, D, E, and F. The geotechnical investigation would be reviewed by County staff prior to issuance of building permits to ensure compliance.

Techniques and standards for effective geotechnical practices are widely known and accepted. Individual measures for particular sites and projects are typically specified at a detailed level of design. The County routinely requires such geotechnical/geologic investigations and specifications, and a significant record exists demonstrating the effectiveness of such design and engineering requirements in addressing potential soil and geologic issues. Under the County's grading permit and building permit regulations, an individual development project cannot be given final approval without project compliance with geotechnical/geologic requirements. These requirements and related County inspection and verification procedures before project occupancy provide reasonable assurances that the project would incorporate the design and engineering refinements necessary. Therefore, the impact of the project related to seismic hazards would be less than significant.

The project would not result in substantial soil erosion or the loss of topsoil.

⁹ http://www.sonoma-county.org/prmd/gisdata/pdfs/usgs_crc_cbc.pdf

Development and use of Tolay Lake Regional Park has the potential to result in erosion, particularly due to the steepness of some of the trails and roads, as well as construction activities. In particular, the Goulding and Laniger soil series at the site are prone to erosion. As specified in the Trails Chapter and the Operations and Maintenance Chapter of the Master Plan, trail development would be required to implement measures to avoid erosion. Guidelines and standards include minimizing ground disturbance as much as possible (T-G5), prompt revegetation following soil disturbance (T-S8), allowing proper drainage for storm runoff (T-S10, T-S11, T-S12), appropriate running slope standards (T-S21), appropriate timing for soil disturbance activities like grading (T-S60), and seasonal closure of trails due to wet conditions (OM-S21). Construction activities have the potential to result in erosion; however, all construction activities would follow Sonoma County Permits and Resources Management Department's Erosion Prevention and Sediment Control Practices for Effective Construction Site Management. Implementation of the Master Plan standards and local regulations for reducing soil erosion and loss of topsoil would reduce this potential impact to a less-than-significant level.

The project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

As stated in the previous section, the project site would be located on varying levels of susceptibility to liquefaction and landslides, depending on soil type, slope, and groundwater levels. Trails that are located in Very High landslide susceptibility areas (for example, the West Ridge Trail) are subject to seasonal closures to reduce risk, see OM-S21 in the Master Plan. New buildings and structures proposed in the Master Plan are mostly located in the northern core park area, and would be subject to Very High landslide potential and Very Low to Moderate liquefaction susceptibility. However, each component of the Master Plan would take site-specific conditions into consideration and would have detailed, design-level geotechnical investigations required by the Sonoma County Building Official. Each component's geotechnical report will include analysis of geologic hazards and recommendations for stabilization measures. Implementation of these measures to the satisfaction of the County combined with conformance with standard California Building Code, State of California, and other applicable regulations, would reduce the potential effects of unstable geologic unit or soils to a less than significant level.

The project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

Certain areas of the project would be located on expansive soils. Clear lake clay loam series soils and Diablo series soils have a high shrink-swell potential and therefore are possibly expansive. Clear lake clay loam series soils overlap with Tolay Lake and the lands adjacent to the Lake; Diablo series soils are found in the middle (2-9 percent slopes), far western area of the property (15-30 percent slopes), and at the far western boundary (9-15 percent slopes). The Goulding soils and the Haire clay loam series soils have a moderate shrink-swell potential and are less likely to be expansive. Goulding-series soils are located somewhat northeast of the Upland Pond area. As stated above, each component of the Master Plan would take site-specific conditions into consideration and would have detailed, design-level geotechnical investigations per Section 1803 of the CBC, as required by the Sonoma County Permit and Management Department. Each

component's geotechnical report will include analysis of expansive soil hazards and recommendations for stabilization measures.

The project would not have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

The soils at the project site are predominantly clay loam and silty clay, which are ill-suited for supporting wastewater treatment systems with septic tanks and leach fields.¹⁰ During Phase 1 and 2, the Park would be served for public waste disposal by temporary facilities that would be pumped out, with the waste taken off-site for treatment. An on-site wastewater treatment system would be constructed during Phase 3 of the project meeting County and State requirements would be constructed.

The new wastewater treatment system consists of a dual chamber septic tank, duplex pump system, grease trap, trickling filter, treatment wetland, and potential spray irrigation area. The treatment system would be regulated by the San Francisco Bay (Region 2) Regional Water Quality Control Board (Regional Board) through their Waste Discharge to Land program. Sonoma County would be required to submit a Report of Waste Discharge (RWD) that describes treatment system engineering calculations, design and construction plans, an operation and maintenance plan, and a copy of an approved CEQA document for the Master Plan. Once the RWD has been deemed complete by the Regional Board, Waste Discharge Requirements would be issued or the County could be allowed to operate under the recommendations of the RWD. Therefore, there would be no impacts to septic tanks or alternative waste water disposal.

4.1.3 Greenhouse Gases

The Tolay Lake Regional Park Master Plan would not generate greenhouse gas emissions, either directly, or indirectly, that may have a significant impact on the environment?

Implementation of the proposed Tolay Lake Regional Park Master Plan would generate GHG emissions from construction equipment, vehicle trips, water and space heating, landscaping equipment and the conveyance and use of water, wastewater, electricity, and solid waste; however, as described below, the GHG emissions produced by the proposed Master Plan would be below BAAQMD CEQA thresholds of significance and, therefore, would not result in a significant impact on the environment.

As described in Section 4.1.1, the Tolay Lake Regional Park Master Plan would result in a series of park improvements (e.g., new trails, traffic and circulation improvements, building improvements, etc.) that would generate short-term construction emissions, including GHG emissions. Short-term GHG emissions were modeled using the same methodology and construction scenarios described in Section 4.1.1. The modeling indicates:

- Development of the Equipment Shop (4,000 square feet) plus improvements to Cannon Lane and the Park's entry road (Phase 1, Scenario 1) would emit 285 metric tons of carbon dioxide equivalents (MTCO_{2e}) over the course of a year.

¹⁰ Wastewater Disposal Options and Preliminary Wastewater System Plan, prepared by Fall Creek Engineering, Inc.

- Development a building or structure up to 4,000 square feet, plus two miles of trails, two acres of grading for camping and parking areas, and minor paving (0.1 miles) on Cannon Lane (Phase 1, Scenario 2) would emit 222 MTCO_{2e} over the course of a year.
- Development of a structure up to 4,000 square feet, plus two miles of trails, two acres of grading or camping and parking areas, and up to 750 heavy duty truck trips needed for improvements to the causeway road (Phase 2) would emit 245 MTCO_{2e} over the course of a year.
- The worst-case construction scenario for Phases 3 and 4, which consists of the construction of the 15,000 square-foot Wastewater Treatment Plant, plus two miles of trail development, two acres of grading, and up to 750 heavy duty truck trips needed for improvements to the causeway road, would emit 229 MTCO_{2e} over the course of a year.

The BAAQMD has not established a threshold of significance for construction GHG emissions; however, as a point of reference, these emissions levels are well below the BAAQMD's recommended annual threshold of significance for non-stationary source projects, which is equal to 1,100 MTCO_{2e}. In addition, the BAAQMD does encourage lead agencies to incorporate BMPs to reduce GHG emissions during construction, as feasible and applicable. Improvements identified in the Master Plan generally are low intensity project, meaning that many of the improvements involve the construction or renovation of buildings; no major demolition or hauling activities are anticipated.

As described in Section 4.1.1, proposed Master Plan improvements would also result in long-term GHG emissions associated with increases in VMT. In addition to VMT, the proposed Master Plan would result in other long-term activities that generate GHG emissions, including emissions related to the disposal of solid waste, water / wastewater transport, and equipment used to maintain the regional park landscaping¹¹. Long-term GHG emissions were modeled using the same methodology and construction scenarios described in Section 4.1.1. The modeling indicates:

- Year 2022 VMT (1,988,500 miles) would emit 650 MTCO_{2e}, annually; however, after accounting for existing GHG emissions related to mobile sources (75 MTCO_{2e}), net mobile emissions during 2022 would be 575 MTCO_{2e}, annually. Other GHG-emitting activities such as water transport, waste disposal, and landscaping maintenance would emit 189 MTCO_{2e}, annually. Thus, the total, annual, operational GHG emissions in Year 2022 would be 764 MTCO_{2e}.
- Year 2040 VMT (2,687,000) would emit 609 MTCO_{2e}, annually; however, after accounting for existing GHG emissions related to mobile sources (75 MTCO_{2e}), net mobile emissions during 2040 would be 534 MTCO_{2e}, annually. Other GHG-emitting activities such as water transport, waste disposal, and landscaping maintenance would

¹¹ CalEEMod estimates solid waste and water usage. It estimates that solid waste generated by the regional park would be approximately 12.9 tons / year. It is worth noting that the emission estimates provided by CalEEMod are most likely to be an overestimation, as the model assumes GHG would be generated by the transport of water and waste. Utilization of the potable water well, and the operation of the wastewater treatment plant (once it is constructed in Phase 3) would most likely reduce emissions related to these sources accounted for in CalEEMod.

emit 190 MTCO₂e, annually. Thus, the total, annual, operational GHG emissions in Year 2040 would be 724 MTCO₂e.

As explained in Section 4.1.1, the proposed Master Plan's short and long-term emissions sources would have the potential to overlap and combine. Accordingly, the proposed Master Plan's total combined GHG emissions (operational and construction) were summed and compared against the BAAQMD's CEQA significance threshold of 1,100 MTCO₂e per year. The total combined GHG emissions were estimated for Phase 1/2 and Phase 3/4¹². Vehicle trip emissions from Year 2022 were used in the combined emissions scenario since these emissions are higher than those modeled for Year 2040. The proposed Master Plan's total combined GHG emissions are shown in Table 4.1-6.

Table 4.1-6: Total Combined Annual GHG Emissions Estimates

Master Plan Activity / GHG Source	Phases 1 and 2	Phases 3 and 4
Planned Construction / Improvements ^(A)	285 MTCO ₂ e	229 MTCO ₂ e
Net Mobile Source Emissions ^(B)	575 MTCO ₂ e	575 MTCO ₂ e
Other Indirect Sources ^(C)	189 MTCO ₂ e	190 MTCO ₂ e
TOTAL	1,049 MTCO ₂ e	994 MTCO ₂ e
<i>BAAQMD Threshold</i>	<i>1,100 MTCO₂e</i>	<i>1,100 MTCO₂e</i>
<i>Potentially Significant?</i>	<i>No</i>	<i>No</i>
<p>(A) Worst-case construction emissions for Phases 1 and 2 include the equipment shop, plus Cannon Lane / Entry Road Improvements (Phase 1, Scenario 1). Worst-case construction emissions for Phases 3 and 4 includes the Wastewater Treatment Plant, two miles of trail construction, two acres of grading, and causeway road improvements. For more information on the development scenarios, see Section 4.1.1.</p> <p>(B) GHG emissions from traffic levels in 2022 net out existing GHG emissions from 2016.</p> <p>(C) Other sources include emissions from water transport, waste disposal, area sources – such as standard yard upkeep (e.g., mowing lawns, pruning trees, etc.).</p>		

As shown in Table 4.1-6, the proposed Master Plan's total combined annual GHG emissions would not exceed the threshold of significance recommended for use by the BAAQMD. GHG emissions associated with the Master Plan would, therefore, be less than significant.

The Tolay Lake Regional Park Master Plan would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The proposed project would not be subject to any GHG permitting or reporting regulation. As discussed above, the project would be below the BAAQMD CEQA thresholds of significance, which were set at a limit that would enable growth in the Bay Area without conflicting with the state's goal of reducing GHG

¹² As discussed in 4.1.1, development of improvements in Phases 1 and 3 would represent worst case scenarios for Phases 1 and 2, and Phases 3 and 4, respectively.

emissions to 1990 levels by 2020 (as established by AB32 and CARB's Scoping Plan)¹³. In September 2016, the Governor signed into law Senate Bill (SB) 32, which establishes a new target for GHG emissions reductions in the state at 40 percent of 1990 levels by 2030. CARB is in the process of updating its Scoping Plan to achieve this new GHG reduction target; however, there are no specific, applicable plans or policies prepared and approved as a result of this new reduction target. The project would also be in conformance with the Sonoma County's Climate Action Plan (CAP), which sets forth GHG reduction goals. One of the ways in which the project would conform with the CAP, is by increasing solid waste diversion, increasing recycled water, and increasing water and wastewater efficiency. By having wells and a wastewater treatment plant on site (with associated spray irrigation area), the Regional Park would not generate as many GHG emissions when compared to the GHG emissions that would be generated from transporting water or disposing of human waste at an offsite location. Accordingly, the Master Plan would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. This impact would be less than significant.

4.1.4 Hazards and Hazardous Materials

The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous material.

Construction and operation of the project would require a variety of common chemicals, including solvents, paints, pesticides, and motor oil. To minimize exposure and ensure safe use, storage, and disposal of any chemicals, including common cleaning and maintenance materials, Regional Parks staff would comply with CCR Title 8 General Industry Safety Orders, Control of Hazardous Substances, and the Sonoma County Fire Code. In addition, the Master Plan sets forth a number of guidelines and standards that are meant to ensure safe use, storage, and disposal of these chemicals (See RMP-S48, RMP-S49, RMP-G56, RMP-S77, and RMP-S78 in Chapter 6 of the Master Plan). Based on the nature of packaging, materials involved, Master Plan guidelines and standards, and the proposed project's required compliance with applicable regulations, the risk of hazard through the routine transport, use, or disposal of hazardous materials would be less than significant, and no further analysis of this issue is required.

The project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? A Phase I Environmental Site Assessment (ESA) dated February 2004, followed by additional site investigations in September 2004, was conducted by EBA Engineering (see Appendix D). No indication of residual herbicides or pesticides were found in the soil samples collected within the Park. Total lead levels sampled in the area of the former waterfowl hunting area were relatively low in concentration, and this area would not be subject to ground disturbing activities as part of the Master Plan. Therefore, there would be no significant impact in regard to accident and upset conditions involving hazardous materials.

The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

¹³ BAAQMD CEQA Air Quality Guidelines, pg. 2-4.

There are no schools within one-quarter mile of the project site. The nearest schools are over four miles from the project area. Therefore, there would be no impacts to proposed or existing schools from hazardous emissions or acutely hazardous materials.

The project would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.

The GeoTracker and EnviroStor databases show no hazardous materials on the project site. The closest hazardous material site is located approximately 0.32 miles southeast of the project site, at the former Bondurant School of High Performance Driving (currently Sears Point Raceway) in Sonoma, California. Its current cleanup status is “completed – case closed” for a leaking underground storage tank. Therefore, implementation of the proposed project would not create a significant hazard to the public or the environment related to its proximate location to a hazardous site. No significant impacts would occur and no further analysis of this issue is required.

The project would not be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.

The proposed project is not expected to result in a safety hazard for people residing or working in the project area. The project is not located within an airport land use plan or within two miles of a public airport. The Sonoma Valley Airport is the nearest airport, located just over two miles east of the project area. The Petaluma Municipal Airport is approximately 5.4 miles northwest of the project area. No significant impacts would occur and no further analysis of this issue is required.

The project would not be within the vicinity of a private airstrip, nor would the project result in a safety hazard for people residing or working in the project area.

The proposed project is not expected to result in a safety hazard for people residing or working in the project area. There are no known legal private airstrips located within the vicinity of the project area.

The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The proposed project is not expected to impair implementation of or physically interfere with the County’s adopted emergency response or evacuation plan. The Sonoma County Department of Emergency Services is the lead agency under the State of California’s Standardized Emergency Management System and is responsible for coordination of response and recovery activities following an emergency or disaster such as earthquakes, floods, landslides, and dam failures. The project area is within the Lakeville Fire Protection District. The Lakeville Volunteer Fire Department is the closest fire station to the property (approximately 2.5 miles away) and would respond to emergency calls. Regional Parks and Lakeville Fire District are conducting joint emergency response training.

The Master Plan identifies multiple emergency evacuation routes throughout the property, as well as off-site easements that allow emergency vehicle access (EVA). On-site EVA routes include West Ridge Trail, Historic Lakeville Road Trail, and the Causeway Trail; off-site

easements for EVA routes include Mangel Ranch Road, Spolini Road, and Cardoza Lane. As stated in the Master Plan goals and RMP, all EVA routes would be maintained on a regular basis and available for use in the event of an emergency.

Emergency response at the Park is provided by Sonoma County Department of Emergency Services and Lakeville Volunteer Fire Department. Resident rangers monitor conditions and serve as First Responders during emergencies and would coordinate with the Sonoma County Department of Emergency Services and Lakeville Volunteer Fire Department in the event of an emergency. Regional Parks Non-Ranger staff such as Park Aides, Park Ranger Assistants, Maintenance, and Environmental Education/Programs are onsite throughout the day every day to assist with coordination, as well. Additionally, Ranger Staff are on site throughout the day monitoring and maintaining facilities up to four scheduled site visits per day. One of the two resident Rangers starts and ends their day onsite at the Park with general oversight of activities at the Park. Ranger staff return for at least one more visit daily to monitor Park activities. Park Aides, Park Ranger Assistants and Environmental Education/Programs staff are onsite, and would continue to be onsite, throughout the day for support of daily maintenance and ongoing programs. Maintenance Staff maintains the infrastructure along with providing agricultural activity support. Park Maintenance stores equipment and material at the Park for county-wide park projects so maintenance staff is regularly at the park off and on throughout the day. None of these activities would change under the Master Plan. Therefore, the project would not impair or physically interfere with an emergency response plan or emergency evacuation plan.

The project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

The project site is located within a State Responsibility Area (SRA), and is identified as a Moderate fire hazard severity zone.^{14,15} According to the Sonoma County Fire and Emergency Services Department, permitted building construction in SRAs requires all structures to be built according to the California Building Code and California Residential Codes, which establishes minimum building standards for the protection of life and property against vegetation fires.¹⁶ In addition, the Sonoma County Hazard Mitigation Plan, Vision 2020 County Strategic Fire Plan, and the Sonoma County Community Wildlife Protection Plan are incorporated into the Sonoma County General Plan 2020 and reduce wildland fire hazards by identifying priority action areas.¹⁷ Moreover, the Sonoma County Regional Parks Department Director may close the facility when there are high fire danger periods or other situations that could pose a threat to the health and safety for those using the facility.

¹⁴ Sonoma County Fire Hazard Severity Zones in State Responsibility Areas, Adopted by CalFire on November 7, 2007.

¹⁵ Sonoma County General Plan 2020: Public Safety Element. Figure PS-1g, Wildland Fire Hazard Areas.

¹⁶ Section R327 of the CA Residential Code and Chapter 7A [SFM] outlines materials and construction methods for exterior wildlife exposure. <http://sonomacounty.ca.gov/FES/Fire-Prevention/Permits-and-Inspections/>

¹⁷ This plan is currently being prepared by the Sonoma County Fire and Emergency Services Department, with an anticipated adoption date in 2016.

Chapter 5 of the Master Plan identifies emergency evacuation routes, water sources for fire suppression and potential wildfire control areas along the Park’s ridgeline roads or trails. The Resource Management Plan (Chapter 6) of the Master Plan includes guidelines and standards that addresses and reduces wildfire risks; see RMP-O42, RMP-O43, RMP-G53, and RMP-S60 through –S66.

Therefore, impacts related to wildfire risks would be less than significant and no further analysis of this issue is required.

4.1.5 Mineral Resources

The project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state nor would it result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

The project site is designated as MRZ-3a and MRZ3b with respect to Portland concrete cement aggregate and asphalt concrete aggregate, and MRZ-3a, MRZ3b, and MRZ-4 with respect to class II base aggregate¹⁸. See table below. MRZ-3a is defined as “areas containing known mineral occurrences of undetermined mineral resource significance,” MRZ-3b is defined as “areas containing inferred mineral occurrences of undetermined mineral resource significance,” and MRZ-4 is defined as "areas of unknown mineral resource potential, where geologic information does not rule out either the presence or absence of significant mineral resources" by the California Department of Conservation.

Table 4.1-7: Mineral Resource Types in Project Site

Mineral Resource	Mapping Designations
Portland Concrete Cement aggregate	MRZ-3a, MRZ-3b, and unknown designation 1
Asphalt concrete aggregate	MRZ-3a, MRZ-3b, and unknown designation 1
Class II base aggregate	MRZ-3a, MRZ-3b, MRZ-4

¹ Some areas were colored-coded pink, but there was no corresponding description of this designation in the legend.
Source: California Department of Conservation, March 2005

The project area is not designated by Sonoma County as an area containing mineral resources;¹⁹ however, there is an existing quarry within the project area.²⁰ Rock material (gravel) is extracted from this quarry for onsite use related to road maintenance and other repairs within the property. The Sonoma County Agricultural Preservation and Open Space District’s conservation easement for this project site allows for the continued extraction of rock material from this quarry, but

¹⁸ Special Report 175, Mineral Land Classification of Aggregate Materials in Sonoma County, California. California Department of Conservation; Miller, Kohler, Busch, Dupras, and Clinkenbeard. Plate 2, 3, and 4.

¹⁹ Zoning map from Sonoma County Permit and Resource Management Department, last updated May 2015

²⁰ Tolay Lake Regional Park Baseline Documentation, June 2006

prohibits any other exploration, development, and extraction of mineral resources within the project property.

Therefore, the project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. Furthermore, the project would not alter its status with respect to the availability of mineral resources. Therefore, the proposed project would not result in any impacts related to the availability of a known mineral resource or a locally-important mineral resource recovery site. No further analysis of this issue is required.

4.1.6 Population and Housing

The project would not induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

The project does not propose the construction of any new housing. Although the project would provide recreational services to the city of Petaluma and Sonoma County, it is not anticipated that these services would attract additional residents to this area.

Additionally, although the project includes a new access road at the southern entrance, the project is located adjacent to existing infrastructure and would not require new services, roads, or utilities of such a magnitude that they might induce population growth. Therefore, implementation of the project would not result in any impacts related to project-induced population growth. No impacts would occur and no further analysis of this issue is required.

The project would not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

No housing would be removed or impacted to allow construction of the project. No impacts would occur and no further analysis of this issue is required.

The project would not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

No people would be displaced to allow implementation of the project. Therefore, implementation of the project would not result in any impacts related to the construction of replacement housing. No further analysis of this issue is required.

4.2 AESTHETICS

This section evaluates the effects of the project on visual resources, including views from public areas in the project vicinity. This analysis also considers the project's consistency with applicable County of Sonoma visual resources-related policies.

This analysis has been prepared using available information which was collected to identify visual resources for Sonoma County. The project site's existing visual resources were evaluated to determine the project's potential to degrade and/or improve existing measures of visual character and visual quality.

4.2.1 Environmental Setting

The project area is located in the unincorporated area of Sonoma County, more specifically to the north of the junction of State Route (SR) 37 and 121, to the south of SR 116, east of the Petaluma River and Lakeville Highway, and northwest of Mangel Ranch Road. There are several visual resources that define the project vicinity. The South Sonoma Mountains are an important part of the South County landscape with a simple landform, minimal vegetation, and expansive views. The SR 37 corridor passes through agricultural lands and offers views of San Pablo Bay. The hills south of Petaluma include open grassy hillsides and ridgelines, which are visually sensitive and development and changes are easily apparent. Located at the Marin County border, this area serves as a gateway to Sonoma County. Other prominent visual resources in the project vicinity are the Sonoma Valley and the Mayacamas Mountains.

The Tolay Lake Regional Park property is located in a valley surrounded by prominent ridgelines and grassy hillsides. Elevation ranges from 100 feet to nearly 800 feet above sea level. Most of the property is situated on a north-west trending ridge that separates the Sonoma Creek Valley and the Petaluma River Valley. The East Ridge on the property is a high point that provides spectacular views of the Bay Area, landmarks of six adjacent counties including Mt. St. Helena, Mt. Tamalpais, Mt. Diablo, the Petaluma River basin, three San Francisco Bay area bridges and the cities of San Francisco, and Oakland. Tolay Lake is a significant aesthetic feature located in the valley bottom, and is approximately 200 acres in surface area. In addition to the ridgelines, hillsides, and Tolay Lake, the property is visually characterized by remnant stands of oak woodland, moist grasslands, meadows, wetlands, ephemeral Tolay Creek, hillside springs, and four ponds.

Views of the project area are shown in Figures 4.2-1 through -7. Visitors currently accessing the Park under the Interim Access Plan, enter from Cannon Lane in the northern part of the Park. The area along Cannon Lane as viewed from Lakeville Highway is a series of hills in a pastoral setting largely free of built structures. The park entrance is located where Cannon Lane crests a hill. The views of the Park from this location includes background views of hills on the east side of the Tolay Valley to the east, and agricultural and vineyard areas to the north (see Figure 4.2-1).

As shown in Figure 4.2-2, a grove of eucalyptus trees is present on the north side of Cannon Lane, where the road intersects with Lakeville Highway. As visitors drive into the Park, powerlines, a fence line and the Old Dairy Barn are visible to the south. The Tolay Lake causeway is also shown in Figure 4.2-2.

Tolay Lake can be seen as visitors enter the Park. Tolay Lake varies dramatically in size with rainfall over the seasons (Figure 4.2-3). Figure 4.2-4 shows the Park Complex, which includes 15 buildings associated with the Cardoza Ranch and the Miwok Village.

As shown in Figure 4.2-5, the West Ridge Trail passes through grazing lands, and offers outstanding views of Tolay Valley to the east, San Pablo Bay to the south, and the Petaluma River to the west. The Fish Pond area (Figure 4.2-6) offers excellent views of the west side of the Park. The eastern side of the Park is characterized by grassy hillsides interspersed with oak groves (Figure 4.2-6) and does not have any modern built features other than roads, trails, and fencing.

The southern park entrance can be observed from Highway 121 and includes views of undeveloped grazing lands and Tolay Creek. The staging area for access to southern end of the Park will be approximately 0.5 miles to northwest of the Park's southern entrance. This area is currently undeveloped, except for evidence of ongoing creek restoration (Figure 4.2-7).

4.2.2 Regulatory Setting

There are no federal laws or regulations that are applicable to aesthetics in relation to this project.

4.2.2.1 Caltrans

At the state level, the California Department of Transportation (Caltrans) administers the California Scenic Highway Program. The stated intent of this program (Streets and Highways Code Sections 260-263) is to protect and enhance the natural scenic beauty of California's highways and adjacent corridors, through special conservation treatment. Official designation requires a local governing body to enact a Corridor Protection Program that protects and enhances scenic resources along the highway.

State highways in the project vicinity include SR 37 and 121. SR 37 and 121, although not Officially Designated State Scenic Highways, are Eligible State Scenic Highways.

4.2.2.2 Sonoma County 2020 General Plan Regulations

At the local level, there are several Sonoma County 2020 General Plan goals, objectives and policies relevant to the project area. The General Plan designated scenic landscape units that surround Tolay Lake Regional Park, and there are four scenic corridors in the vicinity of the Park; Highways 37, 116 and 121; and Lakeville Highway.

Relevant goals, objectives, and policies are summarized below.

Objective OSRC-3.2: Provide guidelines so future land uses, development and roadway construction are compatible with the preservation of scenic values along designated Scenic Corridors.

GOAL OSRC-2: Retain the largely open, scenic character of important Scenic Landscape Units.

Objective OSRC-2.1: Retain a rural, scenic character in Scenic Landscape Units with very low intensities of development.



View from Lakeville Highway at Cannon Lane

Source: Google Maps Street View



View at Cannon Lane Park Entrance





Cannon Lane Entrance looking South



East-Facing View of the Tolay Lake Causeway



Tolay Lake Winter Conditions



Tolay Lake Summer Conditions



Park Complex Ranch Buildings



Miwok Village



Views Along the West Ridge: Petaluma River Valley



Views Along the West Ridge: San Pablo Bay.



Fish Pond



Typical view along eastern ridge



South Entrance Staging Area (Background)



Tolay Creek (South Entrance Staging)

Figure 4-2.7



Objective OSRC-2.2: Protect the ridges and crests of prominent hills in Scenic Landscape Units from the silhouetting of structures against the skyline.

Objective OSRC-2.3: Protect hills and ridges in Scenic Landscape Units from cuts and fills.

Policy OSRC-2d: Unless there are existing design guidelines that have been adopted for the affected area, require that new structures within Scenic Landscape Units meet the following criteria:

- (1) Site and design structures to take maximum advantage of existing topography and vegetation in order to substantially screen them from view from public roads.
- (2) Minimize cuts and fills on hills and ridges.
- (3) Minimize the removal of trees and other mature vegetation. Avoid removal of specimen trees, tree groupings, and windbreaks.
- (4) Where existing topography and vegetation would not screen structures from view from public roads, install landscaping consisting of native vegetation in natural groupings that fits with the character of the area in order to substantially screen structures from view. Screening with native, fire retardant plants may be required.
- (5) Design structures to use building materials and color schemes that blend with the natural landscape and vegetation.
- (6) On hills and ridges, avoid structures that project above the silhouette of the hill or ridge against the sky as viewed from public roads and substantially screen driveways from view where practical.
- (7) To the extent feasible, cluster structures on each parcel within existing built areas and near existing natural features such as tree groupings.

GOAL OSRC-4: Preserve and maintain views of the night time skies and visual character of urban, rural and natural areas, while allowing for nighttime lighting levels appropriate to the use and location.

Objective OSRC-4.1: Maintain night time lighting levels at the minimum necessary to provide for security and safety of the use and users to preserve night time skies and the night time character of urban, rural and natural areas.

Objective OSRC-4.2: Ensure that night time lighting levels for new development are designed to minimize light spillage offsite or upward into the sky.

Policy OSRC-4a: Require that all new development projects, County projects, and signage utilize light fixtures that shield the light source so that light is cast downward and that are no more than the minimum height and power necessary to adequately light the proposed use.

Policy OSRC-4b: Prohibit continuous all night exterior lighting in rural areas, unless it is demonstrated to the decision making body that such lighting is necessary for security or operational purposes or that it is necessary for agricultural production or processing on a seasonal basis. Where lighting is necessary for the above purposes, minimize glare onto adjacent properties and into the night sky.

Policy OSRC-4c: Discourage light levels that are in excess of industry and State standards.

4.2.3 Impacts and Mitigation Measures

This subsection analyzes impacts related to visual resources that could result from implementation of the project. The subsection begins with the criteria of significance, which establish the thresholds for determining whether an impact is significant, and concludes with visual impacts associated with the project.

4.2.3.1 Criteria of Significance

The proposed project would have significant aesthetic impacts on aesthetics if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcropping, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or;
- Create a new source of light and glare which would adversely affect daytime or nighttime views in the area.

4.2.3.2 Less Than Significant Impacts

Project implementation would result in the following less than significant aesthetic impacts.

Impact AES-1 and -2: Construction and other implementation activities associated with the Master Plan would not result in substantial, permanent adverse physical impacts on a scenic vista and would not substantially damage scenic resources within a state scenic highway. (LTS)

Implementation of the Tolay Lake Master Plan would occur over a 20-year time frame. The Master Plan includes recreational improvements for multi-use and hiking-only trails; equestrian facilities; a Park Complex that includes a visitor center with interpretive and educational facilities; as well as improved restrooms and parking. The Master Plan provides resource management recommendations for continued cattle operations, as well as improvements in fencing, boundaries, and exclusion zones of sensitive habitats and prehistoric cultural resources. Additionally, the Master Plan includes improvements to Park access, ADA improvements, a new ranger residence, and water supply and wastewater facilities. The project improvements do not involve the construction of large buildings that would block scenic vistas. Visitors to the Park Complex were the Visitor's Center and other visitor facilities would be located, would have access to the same scenic vistas available now and there would be no change.

Road widening and traffic improvements along the Park boundary would be visible from Cannon Lane. Traffic improvements at the intersection of Lakeville Highway and Cannon Lane would be visible from Lakeville Highway, a Sonoma County Scenic Corridor. Construction activities for these improvements would be temporary and would not cause permanent impacts to scenic vistas seen from Lakeville Highway. During operation, these improvements would be minor (additional widening to Cannon Lane in discrete sections, roadway stripping at the intersection with Lakeville Highway) and would not obstruct views of scenic vistas or damage resources within a County Scenic Corridor.

Traffic improvements to the southern Park entrance would be visible along SR 121, an Eligible State Scenic Highway and County Scenic Corridor. However, the improvement would consist of a new Park entry road and Park entry signage. This improvement would replace the existing dirt road with a two-lane paved road. However, the new paved road would not be out of character with other paved access roads in the vicinity. Signage for the Park entry would be consistent with Sonoma County Regional Parks' signage guidelines as proposed in the Master Plan. Therefore, no impacts to views of trees, rock outcroppings, or historic structures would occur within a State Designated Scenic Highway or County Scenic Corridor and impacts would be *less than significant*.

Impact AES-3: Project construction and implementation would not substantially degrade the existing visual character or quality of the site and its surroundings. (LTS)

Implementation projects associated with the Master Plan would involve actions to restore habitats and existing buildings associated with the Cardoza Ranch. The types of recreational activities proposed for the site include: nature study and outdoor educational programs, hiking, docent led walks, horseback riding, mountain biking, group and family picnicking, bird watching and other types of passive recreation, and overnight hike-in individual and group camping on a permit basis. Due to the size of the project site, improvements to support these activities would not result in readily observable changes to the Park.

Implementation of the Master Plan over the project phases would result in ground disturbance associated with constructing a new visitor center, reconstruction of existing buildings, construction of a camping area and wastewater treatment plant, and rehabilitation of historic buildings. The bulk of improvements of this type would be located in the Park Complex. The most significant change in visual character of the Park would be from construction of a wastewater treatment plant and a new visitor center. The Master Plan includes new landscaping to screen views of administrative areas including the wastewater treatment plant.

These improvements have not been designed at this point, but would be required to be designed to comply with Section 106 of the NHPA Secretary Guidelines for Treatment of Historic Properties to ensure that there would be no impact to the Tolay Lake Historic District Park Complex contributing properties. In regard to the potential impacts to historic buildings, the NHPA requires any rehabilitation actions would need to comply with Section 106 of the NHPA Secretary Guidelines for Treatment of Historic Properties.

As a result, impacts would be *less than significant*.

4.2.3.3 Significant Impacts

The project would have the following significant impact related to aesthetics.

Impact AES-4: Project construction and implementation would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. (S)

Lighting developed for the new visitor center and overnight areas in the Park Complex would not be visible from public highways. However, the lighting may be visible from surrounding residences. Therefore, any individual projects requiring new lighting would be required to develop a lighting plan per MM AES-4.

MM AES-4: Construction or reconstruction of buildings may require the installation of new lighting. As part of the project design process, Sonoma County Parks shall specify and install night-lighting consistent with Dark Sky Association BMPs. This type of lighting shall meet the following standards:

- a. Use fixtures recommended by the International Dark Sky Association
- b. Provide adequate light for the intended task – do not “over-light” an area
- c. Use fully-shielded lighting fixtures that control the light output in order to keep the light in the intended area and reduce spillover

Impacts to light and glare would be *less than significant* with mitigation incorporated.

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4.3 AGRICULTURE AND FORESTRY RESOURCES

This section evaluates the effects of the project on agriculture and forestry resources. This analysis has been prepared using available information pertaining to agricultural resources, soil types, and forest and timberland.

4.3.1 Environmental Setting

As described in Section 3, Project Description, of this EIR, the project site is located southwest of the Sonoma Mountains between State Routes (SR) 116 and 121. The Park is comprised of two properties. The first property is Tolay Lake Ranch, a roughly 1,737-acre area that was purchased by the Sonoma County Agricultural Preservation and Open Space District (District) and its partners on September 27, 2005. The second property is the approximately 1,665-acre Tolay Creek Ranch, currently owned by the Sonoma County Land Trust (SLT), which is protected by a separate Conservation Easement retained by the District. The approximately 3,402-acre project site contains a variety of native and non-native grasses and weeds typical of Sonoma County, with oak and other woodland as well as riparian vegetation. (See Section 4.4 Biological Resources, for a complete description.) Historically, the project site was used for cattle grazing, with some limited agriculture particularly in the Tolay Lake basin, which was intentionally drained for this purpose. After acquisition of the Tolay Lake Ranch by the County in 2005, agricultural use of the lake basin was eliminated. The 10-acre site used historically as vineyard continues to be used for agricultural production and pumpkins are grown annually for sale during the Park Fall Festival. Additionally, another 15-acres west of the lake and south of the Park Complex is used for no-til hay production.

The Tolay Lake Ranch portion of the Park is open under an Interim Access Plan and currently offers trails for hiking, bicycling, or horseback riding, with access to vista points and shaded ponds, and picnic opportunities. Park use is limited by a Day Use permit, or a guide, where hikers, walkers with leashed dogs, mountain cyclists, and equestrians enjoy trails shared with grazing cattle.

Under the Interim Access Plan, the Park sponsors a Fall Festival every October to connect visitors with the beauty and history of the Park with low-key, hands-on activities that are educational by design.

4.3.1.1 Farmland

The Important Farmland Maps use a classification system that combines technical soil ratings and current land use. For environmental review purposes under CEQA, the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land constitute “agricultural land.”¹ As shown on Figure 4.3.1 and Table 4.3.1, according to the Farmland Mapping and Monitoring Program, approximately 4.15 percent of the project site contains Prime Farmland. Approximately 11.87 percent of the site contains “Farmland of Local Importance.” Most of the remainder of the site (approximately 83 percent)

¹ FMMP Important Farmland Categories, http://www.conservation.ca.gov/dlrp/fmmp/mccu/Pages/map_categories.aspx; accessed 8-10-15.

contains grazing land; less than one percent of the site contains land classified as "Other Land" and "Urban and Built-Up Land."²

Table 4.3-1: Important Farmlands on the Project Site

Type	Project Area (%)*
Prime Farmland	4.15
Farmland of Statewide Importance	0
Unique Farmland	0
Farmland of Local Importance	11.87
Important Farmland Subtotal	16.02
Grazing Land	83.40
Agricultural Land Subtotal	99.42
Other Land and Urban and Built-Up Land	0.58
Total Area	100.00

*Percentages are rounded

Source: California Department of Conservation Farmland Mapping and Monitoring Program, August 2015.

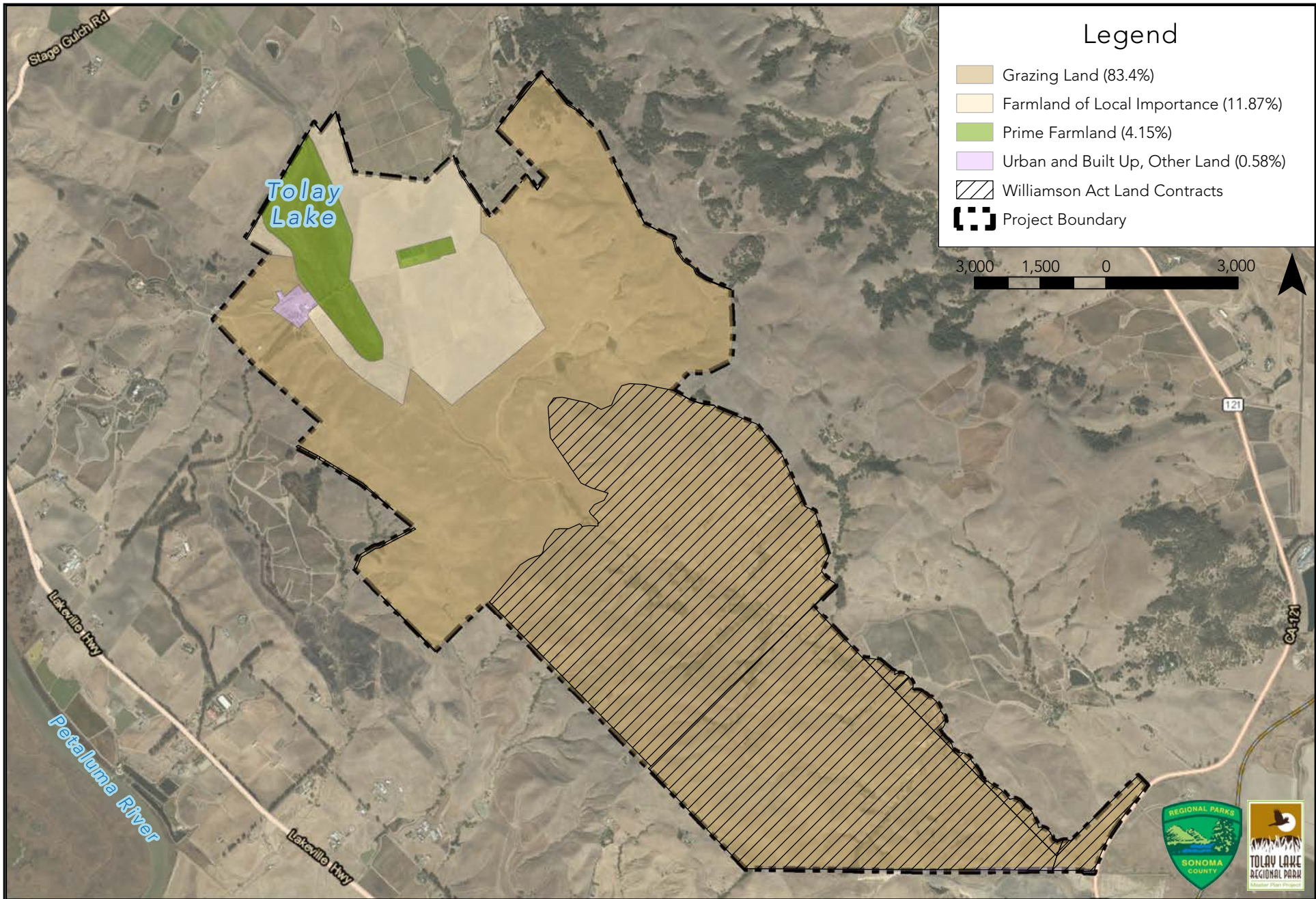
Table 4.3.2 shows soil types as classified by the National Resource Conservation Service (NRCS). Figure 4.3.2 shows the location of these soil types. According to the NRCS, the project site contains approximately 616 acres of Clear Lake clay loam (0 to 2 percent slopes) and 484 acres of Diablo clay (2 to 9 percent slopes). Both of these soils are classified "prime farmland if irrigated."

The project site also contains approximately 546 acres of Diablo clay (9 to 15 percent slopes) and 14 acres of Laniger loam (5 to 9 percent slopes). Both of these soils are classified "farmland of statewide importance." The remaining soils, approximately 1,806 acres, are not considered by the NRCS as prime farmland.³

² "Other Land" is defined as land not included in any other mapping category. For instance, low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres.

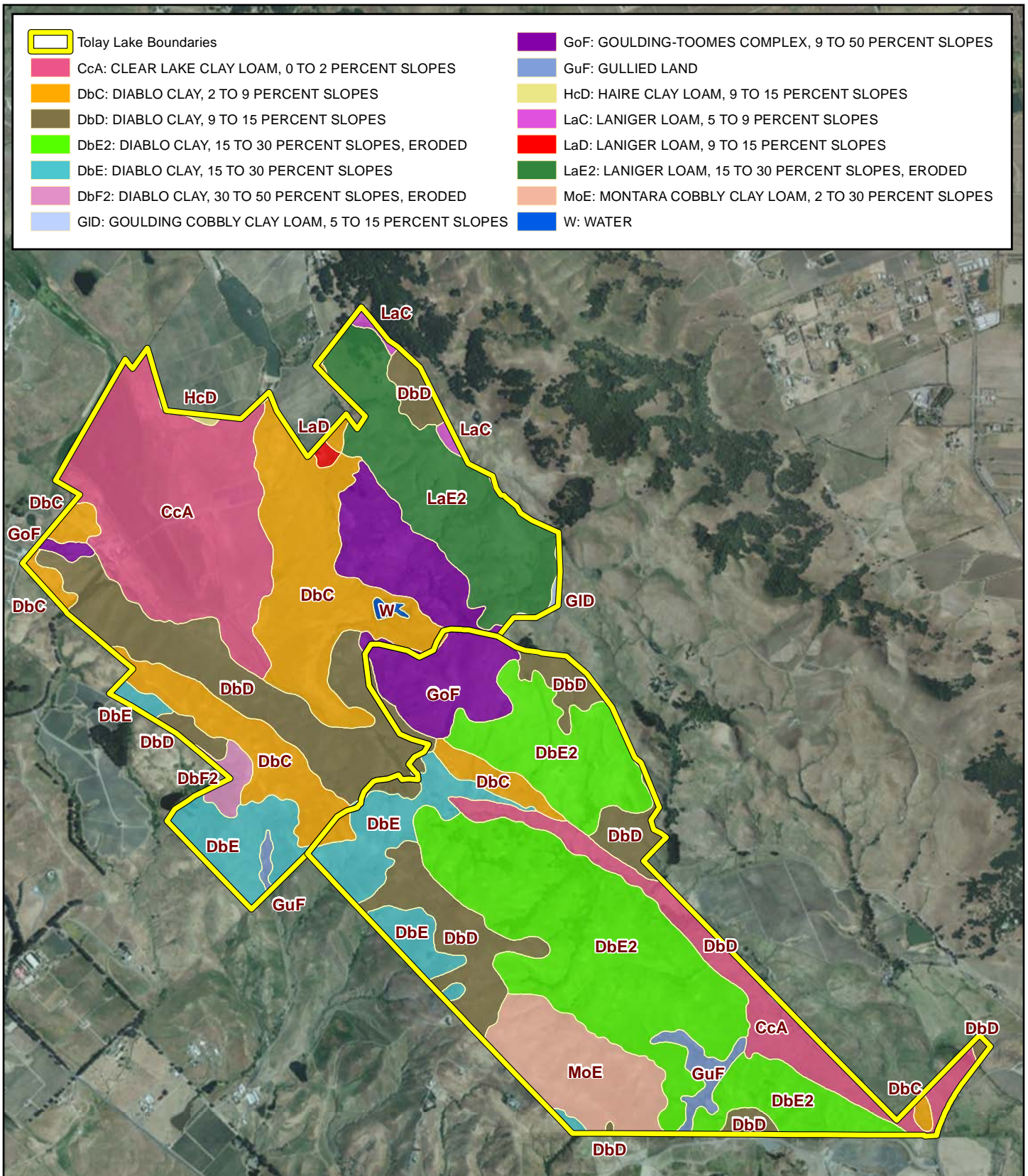
"Urban and Built-Up Land" is defined as land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel, and is typically used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

³ U.S. Department of Agriculture, Natural Resources Conservation Service, Custom Soil Resource Report for Sonoma County, California, August 11, 2015.



Source: California Department of Conservation Farmland Mapping and Monitoring Program

Figure 4-3.1
Prime Farmland



Source: WRA

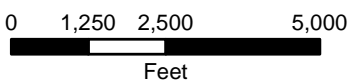


Table 4.3-2: Soil Types on Project Site

Soil Type (Map Symbol)	Project Area %*	Classification
CcA - Clear Lake clay loam (0 to 2 percent slopes)	18	Prime farmland if irrigated
DbC - Diablo clay (2 to 9 percent slopes)	14	Prime farmland if irrigated
DbD - Diablo clay (9 to 15 percent slopes)	16	Farmland of statewide importance
LaC - Laniger loam (5 to 9 percent slopes)	> 1	Farmland of statewide importance
Other soil types**	53	Not prime farmland
W - water (ponds, etc.)	> 1	--
Total	100	
<p><i>SOURCE: U.S. Department of Agriculture, Natural Resources Conservation Service, Custom Soil Resource Report for Sonoma County, California, August 11, 2015.</i></p> <p><i>* Percentages are rounded</i></p> <p><i>*Other soil types include:</i></p> <p><i>DbE - Diablo clay (15 to 30 percent slopes)</i></p> <p><i>DbE2 - Diablo clay (15 to 30 percent slopes, eroded)</i></p> <p><i>DbF2 - Diablo clay (30 to 50 percent slopes, eroded)</i></p> <p><i>GLD - Goulding cobbly clay loam (5 to 15 percent slopes)</i></p> <p><i>GoF - Goulding-Toomes complex (9 to 50 percent slopes)</i></p> <p><i>GuF - Gullied land</i></p> <p><i>HcD - Haire clay loam (9 to 15 percent slopes)</i></p> <p><i>LaD - Laniger loam (9 to 15 percent slopes)</i></p> <p><i>LaE2 - Laniger loam (15 to 30 percent slopes, eroded)</i></p> <p><i>MoE - Montara cobbly clay loam (2 to 30 percent slopes).</i></p>		

4.3.1.2 Agricultural Zoning

The portion of the site under jurisdiction of the SLT is zoned Land Extensive Agriculture District (LEA), and the rest of the site is zoned LEA and Land Intensive Agriculture District (LIA). The purpose of the LEA district is to "enhance and protect lands best suited for permanent agricultural use and capable of relatively low production per acre of land; and to implement the provisions of the Land Extensive Agriculture land use category of the General Plan and the policies of the Agricultural Resources Element." The purpose of the LIA district is to "enhance and protect lands best suited for permanent agricultural use and capable of relatively high production per acre of land; and to implement the provisions of the land intensive agriculture land use category of the General Plan and the policies of the agricultural resources element."

A "Public Park" is a permitted non-agricultural use in both the LEA and the LIA district, provided that "the applicant...demonstrate that the use meets a local need, avoids conflict with

agricultural activities and is consistent with Objective AR-4.1 and Policy AR-4a of the agricultural resources element."⁴

4.3.1.3 Williamson Act Contracts

The southern portion of the project site (the former Tolay Creek Ranch site under SLT ownership) includes approximately 1,657 acres of land under Williamson Act contracts (Type II). The County initiated non-renewal of the contracts on January 1, 2007, and the contracts will terminate on December 31, 2016.⁵

4.3.1.4 Forest and Timberland Resources

In 2014, a total of 13,440,000 board feet of lumber valued at roughly 3.8 million dollars was harvested in Sonoma County. This amount was slightly less than 1% of the timber harvested in the State during that year.⁶ The site contains no areas zoned or designated forest or timberland resource. (Oak and related habitat values are addressed in section 4.4, Biological Resources, of this EIR.)

4.3.2 Regulatory Setting

California Department of Conservation Farmland Mapping and Monitoring Program (FMMP). The California Department of Conservation (DOC) administers the Important Farmland Mapping and Monitoring Program (FMMP), which evaluates the quality of farmlands throughout the State of California. The suitability of the local soil resources plays a crucial part in the FMMP's farmland classifications. The FMMP uses the U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS) soil survey information, land inventory and monitoring criteria to classify most of the state's agricultural regions into five agricultural and three nonagricultural land types. Every two years, the FMMP publishes this information in its Important Farmland map series. The FMMP is an informational service only and does not constitute state regulation of local land use decisions.

California Farmland Conservancy Program. The California Farmland Conservancy Program (CFCP) seeks to encourage the long-term, private stewardship of agricultural lands through the voluntary use of agricultural conservation easements. The CFCP provides grant funding for easement and planning projects that support agricultural land conservation statewide. As of

⁴ General Plan Objective AR-4.1 states: "Apply agricultural land use categories only to areas or parcels capable of the commercial production of food, fiber and plant material, or the raising and maintaining of farm animals including horses, donkeys, mules, and similar livestock. Establish agricultural production as the highest priority use in these areas or parcels."

General Plan Policy AR-4a states: "The primary use of any parcel within the three agricultural land use categories shall be agricultural production and related processing, support services, and visitor serving uses. Residential uses in these areas shall recognize that the primary use of the land may create traffic and agricultural nuisance situations, such as flies, noise, odors, and spraying of chemicals."

⁵ Sonoma County PRMD, ActiveMap, Williamson Act Land Contracts-2012, Feature Report; <http://www.sonoma-county.org/prmd/activemap/reports/wact.pdf>; accessed 8-27-15.

⁶ California State Board of Equalization, Timber Yield Tax & Harvest Values Schedules, July 2007, Reprinted January 2015; <http://www.boe.ca.gov/proptaxes/timbertax.htm>, accessed 10-19-15.

January 2015, CFCP funded more than 175 conservation easements, permanently conserving some of the state's best farmland in agricultural regions throughout the state.

California Land Conservation Act (Williamson Act). The State policy used in regulating farmlands is the California Land Conservation Act of 1965, commonly referred to as the Williamson Act. The purpose of the Williamson Act is to integrate the protection of open space and agricultural resources into their overall strategies for planning urban growth patterns. The Williamson Act allows local governments to enter into private contracts with land owners for the purpose of restricting the land for agricultural or related open space uses.

Sections 65560–65570, Government Code. Open Space Lands. This portion of California planning law defines open space (including rangeland and agricultural land) and requires cities and counties to prepare an open space plan as a required element of its General Plan. Building permits, subdivision approvals, and zoning ordinance approvals must be consistent with the local open space plan.

Sonoma County Agricultural Preservation and Open Space District. The Sonoma County Agricultural Preservation and Open Space District (SCAPOS) was established as part of the Open Space Element of the Sonoma County General Plan to acquire and administer open space lands. The District is a public agency funded by ¼ percent sales tax in Sonoma County, but does not have the power of eminent domain. The District acquires conservation easements through voluntary transactions with landowners, and also purchases land outright from willing sellers. The District has protected over 106,000 acres of active agricultural lands in Sonoma County.

Sonoma Land Trust. The Sonoma Land Trust (SLT), founded in 1976, is a private, non-profit membership organization that has protected more than 50,000 acres in and around Sonoma County by working directly with willing landowners. The Land Trust offers stewardship, education and advice for the preservation and enhancement of agricultural, natural and open space lands.

Sonoma County General Plan 2020. The Sonoma County General Plan contains goals and policies pertinent to the proposed project. The Land Use Element guides growth and development and use of land in the County. The Agricultural Resources Element establishes policies, programs and measures that are intended to promote and protect the current and future needs of the agricultural industry within the County. The Open Space and Resource Conservation Element provides for the conservation of natural resources including water, forests, soils, rivers, harbors, fisheries, wildlife, minerals, and other natural resources.

Sonoma County Municipal Code. Chapter 26 of the Sonoma County Municipal Code (Sonoma County Zoning Regulations) defines three agricultural use categories: Land Intensive Agriculture (LIA), Land Extensive Agriculture (LEA), and Diverse Agriculture (DA). Each category permits a full range of agricultural uses, and differs primarily in the types and intensities of agricultural support services, visitor-serving uses, and residential densities. Chapter 30, Article II of the Municipal Code (Sonoma County Right to Farm Ordinance) declares the policy of the County to conserve, protect, enhance, and encourage agricultural operations on agricultural land within the unincorporated area of the County, as well as provide County residents with proper notification of the County's recognition and support of the right to farm (demonstrated through the provisions of this ordinance).

4.3.3 Impacts and Mitigation Measures

This subsection analyzes impacts related to agriculture and forestry resources that could result from implementation of the project. The subsection begins with the criteria of significance, which establish the thresholds for determining whether an impact is significant, and concludes with impacts associated with the project.

4.3.3.1 Criteria of Significance

The proposed project would have significant impacts on agriculture and forestry resources if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

4.3.3.2 Less Than Significant Impacts

Project implementation would result in the following less than significant agricultural and forestry resources impacts.

Impact AG-1 and -2: The project would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)), nor would the project result in the loss of forest land or conversion of forest land to non-forest use. (NI)

The project contains no areas zoned for forest land, timberland, or timberland production, nor would the project convert any forest land to a non-forest use. The project site is designated as Valley Oak Habitat Combining District (VOH), which is established to protect and enhance valley oaks and valley oak woodlands. However, because there are no forest resources on the site nor does the project contemplate timberland harvesting, there would be ***no impact (NI)*** on forest land or forest resources as a result of the project. (See section 4.4, Biological Resources, for a discussion of oak habitat.)

Impact AG-3: The project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. (LTS)

The project site is currently zoned for agricultural use (LEA, LIA), but both zoning designations include “park” as a permitted use. Agricultural uses currently occurring on the site include cattle grazing, dry farming (no-till hay), a small amount of farm animal husbandry, growing of fruit trees, the continuation of agricultural events (including growing pumpkins for the Fall Festival), and maintaining and investing in the existing agricultural infrastructure.

The project intends to retain the existing agricultural uses, which would ensure preservation of the existing agricultural uses on the site and the agricultural environment in this part of the County. The project uses would be limited to outdoor recreational users visiting during the day (overnight activities would be confined to permit-only camping and bunkhouse facilities) and would not interfere with the proposed agricultural activities. Pursuant to Policy OSRC-17a, the County is requesting a General Plan Amendment to apply the “Public-Quasi Public/Park” land use designation to the Park site. This change in land use designation would allow for implementation of the Master Plan while maintaining the agricultural heritage of the Park, preserving open space and natural resource values, and achieving compatibility among adjacent land uses.

The southern portion of the project is currently under a Type II Williamson Act contract. Type II (Non-Prime) contracts are used for non-prime agricultural or open space lands that are primarily used for grazing, hay farming, horse breeding, timber production, open space or any combination of agricultural and open space uses, including permanent crops, and also must meet minimum size and usage areas in order to qualify.⁷ As of January 1, 2007 the contracts were not renewed, and will expire December 31, 2016. Therefore, project conflicts with existing zoning for agricultural use or Williamson Act contracts would be *less than significant impact (LTS)*.

Impact AG-4: The project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. (LTS)

Over 80 percent of the project site is composed of Grazing Land. The project site includes approximately 4 percent Prime Farmland and less than 12 percent Farmland of Local Importance.⁸ As shown on Figure 4.3-1, most of the Prime Farmland is located on the lake bed and another small area located to the east. The site contains no Unique Farmland or Farmland of Statewide Importance.

Regional Parks acquired Tolay Lake Ranch in 2005. As part of the acquisition funding, the Wildlife Conservation Board and California Department of Fish & Wildlife obtained a conservation easement on the Tolay Lake Ranch at the time of purchase. The conservation easement prevents the Tolay Lake, lakebed from being actively farmed. During the spring and summer, the Lake’s water level gradually decreased, and in drier years virtually disappeared, resulting in a natural growth of tule and other wetland-oriented vegetation. In keeping with the conservation easement, the Master Plan does not include provisions for returning any portion of

⁷ “County of Sonoma, PRMD Phase Out of Substandard Parcels in Agricultural Preserves FAQs” 2013.

⁸ Farmland of Local Importance is determined by the County, and Sonoma County has determined that Farmland of Local Importance includes, among other areas, the hay land producing areas of the Petaluma Valley and those lands which are classified as having the capability for producing locally important crops such as grapes, corn, etc., but may not be planted at the present time California Department of Conservation, “California Farmland Conversion Report 2008-2010,” April 2014, Appendix E, page 101.

the Lake to an agricultural use. Additionally, the Master Plan does not propose any farming activities involving tilling in order to protect sensitive cultural resources in the Park.

The project intends to retain the existing agricultural uses, including grazing, which would ensure preservation of the existing agricultural uses on the site and the agricultural environment in this part of the County. The project proposes the use of the land for a public park. Some building construction is proposed in the Park Complex, and area currently developed with existing buildings. The project does not propose the development of land uses (such as residential or commercial development, new roadways, or infrastructure) that would permanently commit Prime Farmland or Farmland of Local Importance. The project uses would be limited to outdoor recreational users visiting during the day (overnight activities would be confined to permit-only camping and bunkhouse facilities) and would not interfere with the proposed agricultural activities. Therefore, impacts related to conversion of agricultural land on Prime Farmland, including Farmland of Local Importance, would be considered *less than significant (LTS)*.

Impact AG-5: The project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use. (LTS)

The Park is a working ranch and intends to continue to operate as a working ranch, with grazing still occurring on much of the Park property; preservation of the animal pen for pigs, goats, and chickens; no-till hay production; and the traditional growing of pumpkins. In addition, the ethnobotanical garden would be expanded.

Master Plan guideline OM-G36 supports continuation of the historic agricultural use of the Park: “Maintain agricultural lands to allow for continuing sustainable yield of crops and other farm products. Agricultural practices include (1) care, management and handling of farm animals; (2) cattle grazing; (3) maintaining ‘Marvin’s Garden’; (4) repairing farm equipment; and (5) managing the orchard trees and harvesting fruit.” Guideline OM-G36 is also consistent with the 2005 Sonoma County Agricultural Preservation and Open Space District deed, which conveys a conservation easement for Tolay Lake Park in order to “(a) conserve and protect, in perpetuity, the Conservation Values of the Property, (b) to enhance and restore the Conservation Values by specifically permitting the creation of an ecologically viable ecosystem capable of providing wetland habitat for endangered and threatened species, migratory shorebirds, and waterfowl, and (c) to prevent any uses of the Property that would significantly impair or interfere with these Conservation Values.

The project uses would be limited to outdoor recreational users visiting during the day (overnight activities would be confined to permit-only camping and bunkhouse facilities) and would not interfere with the proposed agricultural activities. The Park would be consistent with the County “Right to Farm Ordinance,” which declares the policy of the County “to conserve, protect, enhance, and encourage agricultural operations on agricultural land within the unincorporated area of the county” in an effort to “promote a good-neighbor policy.” The agricultural and open space nature of the Park in general, in addition to the size of the Park itself, would reduce the potential for conflict with adjacent agricultural lands. The project intends to retain the existing agricultural uses, which would ensure preservation of the existing agricultural uses on the site and the agricultural environment in this part of the County. Therefore, impacts on other farmland conversion would be *less than significant (LTS)*.

4.3.3.3 Significant Impacts

The project would have no significant impacts related to agriculture and forestry resources, and no mitigation measures would be required.

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4.4 BIOLOGICAL RESOURCES

This section provides a description of the biological resources in the proposed project area, including the vegetation communities, wildlife, special-status species, sensitive natural communities; a discussion of the regulations that serve to protect sensitive biological resources; an assessment of the potential impacts of the proposed project to biological resources; and recommendations to minimize and mitigate potentially significant impacts on biological resources.

Preparation of this section used data from various sources. These sources are summarized in the Methodology section below.

For the purposes of this analysis, the proposed project area consists of all areas that could be temporarily or permanently affected by implementation of the Tolay Lake Regional Park Master Plan (project). The area within the project area boundaries is approximately 3,402 acres.

4.4.1 Methodology

Existing conditions in the project area and potential impacts of the proposed project on special-status species were evaluated using the methods described in this section.

4.4.1.1 Literature Review

Preparation of the existing conditions in this chapter used information and data from the Biological Resources Report prepared by WRA Environmental Consultants (WRA) in 2013, as well as the Biological Resources Reports prepared by LSA Associates (LSA) in 2009. The Biological Reports are provided in **Appendix D**.

Investigations also included a study of aerial photographs, U.S. Geological Survey (USGS) topographic maps, National Wetland Inventory maps (U.S. Fish and Wildlife Service [USFWS] 2016a), U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) web soil survey (USDA 2016b), and literature and database searches. The California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California was also reviewed (CNPS 2016).

A search of the California Natural Diversity Database (CNDDDB), maintained by the California Department of Fish and Wildlife (CDFW), was reviewed to determine the occurrence or potential occurrence of special-status species and natural communities of special concern within the project area vicinity. The search was conducted for the 7.5-minute USGS quadrangle spanned by the project, as well as all surrounding quadrangles. The quadrangles searched included Cotati, Cuttings Wharf, Glen Ellen, Mare Island, Napa, Novato, Petaluma, Petaluma Point, Petaluma River, San Geronimo, Sears Point, and Sonoma (CDFW 2016b). The USFWS Information for Planning and Conservation tool also provided a list of threatened and endangered species known to occur near or within the project area (USFWS 2016b).

4.4.1.2 Field Surveys

Field surveys for special-status plant and wildlife species, plant communities and terrestrial wildlife habitats, and aquatic resources in the project area were conducted by WRA (WRA 2013)

and LSA (LSA 2009a, LSA 2009b). Biological Resource Reports summarizing the methods for the field surveys are provided in **Appendix D**.

4.4.1.3 *Plant Communities and Wildlife Habitats*

Vegetation community descriptions were based on the vegetation classifications present in the WRA Biological Resources Report (WRA 2013) (**Appendix D**). The WRA Biological Resources Report described vegetation communities using classifications present in the second edition of *A Manual of Vegetation* (Sawyer et al. 2009) and *Preliminary Descriptions of Terrestrial Natural Communities of California* (Holland 1986).

4.4.1.4 *Special-Status Species Habitat Evaluation*

For the purposes of this assessment, special-status species include those plants and animals listed, proposed for listing or candidates for listing as threatened or endangered by the USFWS or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) under the Federal Endangered Species Act (FESA); those listed or proposed for listing as rare, threatened or endangered by the CDFW under the California Endangered Species Act (CESA); animals designated as fully protected or California species of special concern (CSSC) by the CDFW; birds protected by the USFWS under the Migratory Bird Treaty Act (MTBA), USFWS Bald and Golden Eagle Protection Act (BGEPA) and/or by the CDFW under Fish and Game Code Sections 3503 and 3513; and plants occurring on List 1A, List 1B, List 2, List 3, and List 4 of the CNPS Inventory.

The potential occurrence of special-status plant and animal species in the project area was initially evaluated by developing a list of special-status species that are known to or have the potential to occur in the vicinity of the project area based on a search of current database records (e.g., CNDDDB and CNPS Electronic Inventory records), review of the Biological Reports from WRA and LSA (LSA 2009a, LSA 2009b, WRA 2013), and review of the USFWS list of federal endangered and threatened species. The potential for occurrence of those species included on the list was then evaluated based on the habitat requirements of each species relative to the habitat conditions documented in the project area. Special-status species not expected to occur in the project vicinity because either they have not been documented within 5 miles of the project area and the habitat elements they require are not present in the project area, or the project area is not within the range of the species were eliminated from consideration and are not discussed further in this chapter.

All other species were evaluated further for its potential to occur on or in the immediate vicinity of the project area according to the following criteria:

- **No Potential:** CNDDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area.
- **Low Potential:** The CNDDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.

- **Moderate Potential.** Species does not meet all terms of High or Low category. For example: CNDDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.
- **High Potential:** The CNDDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. All or most of the components representing suitable habitat are present within the project area.
- **Present.** Species was observed on the project area, or recent species records (within five years) from literature are known within the project area.

The list of special-status animals and plants that have the potential to occur in the vicinity of the project area, their habitat requirements, and a ranking of potential for occurrence in the project area is included in **Appendix D**.

4.4.2 Environmental Setting

4.4.2.1 Regional Description

The project area is located in the Tolay Lake Valley in Sonoma County between Lakeville Highway and State Route (SR-) 121 and north of SR-37 (Figure 3-1 and Figure 3-2). Tolay Lake Valley is an elevated valley bounded by the Sonoma Mountains to the northeast and low line hillsides that border the valley to the southwest. These serve as a natural barrier from Petaluma Valley directly to the west. The Tolay Lake Valley plays host to a diverse ecosystem. The rich soils and diverse biologic resources of the Tolay Lake Valley have been utilized for an array of needs from the ceremonial and resource-gathering of Native Americans to the modern farming and ranching of the Cardoza and other ranching families, and most recently for recreation and reflection of Sonoma County residents and other visitors to the project area.

Prior to European settlement of Sonoma County, the Tolay Lake Valley was utilized by several groups of Native Americans for settlement, resource-gathering, and ceremonial events. Following European settlement, the valley has been utilized for ranching, farming, and rural residences. The valley was part of the General Mariano Guadalupe Vallejo's Mexican land-grant, located between his Petaluma Adobe in today's City of Petaluma, and the Mission San Francisco de Solano and his private residence in today's City of Sonoma. During this period, the valley was likely grazed by cattle under the auspice of the land-grant. Since the Vallejo era, portions of the valley have been under various ownership, most recently the Cardoza family (LSA 2008b). A variety of agricultural activities including grazing, potato farming, hay farming, and pumpkin farming have been conducted in the modern era (LSA 2008b).

The dominant natural feature within Tolay Lake Valley is Tolay Lake, a naturally occurring seasonal waterbody, which when unaltered, flooded in the wet season, followed by a draw down in spring and early summer. The lake basin resulted from an elevated depression within Tolay Creek. A natural dam formed Tolay Lake, which exists about 14 feet higher than the lakebed. Presumably, the lake ponded water due to being situated on heavy clay soils (i.e., Clear Lake clay soil series) with very slow permeability combined with the natural earthen dam that

prevented rapid outflow. It is likely that the lake experienced pronounced interannual variation in the hydroperiod, with dryer years exposing the lakebed from complete draw down, while wetter years witnessed inundated conditions through the summer (Baye 2014).

In an attempt to increase arable land, Tolay Lake was drained by removing the natural earthen dam and drainage ditches were dug to reroute surface flows. Historic records indicate that Tolay Lake was incrementally drained through periodic dynamiting of the natural dam. Various sources put the original draining of Tolay Lake anywhere from the 1860s to the 1880s (MIG, Inc. 2016). Stock ponds including, but not limited to, Fish Pond and Vista Pond, have been constructed to capture water for summer irrigation and to provide flood control within the Tolay Lake Valley inadvertently creating wildlife habitat.

The project is located within the North Coast Range, a floristic sub-region of the California Floristic Province's Northwestern California region. The North Coast Range sub-region is the largest subregion in the Northwestern California region and includes widespread serpentine (Jepson Flora Projects 2016).

4.4.2.2 Project Site Description

The project area is located at 5869 Cannon Lane, which is approximately 5 miles southeast of the City of Petaluma, within 30 minutes of Santa Rosa and Sonoma Valley, and within 60 minutes of Marin, Napa, and Sonoma counties. Primary access to the project area is from Cannon Lane, which is a Sonoma County-maintained road off Lakeville Highway.

The project area is comprised of two properties in Sonoma County: Tolay Lake and Tolay Creek Ranch. The northernmost property (i.e., Tolay Lake) is 1,737 acres in area and is located in a valley between two ridgelines. It is characterized by rolling hills, moist grasslands, wetlands, riparian and upland habitat, and remnant stands of oak trees. The southernmost property is the 1,665-acre Tolay Creek Ranch, which is currently owned by the Sonoma County Land Trust. This property abuts the southern boundary of the current Tolay Lake property on the north, and Highway 121 on the south. The project area ranges in elevation between 100 and 800 feet above sea level and is mainly vegetated with native and non-native grasslands, forbs, and tree groves.

The project area is located in a valley between two ridgelines, with terrain characterized by rolling hills, moist grasslands, wetlands, riparian and upland habitat, and remnant stands of oak (*Quercus* sp.) trees. The Tolay Lake property is named for the approximately 200-acre shallow seasonal lake (i.e., Tolay Lake) in the center of Tolay Lake Valley. Streams, creeks, irrigation ditches, springs and seeps, marshes and swamps, and artificial ponds form other water features on site. Tolay Creek, which drains the valley and eventually flows south towards San Pablo Bay, is located in the project area. In total the project area include 4.5 miles of Tolay Creek.

The Park Complex is located in the former Cardoza Ranch, and includes homes, barns, and corrals. The Park Complex is located in the northwest corner of the project area on the Tolay Lake property, just west of Tolay Lake. Currently, portions of the project area are also utilized for cattle grazing with row crop agriculture centered near the Park Complex.

The project area provides a habitat core and several linkages, including from Cougar Mountain to Sonoma Mountain, and between the Petaluma and Sonoma-Napa marshes. The northern portion of the Park (i.e., Tolay Lake) is within the Marin Coast to Blue Ridge Critical Linkage. The Marin Coast to Blue Ridge Critical Linkage is an important wildlife corridor that spans three

counties (i.e., Marin, Sonoma, and Napa counties) along several tendrils of habitat. It extends from the Blue Ridge-Berryessa region in northeastern Napa County west across the Mayacamas Mountains on the Napa-Sonoma County line and then south and west to Point Reyes National Seashore in Marin County.

Surrounding Land Uses

The project area is in the southern extent of the Sonoma Mountains, between Petaluma Valley/Marsh and Sonoma Valley. Stage Gulch Road/Highway 116 is located to the north, Lakeville Highway to the west, Arnold Drive/Highway 121 to the east, and Highway 37 to the south. The cities of Petaluma, Sonoma, and Novato are approximately five miles northwest, northeast, and southwest, respectively, of the project area.

The project area is adjacent to vineyards to the north, northwest, and east. The project area is bordered on the south by Sonoma Raceway (formerly Sears Point Raceway and Infineon Raceway), a developed professional/amateur auto racetrack. The Petaluma and Sonoma-Napa marshes are located to the west and east of the project area, respectively. Cougar Mountain is situated to the south of the marshes and located beyond that, are the tidal marshes and diked baylands of Sears Point. The remainder of the project area is immediately surrounded by contiguous habitats, primarily open grasslands in grazing production and rural residential.

Several thousand acres of conserved lands, through ownership or easement, are adjacent to or within the immediate vicinity of the project area. The USFWS manages the San Pablo Bay National Wildlife Refuge which includes tidal portions of lower Tolay Creek, and the CDFW manages wildlife refuges along the Petaluma River and Marsh. The Sonoma County Agricultural Preservation and Open Space District holds ownership and/or easements over Flocchini Ranch, Sleepy Hollow Dairy, and Cougar Mountain, which are in the vicinity of the project area. In addition to the Tolay Creek Ranch, the Sonoma Land Trust manages several contiguous parcels on either side of Highway 37 in the Sears Point vicinity.

Climate and Watershed

The project area is within a mildly seasonal Mediterranean climate, with warm-hot dry summers and cool wet winters. The average annual maximum temperature for Sonoma (CA8351)¹ are 74.7 degrees Fahrenheit (°F) and the average annual minimum temperature is 44.7 °F. The warmest months are June through September, while the coolest months are December and January (USDA 2016a).

Precipitation in the project area averages 30.64 inches annually (USDA 2016a). The majority of rain falls between November and March, with little to no rainfall in the other months. Rainfall replenishes the surface and ground water supply, and abundant spring and seep sources from the surrounding hillsides serve as a water source.

Fog is common in the project area, with late spring and summer westerly/southerly advection fog arising from the Pacific Ocean flowing over the Marin Hills and north across San Pablo Bay in early evening and typically receding by midday. Low-lying fall and winter convection fog is common, particularly with presence of Tolay Lake. Very rarely winter precipitation falls as

¹ The Sonoma weather station is approximately 6 miles from the project area.

snow, but typically is less than one inch and does not regularly remain for a period greater than 24 hours.

The project area resides almost entirely within the Tolay Creek watershed, with the exception of the western boundary including the headwaters of several unnamed drainages in the Petaluma River watershed. The Tolay Creek watershed in Sonoma County is a subbasin of the Sonoma Creek hydrologic area located in the San Francisco Bay hydrologic region. The Tolay Creek watershed is comprised of 13 tributaries and the watershed drains an approximately 8.3 square mile basin. The headwaters of Tolay Creek emerge north of the project area boundary, very near Highway 116 (Stage Gulch Road). Several small tributaries and one sizable tributary emerge off-site and enter lower Tolay Creek from the adjacent Roche property southeast of the project area. Tolay Creek enters the Sonoma Marsh complex immediately off-site to the southeast, meandering south and entering San Pablo Bay approximately six river miles from the project area boundary.

Geology and Soils

The geology within the vicinity of the project area consists of several geologic formations, faults, landslides, and contact zones (California Department of Conservation [CDC] 2002). Several faults are present throughout the project area, with the Lakeville, Roche-Cardoza, and Rogers Creek faults being the most prominent. The Lakeville and Rogers Creek faults run the length of the West Ridge and East Ridge, respectively, each periodically entering the project area. The Roche-Cardoza fault breaks from the Rogers Creek Fault, entering the southern portion of the project area (Koenig 1963, CDC 2002).

The northern portion of the project area, including the Tolay Lake bed, is underlain primarily by Holocene basin deposits composed of fine-grained alluvium. The central-eastern portion of the project area is underlain primarily by the Donnell Ranch Volcanics composed of basalt and basaltic andesite, breccia, scoria, and rhyolite flows and tuffs. The southeastern portion of the project area is underlain primarily by the Petaluma Formation composed of predominantly of lacustrine and fluvial deposits of siltstone, sandstone, shale, and conglomerate, with minor inclusions of silicified tuff, chert, and limestone. The southwestern portion of the project area is underlain primarily by Jurassic period serpentinitized ultramafic rock. The central-west and northwestern portion of the project area is underlain primarily by the Franciscan complex composed of sandstone, altered mafic volcanics, chert, gabbro, and schist and semischist (CDC 2002).

The regional complex geology contributes to the formation of a diversity of soil structures, textures, chemistry, and depths contributing to the often pronounced and diverse vegetation communities within the project area. The *Soil Survey of Sonoma County* (USDA 1977) indicates the presence of 13 soil mapping units composed of seven soil series. Table 4.5-1 summarizes the soil mapping units, including slope class, hydric rating (USDA 2016b), parent material (mineral constituent of soil), soil chemistry, drainage, and notes on the ecologic characteristics. The predominant soil type in the project area is Diablo Clay.

Vegetation communities and plant species are often closely associated with the physical characteristics of soils including parent material (e.g., serpentinite), soil chemistry (e.g., alkaline), and soil texture (e.g., clay). Therefore, the complex geology and diversity of soil types

within the project area, along with microclimate conditions are directly correlated with the potential for the presence of special-status plant species and sensitive vegetation communities.

4.4.2.3 Vegetation

Vegetation communities are assemblages of plant species defined by species composition and relative abundance, which occur together in the same area. These natural communities are based on the classification as presented in *A Manual of California Vegetation* (Sawyer et al. 2009) and *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). Botanical nomenclature follows the *Jepson Manual* (Hickman 1993). Vegetation and habitat type are prime factors in determining the suitability of a site for use by certain wildlife species and the occurrence of certain plant species. The following subsections provide descriptions of each habitat type and/or vegetation community and the location of each habitat within the project area. Table 4.5-2 summarizes each habitat type and/or vegetation community. Biological Resource Reports for the project area (LSA 2009a, LSA 2009b, WRA 2013) are provided in **Appendix D**. Representative photographs of the project site are located within the Biological Resource Reports (**Appendix D**).

Developed and Disturbed Areas

Developed and disturbed areas are not specifically defined as a vegetation community (Holland 1986, Barbour et al. 2007, Sawyer et al. 2009); however, these areas tend to be composed of non-native and invasive plant species, and often provide habitat for native wildlife species. Within the project area, approximately 23 acres of developed and disturbed habitat is present primarily in around the Park Complex, as well as in and around roads, bridges, and other infrastructure throughout the project area.

Developed and disturbed areas within the project area are not composed of documented vegetation alliances, but do host a suite of non-native plant species. Native species are essentially absent from these areas. Several ornamental species were observed but not identified to species in and around the Park Complex. Naturalized, and often invasive, plant species identified include, but are not limited to, blackwood acacia, common fig (*Ficus carica*), black mustard, charlock (*Sinapis arvensis*), sweet fennel (*Foeniculum vulgare*), and bull mallow (*Malva nicaeensis*). The presence and persistence of these disturbance-adapted, invasive species poses a threat to the native habitats throughout the project area by providing a seed source that can be transported from the Park Complex and other disturbed areas. Although somewhat diminished in quality, developed and disturbed areas can offer some wildlife habitat values, as described below.

Wildlife Values of Developed and Disturbed Areas

Wildlife within developed areas is typically more habituated to repeated human activity, and often common in urban to suburban settings. Ornamental vegetation, buildings, and other infrastructure provide nesting and roosting sites for a variety of birds including barn owl, black phoebe (*Sayornis nigricans*), barn swallow (*Hirundo rustica*), house finch (*Carpodacus mexicanus*), and American goldfinch (*Carduelis tristis*).

Western fence lizard, southern alligator lizard (*Elgaria multicarinata*), and gopher snake commonly forage in around developed areas for insects and small vertebrates, while skunk, raccoon (*Procyon lotor*), and Virginia opossum (*Didelphis virginiana*) will frequently occupy abandoned or lightly used barns and other out-buildings. Garden vegetables and domestic ornamentals are often an attractant for black-tailed deer, which likely browse nocturnally and at sunset/sunrise in the developed/disturbed areas when human activity is low.

Upland Communities

Woodlands and Groves

The native woodland vegetation in the project area consists of coast live oak woodland, valley oak woodland, riparian woodland, or quite often, a combination of these vegetation types. Woodlands are depicted on Figure 3-8 of the Project Description. Non-native trees in the project area consist of blue gum eucalyptus (*Eucalyptus globulus*), black acacia (*Acacia melanoxylon*), and Monterey cypress (*Cupressus macrocarpa*).

Woodlands and groves are largely confined to north-facing slopes, deep stream canyons, along lower Tolay Creek, and adjacent to the Park Complex. Riparian woodland is discussed in more detail in Section: Aquatic Communities.

Cismontane Woodlands

Cismontane woodland is broadly defined as vegetation communities typically dominated by broadleaved trees with relatively open canopies located west of the Sierra Nevada crest. These vegetation communities have been described in further taxonomic detail to the vegetation alliance level, which in the project area, includes coast live oak woodland, valley oak woodland, California buckeye woodland, and blue gum groves (Sawyer et al. 2009).

Table 4.4-1: Soil Mapping Units in the Project Area

Soil Map Unit (map code)	Slope Class	Hydric (Sonoma County)	Parent Material & Chemistry	Drainage, Runoff, & Permeability	Ecological Notes
Clear Lake clay loam (CcA)	0-2%	Yes	Alluvium, sandstone and shale Moderately alkaline (pH 8.0)	Poorly drained Negligible to high runoff Slow to very slow permeability	May support clay associated rare plants High potential to support wetlands Native grasses and forbs, non-native annual grasses Low erosion potential (neutral slopes)
Diablo clay (DbC)	2-9%	Yes	Residuum, sedimentary rock Moderately alkaline (pH 8.0)	Well drained Slow runoff (dry), medium to rapid (wet) Slow permeability	May support clay associated rare plants; May support wetlands Annual grasses and forbs Moderate-high erosion potential (slopes)
Diablo clay (DbD)	9-15%	No			
Diablo clay (DbE)	15-30%				
Diablo clay, eroded (DbE2)	15-30%				
Diablo clay, eroded (DbF2)	30-50%				
Goulding-Toomes complex (GoF)	9-50%	No	Residuum, tuff breccia, basalt, andesite Slightly acid (pH 6.0)	Well-somewhat excessively drained Medium-rapid runoff Moderate permeability	May support volcanic associated rare plants; May support seep wetlands Oaks, scrub, grasses and forbs Moderate-high erosion potential (slopes)
Haire clay loam (HcD)	9-15%	No	Alluvium, sedimentary rock Slightly acid (pH 6.0)	Moderately well drained Slow-rapid runoff Very slow permeability	May support sandstone associated rare plants May support seasonal wetlands (low slopes) Annual grasses and forbs Low-moderate erosion potential

Table 4.4-1: Soil Mapping Units in the Project Area

Soil Map Unit (map code)	Slope Class	Hydric (Sonoma County)	Parent Material & Chemistry	Drainage, Runoff, & Permeability	Ecological Notes
Laniger loam (LaC)	5-9%	No	Residuum, rhyolite Medium to slightly (pH 6.0-6.5)	Well-somewhat excessively drained Medium-rapid runoff and permeability	May support volcanic associated rare plants May support seep wetlands Oaks, manzanita, ceanothus, and grasses Moderate-high erosion potential (slopes)
Laniger loam (LaD)	9-15%				
Laniger loam, eroded (LaE2)	15-30%				
Montara cobbly clay loam (MoE)	2-30%	No	Residuum, serpentinite Moderately alkaline (pH 8.0)	Well drained Medium-high runoff Moderately slow permeability	May support serpentine associated rare plants May support seep wetlands Native grasses and forbs Low-moderate erosion potential (slopes)
Gullied Land (GuF)	varies	No	mixed	Well drained	Unlikely to support rare plants (disturbance) May support swale wetlands and non-wetland waters Non-native and ruderal plants High-extreme erosion potential
Source: USDA 1972; USDA 2016.					

Table 4.4-2: Summary of Project Area Biological Communities

Biological Community	Vegetation Structure & Type ¹	Vegetation Alliance ²	Sensitive Status ³
Disturbed and Developed Areas	--	--	No Rank
Non-wetland Waters	--	--	Section 404/401 CWA; Section 1600 California Fish and Game Code
Wetlands	Marshes and Swamps	Hardstem bulrush marshes (<i>Schoenoplectus acutus</i> Herbaceous Alliance)	CDFW Rank G5 S4; Section 404/401 CWA
		Cattail marshes (<i>Typha angustifolia</i> Herbaceous Alliance)	CDFW Rank G5 S5; Section 404/401 CWA
		Saltmarsh bulrush marshes (<i>Bolboschoenus maritimus</i> Herbaceous Alliance)	CDFW Rank G4 S3; Section 404/401 CWA
		Salt grass flats (<i>Distichlis spicata</i> Herbaceous Alliance)	CDFW Rank G5 S4; Section 404/401 CWA
		**Water smartweed marsh (<i>Persicaria amphibia</i> Provisional Herbaceous Alliance)	Section 404/401 CWA
	Vernal Pools	Common spikerush marshes (<i>Eleocharis macrostachya</i> Herbaceous Alliance)	CDFW Rank G4 S4; Section 404/401 CWA
		**California semaphore grass patches (<i>Pleuropogon californicus</i> Provisional Herbaceous Alliance)	Section 404/401 CWA

Table 4.4-2: Summary of Project Area Biological Communities

Biological Community	Vegetation Structure & Type ¹	Vegetation Alliance ²	Sensitive Status ³
	Meadows and Seeps	Meadow barley patches (<i>Hordeum brachyantherum</i> Herbaceous Alliance)	CDFW Rank G4 S3?; Section 404/401 CWA
		**California semaphore grass patches (<i>Pleuropogon californicus</i> Provisional Herbaceous Alliance)	Section 404/401 CWA
		Pacific rush marshes (<i>Juncus effusus</i> Herbaceous Alliance)	CDFW Rank G4 S4?; Section 404/401 CWA
		Common rush marshes (<i>Juncus patens</i> Provisional Herbaceous Alliance)	CDFW Rank G4? S4?; Section 404/401 CWA
		Common monkeyflower seeps (<i>Mimulus guttatus</i> Herbaceous Alliance)	CDFW Rank G4? S3?; Section 404/401 CWA
		**Mixed-annual wetland forb patches (Undocumented Herbaceous Alliance)	Section 404/401 CWA
Riparian Area	Riparian Woodland	Red willow thickets (<i>Salix laevigata</i> Woodland Alliance)	CDFW Rank G3 S3; Section 404/401 CWA (partial); Section 1600 California Fish and Game Code
Woodlands and Groves	Cismontane Woodland	Coast live oak woodlands (<i>Quercus agrifolia</i> Woodland Alliance)	CDFW Rank G5 S4
		Valley oak woodlands (<i>Quercus lobata</i> Woodland Alliance)	CDFW Rank G3 S3

Table 4.4-2: Summary of Project Area Biological Communities

Biological Community	Vegetation Structure & Type ¹	Vegetation Alliance ²	Sensitive Status ³
		California buckeye groves (Aesculus californica Woodland Alliance)	CDFW Rank G3 S3
		Blue gum groves (Eucalyptus globulus Semi-natural Woodland Stands)	No Rank
	Closed-cone Coniferous Forest	Monterey cypress stands (Hesperocyparis macrocarpa Woodland Alliance)	No Rank*
Rock Outcrops	Coastal Scrub	Poison oak scrubs (Toxicodendron diversilobum Shrubland Alliance)	G4 S4
Grasslands	Valley and Foothill Grassland (native)	Purple needlegrass grasslands (Stipa pulchra Herbaceous Alliance)	G4 S3?
		California oat grass prairies (Danthonia californica Herbaceous Alliance)	CDFW Rank G4 S3
		Creeping wild rye turfs (Elymus triticoides Herbaceous Alliance)	CDFW Rank G4 S3
	Wildflower Fields	Mixed wildflower fields (Mixed native wildflowers Undocumented Herbaceous Alliance)	No Rank
		Johnny jump-up wildflower fields (Viola pedunculata Undocumented Herbaceous Alliance)	No Rank
		Cream cup wildflower fields (Platystemon californicus Undocumented Herbaceous Alliance)	No Rank

Table 4.4-2: Summary of Project Area Biological Communities

Biological Community	Vegetation Structure & Type ¹	Vegetation Alliance ²	Sensitive Status ³
	Valley and Foothill Grassland (non-native)	Italian rye grass grasslands (Festuca perennis Semi-natural Herbaceous Stands)	No Rank
		**Medusa head patches (Elymus caput-medusae undescribed Semi-natural Herbaceous Stands)	No Rank
		Slender wild oat grasslands (Avena barbata Semi-natural Herbaceous Stands)	No Rank
		Soft chess grasslands (Bromus hordeaceus Semi-natural Herbaceous Stands)	No Rank
		Dogtail grass grasslands (Cynosurus echinatus Semi-natural Herbaceous Stands)	No Rank

Source: WRA, 2013

¹Source: CNPS Vegetation Mapping Classification (CNPS 2016)

²Source: *A Manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009)

³Sensitive Status based on Section 404/401 of the Clean Water Act (CWA); Section 1600 of the California Fish and Game Code; and/or CDFW Sensitive Natural Communities Ranking

*Considered sensitive in native stands only highly restricted to Monterey Peninsula; community here represents planted stands not indicative of the natural vegetation community/alliance described in the literature

**Not previously described in Sawyer et al. 2009 or elsewhere

Coast live oak woodlands

Coast live oak (*Quercus agrifolia*) woodlands are known throughout coastal California on a variety of substrates, topography, and microclimates (Sawyer et al. 2009). The overstory of this vegetation community dominated by coast live oak with subdominant California bay (*Umbellularia californica*) and scattered individuals of California buckeye (*Aesculus californica*) located along lower Tolay Creek and the lower margins of tributary streams. Higher on slopes, these woodlands contain scattered individuals of Pacific madrone (*Arbutus menziesii*) and California black oak (*Quercus kelloggii*). Many coast live oak trees exceed four feet in diameter at breast height (DBH; 4.5 feet above ground) and approach 30 feet in height.

The understory of coast live oak woodlands in the northern areas of the project area are dominated by herbaceous species with very little shrub cover, while those in the southern portions contained a higher proportion of shrubs. Additionally, a cursory observation of oak saplings/seedlings suggests a higher rate of regeneration in the south. Shrub species include upright snowberry (*Symphoricarpos album*), poison oak (*Toxicodendron diversilobum*), California coffeeberry (*Frangula californica*), and California rose (*Rosa californica*). Herbaceous cover is dominated by miner's lettuce (*Claytonia perfoliata*), Pacific sanicle (*Sanicula crassicaulis*), hedge nettle (*Stachys ajugoides*), and Dutchman's pipe (*Aristolochia californica*).

Valley oak woodlands

Much reduced from their original extent, valley oak woodlands (*Quercus lobata*) are located throughout the Central Valley, valleys in the Coast Ranges, and in the Transverse Range where deep clay soils have accumulated (Sawyer et al. 2009). Located within the project area on the lower reach of Tolay Creek, this woodland or savannah is dominated by valley oak. Leaf shape suggest that many of these oaks may be hybrids between Oregon white oak (*Quercus garryana*) and valley oak, both within white oak subgenus (*Lepidobalanus*) (West Coast Watershed 2009). Individual valley oak trees in the project area reach an estimated height of 40 to 50 feet, and have a DBH between 2 and 4 feet. Mistletoe (*Phoradendron serotinum*) is frequent within the crown and branches of the trees. The valley oak trees in the project area also frequently contain cavities from broken and dropped limbs.

Occasional tree and shrub associates in the valley oak woodland habitat in the project area include coast live oak, willows (*Salix* spp.), California rose, and coyote brush (*Baccharis pilularis*). The understory is dominated by non-native annual grasses, horehound (*Marrubium vulgare*), and dwarf nettle (*Urtica urens*).

California buckeye woodlands

Isolated California buckeye woodlands are common throughout coastal California and the Sierra Nevada Foothills (Sawyer et al. 2009). This woodland habitat is confined to several small rock outcrops in the project area and; therefore, the overstory composed solely of California buckeye. Individual trees are of average size with DBH of up to two feet, and heights less than 20 feet. Mistletoe is prevalent in the crown and branches of the trees, but limb loss appears minimal.

The understory of the California buckeye woodland habitat is composed of large rocks, thin soils, and herbaceous species. The only shrub within this habitat is low-growing poison oak, while the herb layer is dominated by weedy species including dwarf nettle, Italian thistle (*Carduus pycnocephalus*), and yellow star thistle (*Centaurea solstitialis*).

Blue gum groves

Blue gum groves are common in southern and western Sonoma County where trees were planted for shelterbelts and woodlots (Sawyer et al. 2009). The project area contains several groves of planted blue gum, with the largest located immediately west of the Park Complex. The trees are relatively large with heights reaching an estimated 50 to 70 feet and a DBH of 4 to 6 feet. Blue gum trees are prone to windthrow/windsnap causing a large accumulation of limbs and downed trees as well as shredded bark in lower limbs and bole forks within the project area.

The overstory of this community is dominated by a single species, blue gum, and the understory contains no shrubs and few herbs due to heavy leaf/bark litter, a dense nearly complete overstory canopy, and a possible allelopathic effect. Scattered herbs include dogtail grass (*Cynosurus echinatus*), ripgut brome (*Bromus diandrus*), and yellow bedstraw (*Galium murale*).

Closed-cone Coniferous Forest

Closed-cone coniferous forests are stands of dense, typically even-aged, fire dependent coniferous species often associated with nutrient deficient soils (Holland 1986, CNPS 2016). Although termed “forest” in the literature (Holland 1986, Sawyer et al. 2009), the Monterey cypress dominated area may more appropriately be deemed a grove as the dominant species, Monterey cypress, does not occur naturally in Sonoma County and the extent of this community is limited to a few acres or less.

Monterey cypress groves

Native Monterey cypress groves are known only from relict stands on the Monterey Peninsula, but have been planted widely throughout coastal California (Holland 1986, Sawyer et al. 2009). One small grove of Monterey cypress is present in the project area along the banks of lower Tolay Creek, which may be indicative of an old homestead. The trees in this area are large with an estimated height of 40 feet and DBH of 2 to 3 feet. The overstory is dominated by a single species, Monterey cypress. The understory is relatively sparse due to a dense nearly closed canopy, but includes dogtail grass, Italian thistle, miner’s lettuce, and hedge nettle.

Wildlife Values of Woodlands and Groves

Woodlands and groves throughout California provide species-rich wildlife habitat, primarily due the production of acorns and other fruits, as well as the provision of cover, nesting, and sheltered rearing areas. Acorns provide feed for numerous species of birds, and are grazed upon by black-tailed deer (*Odocoileus hemionus columbianus*), western gray squirrels (*Sciurus griseus*), and feral pig (*Sus scrofa*), among other species. Feral pigs have been infrequently observed near the project area. Mature trees and snags provide potential roost sites for bat species known to occur in the region, including Yuma myotis (*Myotis yumanensis*), little brown myotis (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), and pallid bat (*Antrozous pallidus*); however, none have been positively identified (LSA 2009a, LSA 2009b). Additionally, long-tailed weasel (*Mustela frenata*) and striped skunk (*Mephitis mephitis*) are closely, but not exclusively, associated with woodlands and groves.

Reptiles and amphibians often shelter within woodlands and groves for thermo-regulation during warm periods, because evaporative pressure is reduced beneath the shaded canopy (Block and Morrison 1998). Leaf litter, downed branches, and rock outcrops provide cover and forage

habitat for herpetofauna. Salamander species typically observed in California woodlands include slender salamander (*Batrachoseps attenuatus*) and arboreal salamander (*Aneides lugubris*), and common reptiles expected to inhabit or utilize woodlands and groves include the western skink (*Plestiodon skiltonianus*), southern alligator lizard (*Elgaria multicaranata*), ring-necked snake (*Diadophis punctatus*), and sharp tailed snake (*Contia tenuis*).

Dozens of birds are closely associated with and dependent upon oak woodlands. Large trees, including oaks, provide cover and nest sites for both cup-nesting and cavity-nesting birds, and frequently utilized as cache sites by acorn woodpeckers (*Melanerpes formicivorus*). Several species appear to utilize the project area's oak woodlands including, but not limited to, Bullock's oriole (*Icterus bullockii*), band-tailed pigeon (*Patagioenas fasciata*), Stellar's jay (*Cyanocitta stelleri*), oak titmouse (*Baeolophus inornatus*), brown creeper (*Certhia americana*), winter wren (*Troglodytes hiemalis*), and spotted towhee (*Pipilo maculatus*) (LSA 2009b). Raptors, such as red-tailed hawk (*Buteo jamaicensis*) and red-shouldered hawk (*Buteo lineatus*), typically construct nests in large trees within woodland habitats. In March 2006, LSA observed a pair of red-tailed hawks in courtship above an oak woodland in the project area (LSA 2009b). In addition, nesting behavior has been observed at the Park Complex eucalyptus grove; however, specific nest sites were not documented. Golden eagles (*Aquila chrysaetos*) have also been observed within and around the project area (WRA 2013), and may utilize large oak or blue gum trees in midslope positions for nesting, although there have been no confirmed golden eagle nests within the project area.

Grasslands

Valley and Foothill Grasslands

Valley and foothill grasslands are the dominant vegetation type within the project area (Figure 4-1). This habitat type is distinguished here from meadows by their species composition, soil texture and moisture regime, and landscape position. The majority of valley and foothill grassland habitat is dominated by non-native annual Mediterranean grasses introduced to California in 19th century; however, stands of remnant native grasslands and wildflowers are located throughout the project area. The once extensive native grasslands and wildflower fields diminished rapidly in California with the overgrazing by sheep and cattle followed by severe drought in the 19th century, and it is estimated that 10 percent of these habitats remain (McNaughton 1968, Jackson 1985). Consequently, native grasslands and wildflower fields frequently are considered sensitive biological resources by CDFW (CDFW 2009).

Purple needlegrass grassland

Purple needlegrass (*Stipa pulchra*) grasslands are known throughout the Coast Ranges, South Coast, western Transverse Range, and the Sierra Nevada Foothills (Holland 1986, Sawyer et al. 2009). These grasslands are often dominated by a suite of non-native grasses, but purple needlegrass composes at least 10 percent relative cover within these stands (Sawyer et al. 2009). Within the project area these grasslands are overwhelmingly located on slopes underlain by shallow, well-drained soils, on both west- and east-facing aspects. Additionally, extensive purple needlegrass grasslands are present on serpentine substrate in the remote southwest portion of the Tolay Creek Ranch.

Although not completely devoid of non-native annual grasses, purple needlegrass grasslands contain relatively high densities of the native perennial grasses including purple needlegrass, foothill needlegrass (*Stipa lepida*), blue wild rye (*Elymus glaucus*), California onion grass (*Melica californica*), and California oat grass (*Danthonia californica*). Native forbs are typically more prevalent within these grasslands than in non-native grasslands, and typically include miniature lupine (*Lupinus bicolor*), sky lupine (*Lupinus nanus*), and yellow tarweed (*Hemizonia congesta* ssp. *lutescens*), and hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*).

California oat grass prairie

California oat grass prairies are known from coastal sites in Northern and Central California, the Coast Ranges, Sierra Nevada Foothills (Holland 1986, Sawyer et al. 2009). In the project area, this community is located sporadically in Tolay Lake Valley on clay-rich soils where it intergrades with rush (*Juncus* sp.) marshes and wetlands and on coarser textured soils of slopes where it intergrades with purple needlegrass grassland and non-native grassland habitats.

California oat grass prairies/grasslands in the lower parts of Tolay Lake Valley are dominated by California oat grass, with a mix of meadow barley (*Hordeum brachyantherum*), creeping wild rye (*Elymus triticoides*), sedges (*Carex* sp.), and rushes. These areas exhibit many of the same elements as meadows/moist grasslands; however, soils and or wetland hydrology were not observed and are; therefore, considered upland grasslands. Those areas dominated by California oat grass on hillsides contain a greater mix of upland species including purple needlegrass, foothill needlegrass, and non-native grasses.

Creeping wild rye turfs

Creeping wild rye turfs are known from the South Coast, Humboldt Bay, the Bay Area, and Central Valley (Holland 1986, Sawyer et al. 2009). Creeping wild rye grows in areas of relative deep and moist soil. Similar to California oat grass prairie, these turfs intergrade with upland grasslands and meadows/moist grasslands, within the same topographic positions. These turfs contain a very similar suite of associated grasses as California oat grass prairies, but often are nearly a monotypic stand of creeping wild rye. In sparse stands, it often occurs with non-native species, such as, medusahead (*Taeniantherum caput-medusae*), Italian ryegrass (*Festuca perennis*), and soft chess (*Bromus hordeaceus*).

Non-native grasslands

Non-native grasslands are known throughout cismontane California on nearly all soil types and all topographic positions (Holland 1986, Sawyer et al. 2009). In the 19th Century, following severe drought and overgrazing, grasses from the Mediterranean region came to dominate existing native grasslands. Complete removal of woody cover in woodlands, savannahs, and scrublands can also result in a predominance of non-native annual grasslands, and historically was conducted to increase pasture and grazing lands. These grasslands are typically dominated by annual grasses, but can exhibit annual shifts in species dominance as well as can be dominated by non-native annual forbs in drought years. Because of the complex spatial and annual variability, classifying and mapping these grasslands at a given location typically only represents that year's dominant species, and therefore specific vegetation alliances are listed in Table 4.5-2, but detailed descriptions are not given.

Non-native grassland is by far the most prevalent community within the project area and is composed of several annual grasses including Medusa head, wild oats (*Avena* spp.), bromes (*Bromus* spp.), little rattlesnake grass (*Briza minor*), Italian rye grass, and barleys (*Hordeum* spp.). Non-native perennial grasses are present within these grasslands, often forming monotypic stands, and include common velvet grass (*Holcus lanatus*), dallis grass (*Paspalum dilatatum*), harding grass (*Phalaris aquatica*), and hood canary grass (*Phalaris paradoxa*).

During drought years, non-native grasslands can exhibit a higher coverage of native and non-native forbs, including lupines (*Lupinus* sp.), filarees (*Erodium* sp.), geraniums (*Geranium dissectum* and *Geranium molle*), spring vetch (*Vicia sativa*), shepherd's needle (*Scandix pectin-venensis*), clovers (*Trifolium dubium*, *Trifolium hirtum*, and *Trifolium subterraneum*), and milk thistle (*Silybum marianum*) (Knopps and Barthell 1996). Additionally, in areas with repeated disturbance or excessive grazing, very weedy species can come to dominate these grasslands, reducing forage production and wildlife values. Aggressive invasive non-native forbs and grasses include Medusa head, black mustard (*Brassica nigra*), radishes (*Raphanus raphanistrum* and *Raphanus sativum*), star thistles (*Centaurea calcitrapa* and *Centaurea solstitialis*), milk thistle, rough cat's-ears (*Hypochaeris radicata*), and bristly ox-tongue (*Helminthotheca echiodes*).

Native forbs persist within these grasslands, but do not form substantial stands or cover. Typically, these natives are hearty perennial species, particularly geophytes that can compete with the rapid growth of non-native annual grasses in the winter and spring, and include California poppy (*Eschscholzia californica*), Ithuriel's spear (*Triteleia laxa*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), California checkerbloom (*Sidalcea malviflora* ssp. *laciniata*), Fremont's star lily (*Toxicoscordion fremontii*), blue-eyed grass (*Sisyrinchium bellum*), Johnny jump-up (*Viola pedunculata*), and hillside morning glory (*Calystegia subacaulis* ssp. *subacaulis*).

Wildflower Fields

Wildflower fields

Mixed wildflower fields are known throughout Coastal California, the Great Valley, and Sierra Nevada Foothills, and attempts to document several specific vegetation alliances are currently underway (Holland 1986, Barbour et al. 2007, Sawyer et al. 2009). These communities are located on slopes and ridgelines and are typically situated on shallow soils and/or soils derived from serpentine thereby limiting the competition with non-native annual grasses. Wildflower fields within the project area are closely associated and often intergrade with purple needlegrass grassland. Three wildflower field alliances were identified within the project area including, cream cup (*Platystemon californicus*) wildflower fields, Johnny jump-up wildflower fields, and mixed wildflower fields (Figure 4-1).

As with purple needlegrass grassland, these fields contain non-native annual grasses including wild oats, bromes, and barleys, but the characteristic presence of native perennial and annual forbs which bloom throughout the spring and into summer, distinguish this community from native and non-native grasslands. Native perennial forbs within this habitat include Johnny jump-up, California poppy, Fremont's star lily, blue-eyed grass, hog fennel (*Lomatium utriculatum*), and sanicles (*Sanicula bipinnata* and *Sanicula bipinnatifida*). Spring annuals include miniature lupine, cream cups, soft blow wives (*Achyrrachaena mollis*), California goldfields (*Lasthenia californica*), rusty popcornflower (*Plagiobothrys nothofulvus*), coastal tidytips (*Layia*

platyglossa), Johnny-tuck (*Triphysaria eriantha* ssp. *eriantha*), owl's-clovers (*Castilleja densiflora* and *Castilleja exserta*), and a variety of clovers (*Trifolium* spp.). Often overlooked, the late spring and summer blooms of annual forbs includes yellow and white hayfield tarweeds, coast tarweed (*Madia sativa*), Monterey centaury (*Zeltnera muehlenbergii*), California dwarf flax (*Hesperolinon californicum*), winecup clarkia (*Clarkia purpurea* ssp. *quadrivulnaris*), and bluehead gilia (*Gilia capitata* ssp. *capitata*).

Wildlife Values of Upland Grasslands and Wildflower Fields

Grassland areas hosting high densities of wildflowers support butterflies, flies, bees, and other invertebrate pollinators. Opler's longhorn moth (*Adella oplerella*) are dependent upon cream cups, which are present sporadically throughout the grasslands in the project area, with particularly dense patches in areas underlain by serpentine substrate in the southwestern portion of Tolay Creek Ranch. The larvae of silverspot butterflies (*Speyeria zerene*) are dependent upon Johnny jump-ups, while the adults nectar on a variety of flowers, especially thistles and mints (*Mentha* spp. and *Monardella* spp.) (Shapiro and Manolis 2007).

Grasslands dominate the landscape of the project area and; therefore, provide the largest, contiguous habitat for wildlife. Dozens of common bird species forage in grasslands and several may ground nest including western meadowlark (*Sturnella neglecta*), grasshopper sparrow (*Ammodramus savannarum*), and California horned lark (*Eremophila alpestris actia*). Grasshopper sparrows and California horned larks may breed in and around the grasslands of project area based on behavior observed by LSA (2009a, 2009b). These species are more restricted in their distribution than many common grassland bird species and; therefore, their presence suggest relatively high quality grassland habitat of varying structure. Raptors often forage over grasslands for small mammals, birds, and insects. Raptors that have been observed or are assumed to be present in the project area include red-tailed hawk, northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), American kestrel (*Falco sparverius*), great horned owl (*Bubo virginianus*), and barn owl (*Tyto alba*). Other local bird species closely associated with grasslands include turkey vulture (*Cathartes aura*), loggerhead shrike (*Lanius ludovicianus*), western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), American crow (*Corvus brachyrhynchos*), Savannah sparrow (*Passerculus sandwichensis*), and red-winged blackbird (*Agelaius phoeniceus*). In addition, wild turkeys (*Meleagris gallopavo*) that were introduced to California typically utilize meadows and grasslands adjacent to woodlands for foraging and courtship.

Carnivorous mammals such as coyote (*Canis latrans*) and bobcat (*Lynx rufus*) forage widely in grasslands for small mammals and herpetofauna. Black-tailed deer and black-tailed jackrabbit (*Lepus californicus*) forage throughout every type of grassland and find shelter in adjacent woodlands or rock outcrops, and California ground squirrels (*Otospermophilus beecheyi*) create extensive burrow networks in grasslands and wildflower fields which are also utilized by reptiles, amphibians, insects, arachnids, and mollusks. Other small mammals such as deer mouse (*Peromyscus maniculatus*), California vole (*Microtus californica*), Botta's pocket gopher (*Thomomys bottae*), and western harvest mouse (*Reithrodontomys megalotis*) are assumed present within the grasslands in the project area.

Common reptiles typically found in grasslands in this region include western fence lizards (*Sclerophorus occidentalis*), Northern Pacific rattlesnake (*Crotalus oreganus oreganus*), common

garter snake (*Thamnophis sirtalis*), gopher snakes (*Pituophis catenifer*), and northern American racers (*Coluber constrictor*). Grassland areas adjacent to seasonal wetlands in this area could also support common amphibians, such as, northern Sierran tree frog (*Pseudacris sierra*) and western toad (*Anaxyrus boreas*).

Rock Outcrops

Rock outcrops can consist of boulder fields overlying and interspersed with shallow soils as well as large emerging rocks from shallow to deep soil. Organic debris combines with mineral soil in rock fissures to provide a rooting matrix for many shrubs and native forbs. Natural rock outcrops are located throughout the project area, particularly on the West Ridge, as well as historic rock walls, which function similarly to rock outcrops, on the East Ridge. These features often provide cover and nesting habitat for wildlife and host a rich flora. While several large rock outcrops are located in coast live oak woodlands and California buckeye woodlands, poison oak scrub is predominant vegetation alliance associated with these features within the project area, particularly when located in a larger grassland mosaic (Figure 4-1).

Poison oak scrubs

Poison oak scrubs are located throughout cismontane California in the Coast Ranges, Sierra Foothills, and western Transverse Range (Holland 1986, Sawyer et al. 2009). Although not uniquely associated with rock outcrops, these scrubs are often closely associated with exposed sandstone and chert outcrops, as well as rock walls in coastal Sonoma and Marin counties. The dominant shrub species is poison oak, but scattered individuals of sticky monkey (*Mimulus aurantiacus*), upright snowberry (*Symphoricarpos albus*), California rose, and California coffeeberry are located throughout this community. The herbaceous layer is generally richer than surrounding habitats, and composed of fiddleneck (*Amsinckia menziesii* and *Amsinckia intermedia*), shooting stars (*Dodecatheon hendersonii*), California polypody (*Polypodium californicum*), California maidenhair fern (*Adiantum jordanii*), coffee fern (*Pellaea andromedifolia*), gold back fern (*Pentagramma triangularis*), woodland star (*Lithophragma affine*), phacelia (*Phacelia* sp.), wild cucumber (*Marah fabacea*), and Dutchman's pipe.

Wildlife Values of Rock Outcrops

A variety of fossorial mammals and bird species have been observed utilizing rock outcrops. The prominent function offered by these features, particularly when surrounded by grassland habitat, is as perches for lookout and calling. The fissures within the rock and friable soil surrounding the rock outcrops are common refuge for California ground squirrels and burrowing owls (*Athene cunicularia*). Western fence lizards are a ubiquitous siting in and around rock outcrops where they can take shelter and thermo-regulate in shaded fissures during warm temperatures, and capture radiant heat in cooler temperatures.

Predators such as coyote and bobcat often stalk fossorial mammal prey in and around rock outcrops, and mountain lion (*Puma concolor*) may use larger, shrubby or wooded outcrops within the project area to ambush prey.

The generally dense wildflower displays in and around rock outcrops provide nectaring and larval host support for a variety of butterflies and moths, and the presence of Dutchman's pipe in

more shaded positions around coast live oak woodlands, presumably provides larval food for the pipevine swallowtail (*Battus philenor*).

Aquatic Habitats

Riparian

Riparian areas are broadly defined as vegetation assemblages associated with streams or other water bodies, predominantly composed of woody species, which is dependent upon the hydrology of the associated water body (CDFW 1994). Located throughout California, these systems provide numerous benefits to the associated water body including nutrient input, water cooling, bank stabilization, and flood control, as well as essential wildlife habitat. Within the project area, riparian areas are composed primarily of one vegetation alliance, red willow (*Salix laevigata*) thickets, but scattered coast live oak woodlands in the upper reaches of ephemeral and intermittent streams function as riparian areas as well (Figure 4-1).

Riparian Woodland

Red willow thickets

Red willow thickets have been documented in reaches of the Desert, and cismontane California with the exception of the North Coast (Sawyer et al. 2009). The overstory of this community varies in height and crown, but is generally greater than 15 feet tall and wider than 30 feet. The canopy is dominated by several willow species, with some individuals exceeding DBH of 12 inches. Larger, mature trees within the project area are located on the top of bank of Tolay Creek, Cardoza Creek, and other streams, with saplings often colonizing the lower banks and channel bottoms.

The canopy is dominated by a mix of red willow, arroyo willow (*Salix lasiolepis*), yellow willow (*Salix lasiandra*), and sandbar willow (*Salix exigua*), with occasional Fremont cottonwood (*Populus fremontii*), coast live oak, valley oak, and California buckeye. The understory is made up of scattered upright snowberry, California blackberry (*Rubus ursinus*), Himalaya blackberry (*Rubus armeniacus*), California rose, and mugwort (*Artemisia vulgaris*). Shrubs and perennial herbs of the understory are relatively scattered or absent due largely to a nearly closed canopy and/or extensive grazing.

Wildlife Values of Riparian Habitat

Riparian areas are recognized as important habitat for wildlife through the provision of cover, migration, foraging, nesting, breeding, and watering and are essential for many bird species in California. Riparian obligate passerines were not observed nesting in the project area despite the relatively well developed riparian habitat along Tolay and Cardoza creeks (LSA 2009a). Red-winged blackbirds and song sparrows (*Melospiza melodia*) were the two most abundant birds observed within the Tolay Creek watershed, along with single to few observations of warbling vireo (*Vireo gilvus*), orange-crowned warbler (*Vermivora celata*), Wilson's warblers (*Cardellina pusilla*), yellow warblers (*Setophaga petechia*), and willow flycatcher (*Empidonax traillii*); however, since breeding of these latter species was not confirmed they may have been migrants (LSA 2009a). Other birds that are assumed to use or were observed using riparian areas within the project area include, but are not limited to, mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), downy woodpecker (*Picoides pubescens*), northern flicker

(*Colaptes auratus*), black phoebe, tree swallow (*Tachycineta bicolor*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), ruby-crowned kinglet (*Regulus calendula*), hermit thrush (*Catharus gattatus*), American robin (*Turdus migratorius*), yellow-rumped warbler (*Setophaga coronata*), and spotted towhee (*Pipilo maculatus*).

In addition to utilization by numerous bird species, riparian canopy provides cover for migration for large mammals, and shading and cooling of stream waters for aquatic species. Direct observations of deer and coyote have been made in and around riparian areas along Tolay Creek, as well as raccoon tracks on the banks of Tolay Creek. Additional mammal species that are likely to frequent or utilize riparian habitat include common gray fox (*Urocyon cinereoargenteus*) and Virginia opossum.

Non-wetland Waters

Non-wetland waters include those habitat of ephemeral to perennial flowing or still open water with very little to no emergent vascular vegetation. These features are frequently jurisdictional under the Clean Water Act and California Fish and Game Code. Non-wetland waters within the project area include Tolay Lake, creeks, and stock ponds (Figure 4-1).

Tolay Creek and Tributaries

Tolay Creek is the dominant drainage within the project area, extending approximately 4.5 miles from the south end of Tolay Lake in the north to Highway 121 in the south. Tolay Creek has been channelized through and downstream of Tolay Lake for approximately 0.3 mile, presumably to drain Tolay Lake for agriculture. Dredge spoils are located in several locations along the upper reach of Tolay Creek. The entire run of Tolay Creek below Tolay Lake is within a confined and incised channel. The upper reach is approximately 4 to 10 feet deep and 10 to 20 feet in width, while the lower reach is approximately 8 to 15 feet in width with similar depths to the upper reach. Historic floodplain terraces are present in the lower reach of Tolay Creek. Numerous tributaries discharge into Tolay Creek from both West Ridge and East Ridge in the project area.

Flows of Tolay Creek are strongly seasonal with active, flowing water observed in late fall through spring months and a dry creekbed observed by summer. The tributaries to Tolay Creek are ephemeral to intermittent with winter through spring flows. Deeper pools in the lower reach of Tolay Creek typically remain wetted year-round, and pools in several tributaries remain into summer. The substrate of the creek in the upper reach is composed of sorted sediments and muck from decomposed vegetation. Sands and silts comprise the lower velocity portions of the lower reach of the creek, and cobbles and gravels comprise the high velocity areas.

Areas of dense in-channel vegetation are located in the upper reaches of Tolay Creek where alteration to the channel has occurred. This vegetation is generally composed of cattail (*Typha angustifolia*) and water smartweed (*Persicaria amphibia*). The lower reach of Tolay Creek contains less in-channel vegetation and is made up of small patches of cattail, hardstem bulrush (*Schoenoplectus acutus*), pennyroyal (*Mentha pulegium*), watercress (*Nasturtium officinale*), water pennywort (*Hydrocotyle ranunculoides*), water plantain (*Alisma lanceolatum*), and rough cocklebur (*Xanthium strumarium*). The banks and historic floodplain terraces of the creek support intermittent riparian woodland, as well as patches of Himalaya blackberry, poison

hemlock (*Conium maculatum*), Baltic rush (*Juncus balticus*), mugwort, stinging nettle (*Urtica dioica*), and horsetails (*Equisetum laevigatum* and *Equisetum telmateia*).

Cardoza Creek

Cardoza Creek is made up of two primary drainages, the Main and North forks. The Main Fork originates outside and to the east of the project area. The channel has been rerouted from its original flow line into Fish Pond and currently flows into Vista Pond. The Cardoza Creek bank is deeply incised and eroding in several locations and the bed is composed of sediments of mixed size. The channel is approximately 4 to 10 feet in width, and flows appear to be intermittent throughout the winter and spring. Above Vista Pond, scattered coast live oak, California bay, and California buckeye trees grow along the streambank, along with poison oak, California coffeeberry, creeping snowberry (*Symphoricarpos mollis*), and bee plant (*Scrophularia californica*).

The North Fork of Cardoza Creek originates in seep wetlands adjacent to the property line of Tolay Lake property and ridgeline of East Ridge, and flows directly into Fish Pond approximately 1,000 feet below the confluence with the Main Fork. The bank of the North Fork is frequently incised, undercut, and eroding, and the bed contains mixed sediments. The channel of the North Fork is approximately 3 to 8 feet in width, and flows appear to be intermittent with no flow in summer months. Above Fish Pond, a cluster California buckeye and California bay trees are located in the higher portion of the reach, but herbaceous species such as brownhead rush (*Juncus phaeocephalus*), common rush (*Juncus patens*), and bee plant dominate the vegetation along this fork of Cardoza Creek.

The historic Main Fork channel is currently present between the dam face of Vista Pond and Fish Pond, which flows in winter and spring months reverting to a seep wetland in summer months. Fish Pond discharges across a concrete-lined spillway creating downstream erosion and undercutting at the spillway. Automobiles, concrete blocks, and other detritus appear to have been intentionally placed in the channel below the spillway to reduce erosion. The channel below the spillway appears to have stabilized because it has attained a stable elevation with the downstream reach of Cardoza Creek. The historic channel emerging from the Fish Pond dam face does not exhibit wetland characteristics but does contain willow riparian habitat.

The lower reach of Cardoza Creek below Fish Pond flows through a natural, somewhat downcut channel for approximately 2,800 feet where the channel appears to have been altered to flow straight into Tolay Creek 1,200 feet further downstream.

North Creek – Oak Grove Fork

The headwaters of the Oak Grove Fork of North Creek originate in the northeast portion of Tolay Lake property on the East Ridge as a slumped gully and then flows within a defined channel through oak woodland habitat in the project area. Waters flows outside the project area into a large agricultural reservoir. Flows reenter the project area from a reservoir into an artificial ditch system which runs on the east side of Tolay Lake, eventually joining Tolay Creek approximately 690 feet upstream from the Farm Bridge. In the upper reach, the channel is approximately 4 to 8 feet in width, the bank incision is generally muted from the oak woodlands, and the bed is composed of mixed sized sediment. Flows appear to be intermittent, but flowing waters were

observed in August and November 2006 (LSA 2009a), which was an above average rainfall year for Petaluma (UC-IPM 2013 as cited in WRA 2013).

The slumped gully headwaters of the Oak Grove Fork of North Creek support hydrophytes such as Pacific rush (*Juncus effusus*), brownhead rush, and pennyroyal. The reach underneath the oak woodland canopy does not exhibit wetland characters, but the ditches of the lower reach contain a mucky channel bottom and emergent hydrophytes such as cattail and water smartweed, which indicates some wetlands may be present within the creek.

Eagle Creek

The headwaters of Eagle Creek originate near the project area on the edge of the Tolay Lake property line and ridgeline of East Ridge as seep wetlands. The waters flow off the project area between vineyards located immediately north of the project area, and are then are routed through man-made ditches and return to the project area eventually joining Tolay Creek at the Farm Bridge. In the upper reach of the creek, the channel is approximately 2 to 6 feet in width, the bank is incised in several locations, and the bed is composed of mixed sized sediment. Flows appear to be intermittent, but standing water was observed in August 2006 (LSA 2009a). A small grove of coast live oak is present along the upper portion of the reach, and Pacific rush and brownhead rush are present along the bank periodically in-channel. In the lower reaches where Eagle Creek has been routed into artificial ditches, the channel bottom is composed of muck from decaying vegetation, and the vegetation is predominantly a mix of weedy hydrophytes and cattail.

Ponds

Several ponds for irrigation and livestock watering are located throughout the project area. Although these ponds are artificial, they contain functions and values similar to naturally occurring water bodies. Several of these ponds dry out by summer, functioning as seasonal wetlands with distinct vegetation communities.

Vista Pond and Fish Pond, located on East Ridge within the project area, were constructed within the Cardoza Creek watershed, and are supplied by in-channel flow, surface runoff, direct precipitation, and seasonal and perennial springs. Inundation is perennial, with a mix of wetland grasses such as western mangrass (*Glyceria occidentalis*), meadow barley (*Hordeum brachyantherum*), Mediterranean barley (*Hordeum marinum*), Italian rye grass, and California semaphore grass (*Pleuropogon californicus* var. *californicus*). A patch of willow riparian is present where Cardoza Creek enters the west shore of Fish Pond and is made up primarily of red willow.

Duck and Willow ponds, located on the West Ridge adjacent to the Park Complex in the project area, are supplied by over a mile pipe from springs located on the northeastern portion of Tolay Lake property. Overflow water flow from Willow Pond into Duck Pond, and onward into a small swale which runs into a culvert under the primary ranch road. These ponds contain a mix of common facultative grasses, similar to Fish Pond and Vista Pond, and red willows ring the western edge of Willow Pond.

A large, unnamed, seasonal pond/vernal marsh is located in the remote southeastern portion of the Tolay Creek Ranch within the project area adjacent to Highway 121. The pond is supplied by

an ephemeral drainage which runs underneath Highway 121 and into the Sonoma Creek Marsh. The presence of Highway 121 acts as a dam, backing waters up in winter months in this pond, but drying by early summer. Several aquatic plant species are present when ponded water is present in winter and early spring, including Lobb's buttercup (*Ranunculus lobbii*), aquatic buttercup (*Ranunculua aquatilis*), water plantain (*Alisma* sp.), and saltmarsh bulrush (*Bolboschoenus maritimus*). Following draw-down of winter waters, the pond becomes alkali vernal marsh habitat dominated by salt-tolerant wetland species.

Several small stock ponds and depression features are scattered throughout the project area, particularly on the West Ridge. These features collect surface runoff, in-channel runoff, and direct precipitation, wetting in the winter months, and drawing down by the summer or late spring. Vegetation is very similar to that of vernal pool habitat described below in Section: Wetland Waters.

Wildlife Values of Non-Wetland Waters

The year-round water availability and vegetation cover in non-wetland waters provide wildlife with important resources, particularly in the dry summer months. Mammals and birds almost certainly obtain water and wash in the deeper pools of Tolay Creek and its tributaries. In addition, amphibians, including California red-legged frog (*Rana draytonii*), and aquatic invertebrates may utilize the creek for breeding, foraging, and/or dispersal habitat.

Numerous water birds have been observed in and around the project areas several ponds, including, but not limited to, Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), American widgeon (*Anas americana*), cinnamon teal (*Anas cyanoptera*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), and great blue heron (*Ardea herodias*). Shorebirds, such as killdeer (*Charadrius vociferus*), black-necked stilt (*Himantopus mexicanus*), Wilson's snipe (*Gallinago gallinago*), and greater yellowlegs (*Tringa melanoleuca*) utilize the ponds and their edge habitat for foraging. Similar to the pools of Tolay Creek, ponds with an extended hydroperiod provide suitable breeding and/or basking habitat for Sierran tree frog, western toad, bullfrog, western pond turtle (*Emys marmorata*), and possibly California red-legged frog. Garter snakes and southern alligator lizard are frequent visitors to ponds and other aquatic features, foraging on insects, toads, frogs, and small fish.

Wetland Waters

Wetlands and moist grasslands are those features dominated by herbaceous hydrophytic species rooted in soils that are saturated during the growing season for a period sufficient to meet hydric conditions (i.e., 14 days or greater) (Environmental Laboratory 1987). These features are jurisdictional under Section 404/401 of the Clean Water Act. Tolay Lake, the largest wetland water within the project area, is composed of several spatially and temporally distinct wetland types (Figure 4-1). In addition to Tolay Lake, the project area contains seeps, seasonal wet meadows, seasonal depressions, seasonal swales, and vernal pools containing several vegetation alliances typically dominated by native herbaceous, hydrophytic species.

The hydrology of wetlands in the project area varies from perennial or nearly perennial in marsh and seep wetlands to intermittent or seasonal in vernal pools and meadows. Hydrology, soil type, and soil/water chemistry are the strongest determinants of dominant vegetation communities and

species composition within these wetlands. Secondly, disturbance, soil/hydrologic modification, and grazing regime influence vegetation patterns within these features.

Tolay Lake

Tolay Lake is a natural lake which has been substantially altered over the past century. To drain the lake, it is believed that the natural earthen dam was removed, Tolay Creek widened and deepened, and North Creek diverted to enter Tolay Creek below the lake. Consequently, the extent and duration of ponding has been greatly reduced, thereby, altering the biological functions of the lake.

Historically, Tolay Lake is thought to have been perennial during years of high rainfall, extending to Stage Gulch Road located approximately one mile north of the Tolay Lake property's northern boundary (Kamman 2003, Ducks Unlimited 2005). Currently, Tolay Lake is a large, shallow basin segmented into agricultural checks divided by drainage ditches. The lake becomes inundated in the winter months and remains inundated through the early spring. The Cardoza family traditionally pumped water from the lake in April through May for their farming operation, with some lower, unconnected areas of the lakebed retaining inundation later in the season. LSA observed water within Tolay Creek in August 2006, an above average water year, despite an observed dried lakebed (LSA 2009a).

Clearly delineating open water ponded areas (i.e., non-wetland waters) from vegetated areas (i.e., wetlands) in Tolay Lake is difficult due to the extensive, historic alteration of the lake and annual variation in rainfall and consequent vegetation patterns. The outermost extent of the lake was delineated by LSA in 2006 based on a "slight break in the slope of the formerly cultivated field" which may indicate the historic shoreline on the eastern side of the Tolay Lake (LSA 2009a).

The vegetation within Tolay Lake varies spatially, seasonally, and annually, largely depending on amount of rainfall and topographic position. Generally, soils within the upper margin of Tolay Lake are saturated throughout the wet season drying out in early summer, and inundation is only present in above normal water years. The lower margin of Tolay Lake experiences saturation throughout the majority of the year to year-round, and is frequently inundated. The lakebed experiences frequent and repeated inundation within the wet season, which may remain into the dry season depending on volume and timing of rainfall. As a result, a shift from meadow to freshwater marsh habitat is evident between the upper Tolay Lake margin, the lower margin, and the lakebed, effectively dividing the lake into approximately three vegetation alliances including, meadow barley patches, water smartweed marsh, and mixed-annual wetland forb patches.

Meadow barley patches

Meadow barley patches have been documented from the Coast Ranges, Sierra Nevada Foothills and Eastside, and Modoc Plateau (Holland 1986, Sawyer et al. 2009). These patches are located upslope of the lower Tolay Lake margin and contain a mix of spring blooming hydrophytes and summer blooming upland species. Early in the spring, meadow barley, Mediterranean barley, spiny-fruit buttercup (*Ranunculus muricatus*), and curly dock (*Rumex pulcher*) dominate the upper lake margin, followed by the emergence of black mustard, charlock, bristly ox-tongue, and field bindweed (*Convolvulus arvensis*). These patches intergrade with mixed-annual wetland forb patches downslope toward Tolay Lake and upland grasslands upslope from Tolay Lake.

Mixed-annual wetland forb patches

Mixed-annual wetland forb patches have not been previously described as a vegetation community (Holland 1986, Barbour et al. 2007, Sawyer et al. 2009); however, the distinct change in vegetation assemblage between the upper Tolay Lake margin and lakebed merits inclusion as a distinct vegetation alliance (WRA 2013). This area of Tolay Lake is dominated by species which emerge earlier in the spring as waters begin to recede and soils begin to dry, such as slender popcorn flower (*Plagiobothrys stipitatus*), purslane speedwell (*Veronica peregrina* ssp. *xalapensis*), starwort (*Callitriche* sp.), hyssop loosestrife (*Lythrum hyssopifolia*), and common monkeyflower (*Mimulus guttatus*).

Water smartweed marsh

Water smartweed (*Persicaria amphibia*) marshes have not been previously described as a vegetation community (Holland 1986, Barbour et al. 2007, Sawyer et al. 2009); however, the prevalence of water smartweed on the lakebed of Tolay Lake merits inclusion as a distinct vegetation alliance (WRA 2013). Downstream of the causeway of Tolay Lake, water smartweed forms a near complete monoculture. Upstream of the causeway, it is a dominant species, with substantial cover of other semi-aquatic species including water plantain. As the water draws down, late spring and summer blooming species emerge such as Fuller's teasel (*Dipsacus fullonum*), mayweed (*Anthemis cotula*), heliotrope (*Heliotropium curassavicum* var. *oculatum*), swamp pricklegreen (*Crypsis schoenoides*), red ammannia (*Ammannia coccinea*), fat hen (*Atriplex prostrata*), smooth willowherb (*Epilobium campestre*), devil's claw (*Proboscidea lutea*), velvet-leaf (*Abutilon theophrasti*), and common purslane (*Portulaca oleracea*).

Marshes and Swamps

Marshes are typically located in estuaries, deltas, floodplains, broad alluvial valleys, and large depressions where low velocity surface water collects, creating saturated soil conditions for a majority of the year. These systems can range from freshwater to saline, and are often subject to tidal action. Within the project area, marsh habitat is associated with Tolay Lake, the fringes of ponds, and agricultural ditches in the Tolay Lake Valley. Vegetation alliances documented within marsh habitats in the project area include hardstem bulrush marsh, cattail marsh, saltmarsh bulrush marsh, and salt grass flats.

Hardstem bulrush marshes

Hardstem bulrush (*Schoenoplectus acutus*) marshes are known from the Central Valley, Modoc Plateau, the San Francisco Bay Area, and coastal marshes (Holland 1986, Sawyer et al. 2009). These marshes dominate the agricultural ditches in Tolay Lake Valley and the fringe of ponds, and intergrade with cattail marshes. The dominant species is the emergent graminoid, hardstem bulrush, but this vegetation community also includes substantial cover of chairmaker's bulrush (*Schoenoplectus americanus*), cattail, water smartweed, and water plantain.

Cattail marshes

Cattail marshes have been documented throughout California except at the highest elevations (Holland 1986, Sawyer et al. 2009). Similar to hardstem bulrush marshes, this vegetation alliance is located in agricultural ditches and ringing ponds. Dominated by the cosmopolitan hydrophyte

cattail, this alliance contains substantial cover of hardstem bulrush, chairmaker's bulrush, water pennywort, water smartweed, and water plantain.

Saltmarsh bulrush marshes

Saltmarsh bulrush (*Bolboschoenus maritimus*) marshes are known from the San Francisco Bay Area, Humboldt Bay, and the South Coast (Holland 1986, Sawyer et al. 2009). Within the project area, saltmarsh bulrush marsh is located in the deeper portions and channel of the large seasonal pond adjacent to Highway 121, which emerges as spring waters draw down. The dominant species is saltmarsh bulrush, with subdominant and characteristic cover of water plantain, water buttercup, and Lobb's buttercup.

Salt grass flats

Salt grass (*Distichlis spicata*) flats are extensively distributed in moderate to high saline environments throughout the Central Valley, Eastside Sierra, Modoc Plateau, Deserts, and coastal regions of California (Holland 1986, Sawyer et al. 2009). Salt grass flats are located in the large seasonal pond in the project area adjacent to Highway 121, and contain a mix of saline tolerant wetland species such as alkali heath (*Frankenia salina*), alkali mallow (*Malvella leprosa*), rabbit's-foot grass (*Polypogon monspeliensis*), Mediterranean barley, brass buttons (*Cotula coronopifolia*), narrowleaf bird's-foot trefoil (*Lotus tenuis*), coyote thistle (*Eryngium* sp.), smooth goldfields (*Lasthenia glaberrima*), and curly dock (*Rumex crispus*).

Vernal Pools and Stock Ponds

Vernal pools are unique seasonal wetlands located on flat to hillock terrain in concave depressions. These habitats are underlain by restrictive soils, which are typically either fine textured Vertic clays or medium grained substrate overlying a shallow hardpan. Waterbodies vary in size from very localized to extensive in large vernal pool complexes. Vernal pools can range in pH with alkali vernal pools common in the Great Valley, San Joaquin-Sacramento Delta, and San Francisco Baylands. Although vernal pools are not naturally occurring in the project area, several wetlands function similar to vernal pools and host a similar suite of plant species; therefore, they are referred to vernal pools. Within the project area, these features are associated with or located in stock ponds and in-channel depressions of ephemeral and intermittent tributary streams and on the top of West Ridge. Vernal pools were characterized primarily by their observed vegetation assemblage which is dominated by characteristic vernal pool species. Vegetation alliances within vernal pool and stock pond fringe habitats in the project area include common spikerush wetland (Sawyer et al. 2009); however, the species assemblages are often quite rich and shift annually with climatic variation, and distinct alliance-level characterization can be difficult to determine.

Common spikerush wetland

Common spikerush (*Eleocharis macrostachya*) wetlands are known throughout California, particularly in the Central Valley, Sierra Nevada Foothills, and Coast Ranges (Holland 1986, Sawyer et al. 2009). Common spikerush wetlands were observed on the drying margins of stock ponds and within the intermittent and ephemeral drainages on the East and West ridges in the project area. Observed species include common spikerush, armed coyote thistle (*Eryngium*

armatum), Lobb's aquatic buttercup, aquatic buttercup, common yellow monkey flower, flowering quillwort (*Triglochin scilloides*), water chickweed (*Montia fontana*), California semaphore grass, rabbit's-foot grass, Mediterranean barley, brownhead rush Pacific rush, and common rush.

Meadows and Seeps

Meadows or moist grasslands are typically located on flat to very slightly concave alluvial floodplains, terraces, and valley bottoms. These habitats are often underlain by fine textured soils which hold saturation into late spring or summer, thereby, supporting wetland grasses and forbs. However, extensive surface ponding of water is uncommon or very short lived. These systems are overwhelmingly freshwater and soil pH is often neutral to alkaline. Within the project area, they are associated with upper margins of Tolay Lake, the large seasonal pond adjacent to Highway 121, and scattered locales in Tolay Lake Valley.

Seeps are associated with springs and typically located on hillsides, often as headwaters to defined wetland swales and streams. These habitats are typically underlain by mixed textured sediments with substantial cobble and gravel and/or associated with rock outcrops. Saturated conditions are strongly seasonal to year-round, and surface ponding may be present, particularly in areas where ungulates graze heavily or which have been developed. These systems are freshwater and pH varies with soil type. Vegetation alliances within meadow and seep habitats in the project area include Pacific rush meadows, common rush meadows, common monkeyflower seeps, and California semaphore grass meadows (Sawyer et al. 2009).

Pacific rush meadows

Pacific rush meadows are known from the San Francisco Bay Area, San Joaquin-Sacramento Delta Area, and Sierra Nevada Foothills. (Sawyer et al. 2009). This community is dominated by Pacific rush, a perennial cespitose or tussocked graminoid closely associated with fine grained soils and extended saturation, and are scattered throughout the project area in low gradient positions and in small patches adjacent to hillside seeps. Associated species include hydrophytes including common rush, brownhead rush, meadow barley, creeping wild rye, common monkeyflower, and rabbit's-foot grass.

Common rush meadows

Common rush (*Juncus patens*) meadows are considered a provisional alliance requiring further investigation by vegetation ecologists (Sawyer et al. 2009); however, several areas within the project area in low gradient positions and adjacent to hillside seeps support a characteristic to dominant presence of common rush. Associated species include hydrophytes including Pacific rush, California semaphore grass, tall fescue (*Festuca arundinacea*), meadow barley, and Mediterranean barley, and Italian rye grass.

California semaphore grass meadows

California semaphore grass wetlands are known throughout the Central Valley and North Coast Ranges of California (Holland 1986, Sawyer et al. 2009). Wetlands within the project area dominated by California semaphore grass are located in similar positions as common spikerush wetlands, as well as broad meadow-like wetlands. Other dominant or characteristic species in

wetter areas include meadow barley, brownhead rush, and creeping wild rye, while drier portions support facultative species such as Mediterranean barley, Italian rye grass, and California oat grass (*Danthonia californica*).

Common monkeyflower seeps

Common monkeyflower seeps have been documented from the Klamath and Cascade Ranges, Sierra Nevada Foothills, Interior Coast Ranges, and Modoc Plateau (Sawyer et al. 2009); however, small patches of this alliance are relatively frequent in seep and spring areas throughout the Coast Ranges (Baldwin et al. 2012). Within the project area, this vegetation alliance is located adjacent to hillside seeps where strongly seasonal flows support several obligate and facultative wetland species including brass buttons (*Cotula* sp.), Jersey cudweed (*Pseudognaphalium luteoalbum*), watercress, water pygmyweed (*Crassula aquatica*), rushes, and purslane speedwell.

Wildlife Values of Wetland Habitats

Tolay Lake provides an important year-round or nearly year-round water source for a variety of wildlife, from large mammals to migratory birds. Black-tailed deer, raccoon, long-tailed weasel (*Mustela frenata*), striped skunk, and Virginia opossum are likely to obtain water and wash in and around the Tolay Lake.

Tolay Lake is recognized as an important wintering area for migratory waterfowl (LSA 2009a). The spatial extent and relatively shallow depth of the lake attracts ducks and other waterbirds, while the extensive vegetation provides important forage for over-wintering waterfowl. LSA (2009a) identified duck species, including, but not limited to, gadwall (*Anas strepera*), American widgeon, mallard, cinnamon teal, northern shoveler (*Anas clypeata*), northern pintail (*Anas acuta*), green-winged teal (*Anas cracca*), canvasback (*Aythya valisineria*), greater scaup (*Aythya marila*), bufflehead (*Bucephala albeola*), and ruddy duck (*Oxyura jamaicensis*) in Tolay Lake. Other birds observed in and around Tolay Lake associated water bodies include, but are not limited to, Canada goose, pied-billed grebe (*Podilymbus podiceps*), double-crested cormorant (*Phalacrocorax auritus*), American coot (*Fulica americana*), and Caspian tern (*Hydroprogne caspia*).

The shallow water and productive vegetation provide forage and cover for wading birds such as great blue heron, great egret, and snowy egret, which forage along the lake edge. Egret rookeries have been observed in blue gum groves along Lakeville Highway and downtown Petaluma. These nesting egrets may utilize Tolay Lake among other waterbodies in southern Sonoma County for forage during the breeding season. The shallower margins of the lake likely provide foraging habitat for wintering and migrating shorebirds such as killdeer, greater yellowlegs, least sandpiper (*Calidris minutilla*), western sandpiper (*Calidris mauri*), and long-billed dowitcher (*Limnodromus scolopaceus*).

The importance of Tolay Lake as habitat for invertebrates has not been investigated, but the seasonal drawdown of the lake likely reduces macro-invertebrate diversity. Insect hatches are likely in spring and early summer, providing important forage resources for bats, swallows, and other insectivores. Tolay Lake provides suitable breeding habitat in most years for western toads and Sierran tree frogs, as well as California red-legged frog in protected areas when waters remain into early summer. Although American bullfrogs utilize the lake for forage and cover,

breeding is unlikely due to the depth and seasonal drawdown. Tolay Lake also provides suitable habitat for western pond turtle.

Wildlife values for other wetlands are similar to those as Tolay Lake. Many of the project area's wetlands provide water resources into late summer when water availability is at a minimum. Birds, mammals, and reptiles are expected to frequent wetlands for watering and the associated dense vegetation provides cover. Shrews (*Sorex* spp.) and other small mammals are likely to utilize seep wetland habitat for foraging and cover, while birds such as killdeer, great egret, and Wilson's snipe (*Gallinago delicata*) are more likely to forage in wet areas than drier portions of grasslands and wildflower fields.

The wetlands within the project area provide suitable breeding, foraging, and dispersal habitat for a variety of amphibians and reptiles. Wetlands with an extended spring hydroperiod provide breeding habitat for Sierran tree frog and western toad, while connected streams and creeks provide a dispersal pathway and adjacent uplands provide estivation sites. Suitable breeding habitat for American bullfrog and California red-legged frog is present within several of the larger seasonal wetlands, vernal pools, and stock ponds. Garter snakes forage in and around meadows, seeps, and vernal pools where their prey resources, such as toads, frogs, salamanders, and small fish, are plentiful. Southern alligator lizard and western fence lizard are frequently, though not exclusively, observed in and around wetland resources foraging, sheltering, and basking in the warmer periods of the year

4.4.2.4 Waters of the United States

Numerous wetlands and non-wetland waters are present in the project area that are likely regulated by the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) Section 404/401 of the Clean Water Act (CWA) and/or the CDFW Section 1600 of the California Fish and Game Code. The wetlands and non-wetland waters are described in more detail in Section 4.5.1.3 and habitats that could be jurisdictional are identified in Table 4.5-2.

4.4.2.5 Sensitive Vegetation Communities

Sensitive vegetation communities include riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or designated by the USFWS and the CDFW. Numerous sensitive vegetation communities are present in the project area. These sensitive vegetation communities are identified in Table 4.4-2.

4.4.2.6 Special Status Species

Special-status species are plants and animals that are legally protected under the CESA and FESA or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). This includes:

- Plants and animals that are listed or proposed for listing as threatened or endangered under the CESA or FESA or that are candidates under these acts;
- Species designated by the CDFW as CSSC;
- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of CNPS' electronic inventory; and

- Animal species that are “fully protected”² in California.

Appendix D provides a list of federally or state-listed plant and wildlife species potential to occur in the project area.

Special-Status Plant Species

Initially, it was determined that 45 special-status plant species have the potential to occur within the project area. Based on field visits, database searches, and review of other relevant literature, it was determined that the project area lacked suitable habitat for four special-status plant species; therefore, 41 species have a potential to occur in the project area. Of these species three species have been observed in the project area, 23 species have a moderate or high potential to occur in the project area, and 15 species have a low potential to occur in the project area. Special-status plant species observed in the project area or with a high or moderate potential to occur in the project area are described in more detail below. An assessment of all 45 special-status plant species is included in **Appendix D**.

Present in the Project Area

Fragrant fritillary

Fragrant fritillary (*Fritillaria liliacea*) is CNPS Rank 1B.2. It is a low-growing, bulbiferous perennial forb in the lily family (*Liliaceae*) that blooms from February to April. It typically occurs in open, grassy areas in valley and foothill grassland, coastal scrub, and coastal prairie habitat at elevations below 1,345 feet (CDFW 2016b, CNPS 2016). Soil survey data at known locations suggest that this species is typically located on moderately acidic (pH 5.8) to neutral (pH 6.7) clay loams to clays derived from volcanics or serpentine (WRA 2013). This species has a serpentine affinity rank of weak indicator (1.8) (WRA 2013).

Fragrant fritillary is documented in Alameda, Contra Costa, Marin, Monterey, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma counties (CNPS 2016). Although no CNDDDB occurrences for this species have been documented within 5 miles of the project area, it was thought to have a high potential to occur in the project area due the presence of clay substrate derived from serpentine soils. In 2006 and 2008, hundreds of individuals were observed in two populations on northeast-facing slope underlain by Diablo clay in the northwest portion of the Tolay Lake property within the project area (LSA 2009a).

Lobb's aquatic buttercup

Lobb's aquatic buttercup (*Ranunculus lobbii*) is CNPS Rank 4. It is an annual aquatic forb in the buttercup family (*Ranunculaceae*) that blooms from February to May. It typically occurs in vernal wet areas within cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pool habitat at elevations ranging from 45 to 1,530 feet (CNPS 2016). This species is an obligate (OBL) wetland plant (Lichvar et al. 2016) and is known from vernal pool habitat in some regions of California, but is generalist in others.

Lobb's aquatic buttercup is known in Alameda, Contra Costa, Marin, Mendocino, Napa, Santa Cruz, San Mateo, Solano, and Sonoma counties (CNPS 2016). There are no CNDDDB records of

²“Fully Protected” is a legal protective designation administered by the CDFW, intended to conserve wildlife species that risk extinction within the state of California.

this species within 5 miles of the project area. However, Lobb's aquatic buttercup was thought to have a high potential to occur within the project area due to the presence of seasonal wetland habitat and stock ponds, and the presence of the associated species. In 2006-2008, Lobb's aquatic buttercup was observed in vernal pools, seasonal depressions at hillside slumps, and stock ponds on the West Ridge of the project area and the large seasonal pond adjacent to Highway 121 within Tolay Creek Ranch (LSA 2009a, LSA 2009b).

Marsh zigadenus

Marsh zigadenus (*Toxicoscordion fontanum*) is CNPS Rank 4. It is a bulbiferous perennial forb in the false-helleborine family (*Melanthiaceae*) that blooms from April to July. It typically occurs in vernal mesic areas underlain by clay substrate derived from serpentine in chaparral, cismontane woodland, lower montane coniferous forest, meadow and seep, and marsh and swamp habitat at elevations ranging from 45 to 3250 feet (CNPS 2016, CDFW 2016b). This species is an OBL wetland plant (Lichvar et al. 2016) and has a serpentine affinity rank of broad endemic/strong indicator (3.8) (WRA 2013).

Marsh zigadene is known from Lake, Marin, Mendocino, Monterey, Napa, San Benito, Santa Cruz, San Luis Obispo, San Mateo, and Sonoma counties (CNPS 2016). There are no CNDDDB records within 5 miles of the project area. However, marsh zigadenus was thought to have a high potential to occur within the project area due to the presence of serpentine seep habitat. A few marsh zigadenus individuals were observed along a tributary to Tolay Creek in the southeast portion of Tolay Creek Ranch within the project area.

High Potential to Occur

Gairdner's yampah

Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*) is CNPS Rank 4. It is a perennial forb in the carrot family (*Apiaceae*) that blooms from June to October. It typically occurs in vernal mesic areas within broadleaf upland forest, chaparral, coastal prairie, valley and foothill grassland, and vernal pool habitat at elevations below 1,985 feet (CNPS 2016). This species is a facultative (FAC) plant (Lichvar et al. 2016) and is known from vernal pool habitat in some regions of California, but is generalist in others.

Gairdner's yampah has been documented in Contra Costa, Kern, Los Angeles, Marin, Mendocino, Monterey, Napa, Orange, San Benito, Santa Clara, Santa Cruz, Santa Clara, San Diego, San Luis Obispo, San Mateo, Solano, and Sonoma counties (CNPS 2016). There are no CNDDDB records of this species within 5 miles of the project area. However, the presence of mesic grassland and seasonal wetland habitat in the project area provides suitable habitat for this species. Yampah (*Perideria* sp.) were observed in the project area in 2006 and 2008; however, this species is very difficult to distinguish from the more common, Kellogg's yampah (*Perideridia kelloggii*) and positive identification was not confirmed. As a result, this species has a high potential to occur in the project area.

Moderate Potential to Occur

Bristly Leptosiphon

Bristly leptosiphon (*Leptosiphon acicularis*) is CNPS Rank 4. It is an annual forb in the phlox family (*Polemoniaceae*) that blooms from April to July. It typically occurs in chaparral,

cismontane woodland, coastal prairie, and valley and foothill grassland habitat at elevations ranging from 175 to 4,875 feet (CNPS 2016).

Bristly leptosiphon is known from Alameda, Butte, Contra Costa, Fresno, Humboldt, Lake, Marin, Mendocino, Napa, Santa Clara, San Mateo, and Sonoma counties (CNPS 2016). There are no CNDDDB records of this species within 5 miles of the project area; however, suitable habitat for this species is present in the project area. Bristly Leptosiphon has a moderate potential to occur within the project area because it is known to occur in Sonoma County and suitable habitat is present in the project area. This species was not observed during plant survey conducted in 2006, 2007, and 2008.

Contra Costa Goldfields

Contra Costa goldfields (*Lasthenia conjugens*) are Federal Endangered and CNPS Rank 1B.1. Contra Costa goldfields are annual herbs in the sunflower family (*Asteraceae*) that bloom from March to June. They typically occur in vernal saturated areas in pools, depressions, and swales of open grassy areas in valley and foothill grassland, vernal pool, and cismontane woodland habitat at elevations below 1,530 feet (CNPS 2016). This species is a facultative wetland (FACW) plant (Lichvar et al. 2016).

Contra Costa goldfields are known from Alameda, Contra Costa, Marin, Mendocino, Monterey, Napa, Santa Barbara, Santa Clara, Solano, and Sonoma Counties (CNPS 2016). There is one CNDDDB record of this species within 5 miles of the project area. Contra Costa goldfields have a moderate potential to occur in the project area due to the presence of suitable wetland and vernal pool habitats. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Franciscan onion

Franciscan onion (*Allium peninsulare* var. *franciscanum*) is CNPS Rank 1B.2. It is a perennial forb in the lily family (*Liliaceae*) that blooms from May to June. It typically occurs on dry hillsides underlain by clay substrate, often derived from serpentine, in cismontane woodland and valley and foothill grassland habitat at elevations ranging from 170 to 980 feet (CNPS 2016). This species has a serpentine affinity.

Franciscan onion is known from Mendocino, Santa Clara, San Mateo, and Sonoma counties (CNPS 2016). No CNDDDB occurrences for this species have been documented within 5 miles of the project area; however, Franciscan onion has a moderate potential to occur within the project area due to the presence of serpentine substrate and suitable valley and foothill grassland habitat. This species was not observed during plant surveys in 2006, 2007, and 2008.

Green Monardella

Green monardella (*Monardella viridis*) is CNPS Rank 4. It is a rhizomatous herb in the mint family (*Lamiaceae*) that blooms from June to September. It typically occurs in broadleafed upland forest, chaparral, and cismontane woodland habitats at elevations from 330 to 3,315 feet (CNPS 2016).

Green monardella is known from Lake, Napa, Solano, and Sonoma counties (CNPS 2016). No CNDDDB occurrences for green monardella have been documented within 5 miles of the project area; however, this species has a moderate potential to occur due to the presences of suitable

cismontane woodland habitat for this species in the project area. This species was not observed during plant surveys in 2006, 2007, and 2008.

Johnny-nip

Johnny-nip (*Castilleja ambigua* var. *ambigua*) is CNPS Rank 4. It is an annual hemiparasitic herb in the broomrape family (*Orobanchaceae*) that blooms from March to August. It typically occurs at the margins of coastal bluff scrub, coastal prairie, coastal scrub, vernal pool, marsh and swamp, and valley and foothill grassland habitats sea level to approximately 1,450 feet (CNPS 2016).

Johnny-nip is known from Alameda, Contra Costa, Del Norte, Humboldt, Mendocino, Marin, Napa, Santa Cruz, San Luis Obispo, San Mateo, and Sonoma counties (CNPS 2016). No CNDDDB occurrences for johnny-nip have been documented within 5 miles of the project area; however, this species has a moderate potential to occur due to the presences of suitable vernal pool, marsh and swamp, and valley and foothill grassland habitats for this species in the project area. This species was not observed during plant surveys in 2006, 2007, and 2008.

Kenwood Marsh Checkerbloom

Kenwood marsh checkerbloom (*Sidalcea oregana* ssp. *valida*) is Federal Endangered, State Endangered, and CNPS Rank 1B.2. It is a rhizomatous herb in the mallow family (*Malvaceae*) that blooms from June to September. It typically occurs in freshwater marshes and swamps. It occurs at elevations from approximately 380 to 500 feet. June to September (CNPS 2016).

Kenwood marsh checkerbloom is known only from two occurrences in Sonoma County (CNPS 2016); however, surveys were last conducted in these known locations 2008. No CNDDDB occurrences for Kenwood marsh checkerbloom have been documented within 5 miles of the project area; however, this species has moderate potential to occur due to the presence of suitable marsh and swamp habitat for this species in the project area. This species was not observed in the project area during rare plant surveys conducted from 2006 to 2008.

Legenere

Legenere (*Legenere limosa*) is CNPS Rank 1B.1. It is an annual forb in the harebell family (*Campanulaceae*) that blooms from April to June. It typically occurs in the lower portions of vernal pool habitat at elevations below 2,890 feet (CNPS 2016). This species is an OBL wetland plant (Lichvar et al. 2016) and is restricted to vernal pool habitat.

Legenere is known from Alameda, Lake, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus, Tehama, and Yuba Counties (CNPS 2016). There are no CNDDDB records within 5 miles of the project area; however, legenere has a moderate potential to occur in the project area due to the presence of seasonal wetland and vernal pool habitat. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Marin Western Flax

Marin western flax (*Hesperolinon congestum*) is Federal Threatened, State Threatened, and CNPS Rank 1B.1. It is an annual forb in the flax family (*Linaceae*) that germinates in early spring, blooms from April to July, and senesces by mid-summer. It typically occurs in serpentine

grassland, scrub, or barrens in chaparral and valley and foothill grassland habitat at elevations below 1,213 feet (CNPS 2016). This species has a serpentine affinity.

Marin western flax is known from Marin, San Francisco and San Mateo counties (CNPS 2016). There are no CNDDDB records of this species within 5 miles of the project area. Marin western flax was reported from the southeast portion of Tolay Creek Ranch within the project area; however, closer examination at the Jepson herbarium resulted in a revised identification to the common species, California western flax. Marin western flax has a moderate potential to occur in the project area due to suitable serpentine substrate in valley and foothill grassland habitat. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Mt. Diablo cottonweed

Mt. Diablo cottonweed (*Micropus amphibolus*) is CNPS Rank 3. It is an annual herb in the sunflower family (*Asteraceae*) that blooms from March to May. It typically occurs on thin, rocky substrates in broadleaf upland forest, chaparral, cismontane woodland, and valley and foothill grassland habitat at elevations ranging from 145 to 2,710 feet (CNPS 2016).

This species is known from Alameda, Contra Costa, Colusa, Lake, Marin, Monterey, Napa, Santa Barbara, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, Solano, and Sonoma Counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Mt. Diablo cottonweed has a moderate potential to occur in the project area due to the presence of suitable habitat in the project area. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Napa false indigo

Napa false indigo (*Amorpha californica* var. *napensis*) is CNPS Rank 1B.2. It is a small deciduous tree in the pea family (*Fabaceae*) that blooms from April to July, with identifiable vegetative structures remaining into early fall. It typically occurs on north-facing aspects in openings in broadleaf upland forest, chaparral, and cismontane woodland habitat at elevations ranging from 395 to 6,560 feet (CNPS 2016). Soil survey data at known locations in Sonoma County suggest that this species is typically located on moderately acid (pH 5.6) to neutral (pH 6.7) loams, often mixed with larger textures (CDFW 2016b).

Napa false indigo is known from Marin, Monterey, Napa, and Sonoma Counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Napa false indigo has a moderate potential to occur in the project area due to the presence of shaded woodland with associated species. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Narrow-anthered California Brodiaea

Narrow-anthered California brodiaea (*Brodiaea leptandra*) is CNPS Rank 1B.2. It is a bulbiferous herb in the agave family (*Themidaceae*) that blooms from May to July. It typically occurs in volcanic soils in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland habitats at elevations from approximately 360 to 3,000 feet (CNPS 2016). May to July.

Narrow-anthered California brodiaea is known from Lake, Napa, and Sonoma counties (CNPS 2016). No CNDDDB occurrences for narrow-anthered California brodiaea have been documented

within 5 miles of the project area; however, this species has a moderate potential to occur due to suitable cismontane woodland habitat that is present in the project area. This species was not observed in the project area during rare plant surveys conducted from 2006 to 2008.

North Coast Semaphore Grass

North Coast semaphore grass (*Pleuropogon hooverianus*) is State Threatened and CNPS Rank 1B.2. It is a perennial herb in the grass family (*Poaceae*) that blooms from April to June. It typically occurs in shady, wet grassy areas in broadleaf upland forest, meadow, seep, and North Coast coniferous forest habitat at elevations ranging from 30 to 2,205 feet (CNPS 2016). Soil survey data at known locations suggest that this species is typically located on strongly to slightly acid (pH 5.5 to pH 6.1) gravelly to sandy loams derived from a variety of orogeny (CDFW 2016b). This species is a facultative wetland (FACW) plant (Lichvar et al. 2016).

North Coast semaphore grass is known from Marin, Mendocino, and Sonoma counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, North Coast semaphore grass has a moderate potential to occur due to the presence of mesic areas in oak-bay woodlands. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Oval-leaf Viburnum

Oval-leaf viburnum (*Viburnum ellipticum*) is CNPS Rank 2B.3. It is a shrub in the honeysuckle family (*Caprifoliaceae*) that blooms from May to June, with identifiable vegetative characteristics remaining intact into fall. It typically occurs in chaparral, cismontane woodland, and lower montane coniferous forest habitat at elevations ranging from 695 to 4,550 feet (CNPS 2016).

Oval-leaf viburnum is known from Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Mendocino, Napa, Placer, Shasta, Sonoma, and Tehama counties, and is known from the states of Oregon and Washington (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Oval-leaf viburnum has a moderate potential to occur in the project area due to the presence of shaded woodland sites. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Point Reyes checkerbloom

Point Reyes checkerbloom (*Sidalcea calycosa* ssp. *rhizomata*) is CNPS Rank 1B.2. It is a perennial, rhizomatous forb in the mallow family (*Malvaceae*) that blooms from April to September. It typically occurs in freshwater marshes and swamps near the coast at elevations ranging from 10 to 245 feet (CNPS 2016). This species is an OBL wetland plant (Lichvar et al. 2016).

Point Reyes checkerbloom is known from Marin, Mendocino, and Sonoma counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Point Reyes checkerbloom has a moderate potential to occur within the project area due to the presence of perennial wetland habitat. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Round-headed Beaked-rush

Round-headed beaked-rush (*Rhynchospora globularis*) is CNPS Rank 2B.1. It is a rhizomatous herb in the sedge family (*Cyperaceae*) that blooms from July to August. It typically occurs in freshwater marshes and swamps at elevations from 145 to 200 feet in elevation (CNPS 2016).

Round-headed beaked rush is found in California, Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. In California, it is found in Sonoma County (CNPS 2016). No CNDDDB occurrences for round-headed beaked-rush have been documented within 5 miles of the project area; however, suitable freshwater marsh and swamp habitat for this species is present in the project area. Therefore, this species has a moderate potential to occur in the project area. This species was not observed in the project area during rare plant surveys conducted from 2006 to 2008.

Sebastopol Meadowfoam

Sebastopol meadowfoam (*Limnanthes vinculans*) is Federal Endangered, State Endangered, CNPS Rank 1B.1. It is an annual herb in the meadowfoam family (*Limnathaceae*) that blooms from April to May. It typically occurs on poorly drained clay or sandy soils in swales, depressions, and pools of marshy areas of valley oak savanna, mesic meadow, vernal pool, and valley and foothill grassland habitat at elevations ranging from 45 to 1,000 feet (CNPS 2016). This species is an OBL wetland plant (Lichvar et al. 2016).

Sebastopol meadowfoam is known Napa and Sonoma Counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Sebastopol meadowfoam has a moderate potential to occur in the project area due to the presence of seasonal wetland habitat. It was not observed during plant surveys conducted in 2006, 2007, and 2008.

Showy Rancheria Clover

Showy rancheria clover (*Trifolium amoenum*) is Federal Endangered and CNPS Rank 1B.1. It is an annual forb in the pea family (*Fabaceae*) that blooms from April to June. It typically occurs on open, sunny sites, in swales, on roadsides, and cliffs sometimes underlain by serpentine substrate in valley and foothill grassland and coastal bluff scrub habitat at elevations below 1,360 feet (CNPS 2016). This species is a FACW plant (Lichvar et al. 2016), and has a weak serpentine affinity.

Showy Rancheria clover is known from Marin, Napa, Santa Clara, Solano, and Sonoma counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Showy Rancheria clover has a moderate potential to occur in the project area due to the presence of serpentine grassland habitat. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Small Spikerush

Small spikerush (*Eleocharis parvula*) is CNPS Rank 4. It is a perennial herb in the sedge family (*Cyperaceae*) that blooms from April to September. It occurs in marshes and swamps from sea level to approximately 10,000 feet (CNPS 2016).

Small spikerush is found in California and throughout the United States. In California, found in Butte, Contra Costa, Glenn, Humboldt, Mono, Napa, Orange, Plumas, Siskiyou, San Luis Obispo, Sonoma, and Ventura counties (CNPS 2016). No CNDDDB occurrences for small spikerush have been documented within 5 miles of the project area; however, suitable marsh and swamp habitat for this species is present in the project area. Therefore, this species has a moderate potential to occur in the project area. This species was not observed in the project area during rare plant surveys conducted from 2006 to 2008.

Sonoma Alopecurus

Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*) is Federal Endangered and CNPS Rank 1B.1. It is a perennial herb in the grass family (*Poaceae*) that blooms from May to July. It typically occurs in wet areas in freshwater marsh and riparian habitat at elevations ranging from 15 to 1,200 feet (CNPS 2016). Soil survey data at known locations in Sonoma County suggest that this species is typically located on moderately strongly acid (pH 5.0) to neutral (pH 6.7) loams, often mixed with larger textures derived from sandstone or other sedimentary rock (CDFW 2016b). This species is an OBL wetland plant (Lichvar et al. 2016).

Sonoma alopecurus is known from Marin and Sonoma counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Sonoma alopecurus has a moderate potential to occur within the project area due to the presence of perennial wetland habitat. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Sonoma Sunshine

Sonoma sunshine (*Blennosperma bakeri*) is Federal Endangered, State Endangered, and CNPS Rank 1B.1. It is an annual herb in the sunflower family (*Asteraceae*) that blooms from March to May. It typically occurs on heavy clay soils in vernal wet areas in vernal pool, and valley and foothill grassland habitat (CNPS 2016). This species is an OBL wetland plant (Lichvar et al. 2016).

This species is known from Sonoma County (CNPS 2016). Two CNDDDB records for this species occur within 5 miles of the project area. Sonoma sunshine has a moderate potential to occur within the project area due to the presence of seasonal wetland habitat. This species was not observed during plant surveys conducted during 2006, 2007, and 2008.

Tiburon buckwheat

Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*) is CNPS Rank 1B.2. It is an annual forb in the buckwheat family (*Polygonaceae*) that blooms from May to September. It typically occurs in chaparral, valley and foothill grassland, cismontane woodland, and coastal prairie habitat at elevations below 2,275 feet (CNPS 2016). Soil survey data at known locations suggest that this species is typically located on very slightly acidic to neutral (pH 6.7 to pH 7.2) unweathered bedrock to stony clay loams derived from serpentine (CDFW 2016b). This species has a strict serpentine affinity.

Tiburon buckwheat is known from Alameda, Contra Costa, Marin, and Sonoma counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, Tiburon buckwheat has a moderate potential to occur in the project area due to the presence of serpentine grassland and outcrops. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Woolly-headed Lessingia

Woolly-headed lessingia (*Lessingia hololeuca*) is CNPS Rank 4. It is an annual herb in the sunflower family (*Asteraceae*) that blooms June to October. It typically occurs on clay often derived from serpentine in broadleaf upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland at elevations ranging from 45 to 1,000 feet (CNPS 2016).

This species is known from Alameda, Marin, Monterey, Napa, Santa Clara, San Mateo, Solano, Sonoma, and Yolo Counties (CNPS 2016). There are no CNDDDB records for this species within 5 miles of the project area; however, woolly-headed lessingia has a moderate potential to occur within the project area due to the presence of serpentine substrate. This species was not observed during plant surveys conducted in 2006, 2007, and 2008.

Special-Status Wildlife Species

Initially, it was determined that 44 special-status wildlife species have the potential to occur within the project area. Based on field visits, database searches, and review of other relevant literature, it was determined that the project area lacked suitable habitat for six special-status wildlife species; therefore, 38 species have a potential to occur in the project area. Of these species 27 species have been observed in the project area, four species have a moderate or high potential to occur in the project area, and seven species have a low potential to occur in the project area. Many of the special-status wildlife species that have been observed in the project area are bird species that are migrating through or wintering in the area. Unless these bird species are protected by the FESA, CESA, or other state guidelines during the migration/winter season (e.g. burrowing owl), these species are included in the table in **Appendix D**, but are not described further below. All other special-status wildlife species observed in the project area or with a high or moderate potential to occur in the project area are described in more detail below. An assessment of all 44 special-status wildlife species is included in **Appendix D**.

Present in the Project Area

Burrowing owl

Burrowing owl (*Athene cunicularia*) is CDFW CSSC and is protected by the CDFW in both wintering and breeding habitat. In California, burrowing owls breed from February 1 to August 31, with some variances by geographic location and climatic conditions. The non-breeding season (i.e., wintering season) for burrowing owl occurs from September 1 to January 31. Burrowing owls prefer short grass grasslands with burrow networks, and frequently with boulder fields or rock outcrops. Burrows of small mammals, such as ground squirrels, are utilized for year-round shelter and nesting, and are frequently modified by these owls. Constructed burrows are readily occupied by burrowing owls, and have been constructed for habitat enhancement and mitigation in several sites in California.

Burrowing owls have been observed within the grasslands of the project area, particularly in areas of burrow activity and rock outcrops (LSA 2009a). Single individuals have been repeatedly observed at rock outcrops and boulder fields in winter and spring, though infrequently in summer, suggesting dispersing juveniles or over-wintering birds. Breeding burrowing owls have not been observed in Sonoma County since 1987, and breeding colonies are considered extirpated from the county (Burridge 1995).

California horned lark

California horned lark (*Eremophila alpestris*) is a CDFW Watchlist Species. California horned lark generally prefers moderately open habitats, usually where trees and large shrubs are absent and vegetation is sparse.

California horned lark are ground nesting birds, creating cupped nests in depression in the open. Breeding occurs from March through July, with peak activity in May. Incubation lasts 10-14 days and the young leave the nest approximately 9-12 days after hatching. Both males and females provide care to the young, and second broods are common. This species primarily feeds on insects. Suitable foraging and breeding habitat for this species is widely present in the project area, where open shrubs and grasslands with bare ground create a habitat mosaic. In addition, this species was observed in the project area in the spring; therefore, likely nests in the project area (LSA 2009a).

California Red-Legged Frog

California red-legged frog (*Rana draytonii*) is a Federal Threatened species and a CDFW CSSC. California Red-legged Frog was listed as Federally Threatened May 23, 1996 (61 FR 25813-25833). Critical Habitat for California red-legged frog was designated on March 17, 2010 (75 FR 12815 12959). A Recovery Plan for California red-legged frog was published by the USFWS on May 28, 2002. The project area falls within the Petaluma Creek-Sonoma Creek Core Recovery Area. There are four habitat characteristics that are considered to be essential for the conservation or survival of this species including, (1) aquatic breeding habitat; (2) non-breeding aquatic habitat; (3) upland habitat; and (4) dispersal habitat (USFWS 2006).

Aquatic breeding habitat consists of low-gradient fresh water bodies including natural and artificial (e.g., stock) ponds and pools in perennial streams, marshes, lagoons, and dune ponds with still or slow-moving water, and dense shrubby riparian vegetation (Hayes and Jennings 1986, Jennings 1988, Jennings and Hayes 1994). Aquatic breeding habitat must hold water for a minimum of 20 weeks in most years to allow for egg, larvae, and tadpole development (USFWS 2006).

Aquatic non-breeding habitat may or may not hold water long enough for this species to hatch and complete its aquatic life cycle, but it provides shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frog. These waterbodies include plunge pools within intermittent creeks, seeps, quiet water refugia during high water flows, and springs of sufficient flow to withstand the summer dry period.

Upland habitats (e.g., grasslands, woodlands) provide shelter, forage, and cover, and include areas within 200 to 300 feet. Upland habitat can include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), as well as small mammal burrows and moist leaf litter (USFWS 2006).

Dispersal habitat includes accessible upland or riparian habitats between occupied locations within 0.7-mile of each other that allow for movement between these sites, but dispersal of up to 1.8 miles has been documented (USFWS 2002, Fellers and Kleeman 2007). Moderate to high density urban or industrial developments, large reservoirs and heavily traveled roads without bridges or culverts are considered barriers to dispersal (USFWS 2006). Short-distance dispersal movements are generally straight-line movements, and dispersal typically occurs at night during

wet weather (Bulger et al. 2003, USFWS 2002, Fellers and Kleeman 2007). California red-legged frog tend to remain very close to a water source during dry weather; however, overland dispersal may occur in response to receding water (USFWS 2002).

Seven CNDDDB occurrences for California red-legged frog have been documented within 5 miles of the project area. Suitable dispersal and breeding habitat is present in the project area for this species. In addition, California red-legged frog have been observed in Tolay Creek and within other waterbodies in Tolay Creek Ranch in the past.

Golden eagle

Golden eagle (*Aquila chrysaetos*) is a CDFW Fully Protected Species and is protected by the Federal BGEPA. Golden eagle is largely resident in open and semi-open areas from sea level to 11,500 feet elevation. Occupied habitats include shrublands, grasslands, desert, mixed woodlands, and coniferous forests. This species is usually found in mountainous areas, but it may also nest in wetland, riparian, and estuarine habitats at lower elevations (Kochert et al. 2002). Golden eagles typically build or maintain multiple nests prior to selecting one nest for a given year; however, they do exhibit strict site fidelity, often moving nesting locations between years, and may not nest each year (Peeters and Peeters 2005). Nests are large and typically built on cliff ledges or in large, relatively isolated trees; therefore, many of the blue gum and possibly larger coast live oak trees in the project area provide potential nesting locations.

Golden eagles forage over wide areas, most frequently above open canopied shrub or woodland, or grassland habitat, and feed primarily on ground squirrels, rabbits, large birds, and carrion. The project area's expansive grassland habitat is optimal for foraging, and the mix of riparian, woodland, and minor shrub elements provide cover for many of the prey animals of the golden eagle.

Golden eagles have been repeatedly observed in and immediately adjacent to the project area (LSA 2009a), and the Tolay Lake area is thought to host five active golden eagle nests (LSA 2009a), likely lending to the frequent observations. The East Ridge has the highest frequency of observations, and due to its relatively isolated location and the presence of coast live oak woodland with sizable trees, it is thought that nesting is most likely here, though perhaps outside of the project area. According to Peeters and Peeters (2005), the optimal nesting location is at the midslope position of north- and east-facing ridges gaining maximum protection from strong winds, and there have been no observations of nests on ridgelines. Although golden eagles have been observed soaring, foraging, and perching over the project area (LSA 2009b), and the project area provides suitable nesting habitat, no nesting has been observed on-site.

Grasshopper sparrow

Grasshopper sparrow (*Ammodramus savannarum*) is a CDFW CSSC. A second priority species of special concern (Shuford and Gardali 2008), the grasshopper sparrow generally prefers moderately open grasslands and prairies with patchy bare ground. They select different components of vegetation depending on grassland ecosystem. This sparrow typically avoids grasslands with extensive shrub cover, although some level of shrub cover is important for birds in western regions (Vickery 1996).

Grasshopper sparrows are ground nesting birds, creating cupped nests domed with overhanging grasses and a side entrance, which are very rarely located in tall grasses of grasslands. Eggs are

usually laid in early to mid-June and hatch within 14 days. Both males and females provide care to the young, and second broods are common. This species primarily feeds on insects (Vickery 1996). Suitable foraging and breeding habitat for this species is widely present in the project area, where open shrubs and grasslands with bare ground create a habitat mosaic. In addition, this species was heard calling throughout the grasslands of the project area and; therefore, likely nests in the project area (LSA 2009a).

Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is a CDFW CSSC. Loggerhead shrikes breed mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. They require tall shrubs or trees (also use fences or power lines) for hunting perches, territorial advertisement, and pair maintenance. They require short grasses, forbs, or bare ground for hunting, and large shrubs or trees for nest placement. They also need impaling sites for prey manipulation or storage, which can include sharp, thorny, or multistemmed plants and barbed-wire fences (Shuford and Gardali 2008).

Loggerhead shrikes often build their nests in thorny vegetation, which may help keep predators away. In the absence of trees or shrubs, they may sometimes nest in brush piles or tumbleweed. Nests are typically 2.5 to 4 feet above the ground (Yosef 1996). Eggs hatch within 17 days and chicks leave the nest within 20 days of hatching. Second broods are common. This species primarily feeds on insects (Yosef 1996). Suitable foraging and breeding habitat for this species is present in the project area. In addition, this species was observed in the project area and; therefore, likely nests in the project area (LSA 2009a, LSA 2009b).

Northern Harrier

Northern harrier (*Circus cyaneus*) is a CDFW CSSC. This species is predominantly found in grassland and wetland communities; however, it uses various habitats (Shuford and Gardali 2008). In California, northern harriers have been found in habitats including freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands (including those with vernal pools), weed fields, ungrazed or lightly grazed pastures, some croplands (especially alfalfa, grain, sugar beets, tomatoes, and melons), sagebrush flats, and desert sinks (MacWhirter and Bildstein 1996).

Northern harriers are ground nesting birds. The nest is usually placed in a dense clump of vegetation such as willows, grasses, sedges, reeds, or cattails. Eggs hatch within 36 days and chicks leave the nest within 14 days of hatching. Females incubate eggs and brood chicks, while males provide most of the food for the females and nestlings. In the breeding season, northern harriers eat small mammals, reptiles, amphibians, and birds. During winter, northern harriers in feed almost exclusively on voles; they also eat mice, shrews, rabbits, and songbirds (Macwhirter and Bildstein 1996). Suitable foraging and breeding habitat for this species is present in the project area. In addition, northern harrier has been observed in the project area. Although no nests have been located, this species has been observed during breeding season and could be nesting in the project area (LSA 2009a).

Opler's longhorn moth

Opler's longhorn moth (*Adella oplerella*) was a federal species of concern that was considered but rejected for listing as an endangered species in 1994. At this time, Opler's longhorn moth is

not federally or state listed. The moth is endemic to grasslands where its larval food plant, cream cups, grow. Descriptions of the life history and early stages of this moth are incomplete, but it is known that the moth completes the active portions of its life cycle during the winter-spring wet season (Powell 1969). Eggs are deposited directly into the unopened flowers of the host plant, and larvae emerge after they have consumed the developing seeds. The larvae may enter diapause during the summer and re-emerge after the winter rains to continue feeding until they are large enough to pupate. The adult host plant is not known, though it appears that the adults may feed on the nectar of cream cups and other native herbaceous species.

In recent years, Opler's longhorn moth has been recorded from sites extending along the west side of San Francisco Bay, the inner Coast Ranges, and Alameda, Marin, Sonoma, Santa Cruz, and Santa Clara counties (USFWS 1998). The moth was previously thought to only occur in areas of serpentine soil where its exclusive host plant is often found in prodigious numbers, but it has been observed in non-serpentine areas where thin soils support a high density of native species, including cream cups. Therefore, it may be more accurate to associate the moth with low fertility soils that support a sufficient density of host plants. Within the project area, one individual was observed in native grassland habitat underlain by serpentine substrate in the southwest portion of Tolay Creek Ranch. The presence of cream cup colonies and recorded observations of Opler's longhorn moth suggest that the project area offers high quality habitat for this species.

Saltmarsh Common Yellowthroat

Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) is a CDFW CSSC. Saltmarsh common yellowthroat nests and forages in fresh and saltwater marshes, woody swamps, and seasonal wetlands (Shuford and Gardali 2008). For the San Francisco Bay area as a whole, about 60 percent of saltmarsh common yellowthroats occupy brackish marsh, 20 percent riparian woodland/swamp, 10 percent freshwater marsh, 5 percent salt marsh, and 5 percent upland habitats (Shuford and Gardali 2008).

Saltmarsh common yellowthroat nests in tall, emergent wetlands on the ground or up to 3 meters off the ground. Eggs hatch within 12 days and chicks leave the nest within 10 days of hatching. Both males and females provide care to the young, and second broods are common (Menges 1998). Saltmarsh common yellowthroat mainly feeds of insects (Shuford and Gardali 2008). Twelve CNDDB occurrences for saltmarsh common yellowthroat have been documented within 5 miles of the project area. Suitable nesting and foraging habitat for this species is present in the project area. Saltmarsh common yellowthroat was observed in the project area in September 2007 and; therefore, may nest in the project area (LSA 2009a).

Tricolored blackbird

Tricolored blackbird (*Agelaius tricolor*) is a CDFW CSSC. The tricolored blackbird is a locally common resident in the Central Valley and along coastal California. This species breeds adjacent to freshwater, preferably in emergent wetlands with tall, dense cattails or tules, thickets of willow, blackberry and/or tall herbs, as well as flooded agricultural fields with dense vegetation (Shuford and Gardali 2008). Insects are the primary food source. This species is highly colonial and nesting habitat must be large enough to support a minimum of 30 pairs, however, colonies are commonly substantially larger, ranging from 100 to tens of thousands of individuals. Several confirmed and probable breeding locations have been observed in southern Sonoma County

(Burridge 1995). Tricolored blackbirds have been observed within the project area (LSA 2009a), and it has a high potential to nest within the project area due to observations within the project area, relative to the location of documented nesting observations in southern Sonoma County, as well as the presence of suitable emergent freshwater marsh vegetation.

Western Pond Turtle

Western pond turtle (*Emys marmorata*) is a CDFW CSSC. Western pond turtle is the only freshwater aquatic turtle native to most of California, associated with rivers, creeks, lakes, and ponds throughout much of the state. Typical aquatic habitat features stagnant or low gradient water, aquatic vegetation, and aerial basking sites such as logs, rocks, and mud-banks. Adult females excavate nests in riparian and upland areas in the spring or early summer. Nest sites are generally located on sunlit slopes, and require friable soil that is sufficiently dry to promote successful egg development (Holland 1994). The young generally hatch and overwinter in the nest (Jennings and Hayes 1994). At least under some ecological conditions, pond turtles may regularly utilize terrestrial habitats (Reese and Welsh 1997). While some populations are active principally in the spring and aestivate during the rest of the year, turtles along the southern California coast may be active year-round (Jennings and Hayes 1994). Western pond turtle is a dietary generalist, subsisting principally on invertebrates as well as plant material and carrion.

The project area contains relatively high quality habitat for western pond turtle. In addition, western pond turtle has been observed in Tolay Lake within the project area.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is a CDFW Fully Protected Species. White-tailed kite is resident in a variety of open habitats, including agricultural areas, grasslands, scrub and open chaparral habitats, meadows, and emergent wetlands throughout the lower elevations of California. Nests are constructed mostly of twigs and placed in small to large trees, often at habitat edges or in isolated groves (Dunk 1995). This species preys upon a variety of small mammals and other vertebrates. The project area provides open habitats for foraging and suitable trees for nesting, as well as contiguous high-quality foraging habitat adjacent to the project area. White-tailed kites have been observed by LSA foraging within the project area (LSA 2009a, LSA 2009b). Although no nesting location has been documented to date, suitable nesting habitat is present within the project area.

Yellow Warbler

Yellow warbler (*Setophaga petechia*) is a CDFW CSSC. Yellow warbler generally occupies riparian vegetation in close proximity to water along streams and in wet meadows. Throughout their range, they are found in willows and cottonwoods (*Populus* spp.), and in California they are found in numerous other species of riparian shrubs or trees, varying by biogeographic region (Shuford and Gardali 2008).

Yellow warblers build their nests in the vertical fork of a bush or small tree such as willow or other riparian species. The nest is typically within about 10 feet of the ground but occasionally up to about 40 feet (Lowther et al. 1999). Eggs hatch within 13 days and chicks leave the nest within 12 days of hatching (Lowther et al. 1999). This species primarily feeds on insects (Shuford and Gardali 2008). Suitable foraging and nesting habitat for this species is present in

the project area. This species has been observed in the project area and; therefore, may nest in the project area (LSA 2009a, LSA 2009b).

Moderate or High Potential to Occur

American badger

American badger (*Taxidea taxus*) is a CDFW CSSC. The American badger is a semifossorial mammal in the weasel family (*Mustelidae*). Macrohabitat includes dry, open forests and woodlands, open scrub, and grasslands. Microhabitat conditions require loose friable soils for burrow creation and foraging potential. Badgers are typically solitary, nocturnal, and construct burrows for refuge during daylight hours. Badger burrows are usually elliptical, with only one entrance, and are located in areas with plentiful prey sources. The primary prey is composed of ground squirrels and pocket gophers, which are typically pursued by digging into their burrows (Blood 2002). Alternative prey resources include mice, rats, reptiles, amphibians, and bird eggs. Young are born in the spring and independent by the end of summer.

Badgers have very large home ranges, depending on available habitat. Males can forage across a range of approximately one square mile to 500 square miles, while females can range from one-half square mile to 50 square miles (Blood 2002). However, in general, densities are one badger per square mile in occupied, prime habitat (Long 1973). Badgers have not been recorded in the project area or immediate vicinity, but suitable habitat is present on hillsides (i.e., East and West ridges) away from heavy clay soils, soil disturbance, and frequent human visitation in Tolay Lake Valley. Several large holes have been observed in the project area that may have been constructed by American badger (Steve Ehret pers. comm. as cited in WRA 2013). Therefore, American badger has a moderate potential to occur in the project area.

Foothill yellow-legged frog

Foothill yellow-legged frog (*Rana boylei*) is a CDFW CSSC. This species is typically located in forested and woodland habitats, occurring in shaded, shallow streams and riffles with a rocky substrate. Egg masses are attached to the rock substrate, and at least some cobble-sized stones are necessary. Tadpoles require at least 15 weeks to metamorphose into juvenile form. Foothill yellow-legged frog does not estivate and is rarely found far from a source of permanent water. Historically, this species was known to occur in most Pacific drainages from Oregon to Los Angeles (Jennings and Hayes 1994). Populations have declined due to siltation and the introduction of American bullfrogs and exotic fish. Tolay Creek and its tributaries contain suitable breeding, foraging, and dispersal habitat for foothill yellow-legged frog; therefore, this species has a moderate potential to occur in the project area. However, this species was not observed during site visits in 2006 to 2008.

Pallid bat

Pallid bat (*Antrozous pallidus*) is a CDFW CSSC. Pallid bats are distributed from southern British Columbia and Montana to central Mexico, and east to Texas, Oklahoma, and Kansas. This species occurs in a number of habitats ranging from rocky arid deserts to grasslands, and into higher-elevation coniferous forests. Pallid bats are most abundant in the arid Sonoran life zones below 6,000 feet, but have been found up to 10,000 feet in the Sierra Nevada. They often roost in colonies of between 20 and several hundred individuals. Roosts are typically in cliffs, rock crevices, tree hollows, mines, caves, and various structures, such as vacant and occupied

buildings, bridges, and bird boxes. Tree roosting has been documented in large conifer snags (e.g., ponderosa pine [*Pinus ponderosa*]), inside basal hollows of giant sequoias (*Sequoiadendron giganteum*), and within bole cavities in oak (*Quercus* spp.) trees. They have also been reported roosting in stacks of burlap sacks and stone piles. Pallid bats are primarily insectivorous, feeding on large prey that is taken on the ground, or sometimes in flight (Texas Parks and Wildlife 1997). Prey items include arthropods such as scorpions, ground crickets, and cicadas (Western Bat Working Group 2013). Pallid bats have a moderate potential to occur due to the presence of several documented roost sites in the general vicinity of the project area (CDFW 2016b) and the presence of suitable roosting habitat (e.g., old farm buildings) within the Park Complex portion of the project area.

Townsend's big-eared bat

Townsend's big-eared bat (*Corynorhinus townsendii townsendii*) is a CDFW CSSC. This species ranges throughout western North America, from British Columbia to the central Mexico. It is typically associated with caves, but also found in man-made structures, including mines and buildings (CDFW 2016b). While many bats wedge themselves into tight cracks and crevices, big-eared bats hang from walls and ceilings in the open. Males roost singly during the spring and summer months while females aggregate in the spring at maternity roosts to give birth. Females roost with their young until late summer or early fall, until young become independent and can fly and forage on their own. Hibernation roosts tend to be made up of small aggregations of individuals in central and southern California (Pierson and Rainey 1998). Although there are no documented roost sites within the project area or its immediate vicinity, the presence of old farm buildings in the Park Complex offers the potential for suitable roost sites. Townsend big-eared bats roosting elsewhere in the area may forage over the project area at night. Therefore, this species has a moderate potential to occur in the project area.

4.4.2.7 Nonlisted Birds Protected Under the Migratory Bird Treaty Act

Despite no federal or state listing, all native birds are protected either by the MBTA and/or the California Fish and Game Code. The MBTA protects active nests of all birds including migratory species. Breeding bird season may vary depending upon species, site condition, and annual weather, but generally runs from February 1 to August 31 in a given year. The project area provides suitable habitat for numerous species of birds protected by the MBTA and California Fish and Game Code. Red-tailed hawk and western meadowlark have been observed nesting on site by LSA (LSA 2009a), and several other species undoubtedly nest each year within the project area boundaries.

4.4.2.8 Migratory Corridors

Wildlife corridors play an important role in countering habitat fragmentation. A wildlife corridor is a linear landscape element which serves as a linkage between historically connected habitats or landscapes that are otherwise separated and is meant to provide avenues along which wildlife can travel, migrate, and meet mates; plants can propagate; genetic interchange can occur; populations can move in response to environmental changes and natural disasters. Corridors can consist of a sequence of stepping-stones across the landscape (i.e., discontinuous areas of habitat such as isolated wetlands and roadside vegetation), continuous lineal strips of vegetation and habitat

(e.g., riparian strips and ridge lines), or they may be parts of larger habitat areas selected for its known or likely importance to local wildlife.

The project area provides a habitat core and several linkages, including from Cougar Mountain to Sonoma Mountain, and between the Petaluma and Sonoma-Napa marshes. The northern portion of the Tolay Lake property is within the Marin Coast to Blue Ridge Critical Linkage. The Marin Coast to Blue Ridge Critical Linkage is an important wildlife corridor that spans three counties (i.e., Marin, Sonoma, and Napa counties) along several tendrils of habitat. It extends from the Blue Ridge-Berryessa region in northeastern Napa County west across the Mayacamas Mountains on the Napa-Sonoma County line and then south and west to Point Reyes National Seashore in Marin County. The remainder of the project area also provides migratory corridor habitat (e.g., creeks, ridgelines, marshes and swamps, lake) for numerous bird, mammal, amphibian, and reptile species.

4.4.3 Regulatory Setting

4.4.3.1 *Federal*

Endangered Species Act of 1973 (16 U.S. Code [USC] 1531-1543). The FESA and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 9 of the FESA prohibits the taking of a federally listed species. Taking is defined by the FESA to mean “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Section 7 requires Federal agencies, in consultation with, and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Non-federal agencies can obtain authorization for “take” of federally listed species under Section 10 of the FESA.

Clean Water Act (33 USC 1251-1376). The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation’s waters.

Section 401 of the CWA requires that discharges of dredged or fill material into waters of the United States not violate effluent limitations or water quality standards established by the state. The USACE may not authorize a project under Section 404 of the CWA until the permit applicant has obtained a certification of compliance with state water quality standards (i.e., a water quality certification) from the RWQCB.

Section 402 of the CWA prohibits the discharge of any pollution into surface waters of the United States unless the discharge is permitted under the National Pollution Discharge Elimination System (NPDES) program (Title 33 of the United States Code Sections 1311, 1342). In California, Section 402 permitting authority has been delegated to the State Water Resources Control Board and is administered by the RWQCB.

Section 404 establishes a permit program administered by the USACE regulating the discharge of dredged or fill material into waters of the United States (including wetlands). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

The Federal Migratory Bird Treaty Act (16 U.S.C. 703 et seq.). The Federal MBTA (16 U.S.C. 703 et seq.), Title 50 Code of Federal Regulations (CFR) Part 10, prohibits taking, killing, possessing, transporting, and importing of migratory birds, parts of migratory birds, and their eggs and nests, except when specifically authorized by the Department of the Interior. As used in the act, the term “take” is defined as meaning, “to pursue, hunt, capture, collect, kill or attempt to pursue, hunt, shoot, capture, collect or kill, unless the context otherwise requires.” With a few exceptions, most birds are considered migratory under the MBTA.

The Federal Bald and Golden Eagle Protection Act (16 U.S.C. 668(a); 50 CFR 22). The BGEPA that was first passed in 1940 regulates take, possession, sale, purchase, barter, transport, import and export of any bald or golden eagle or their parts (e.g., nests, eggs, young) unless allowed by permit. “Take” was broadly defined to include shoot, wound, kill, capture, collect, molest, or disturb. In the 1972 amendments, penalties for violations were raised to a maximum of fine \$250,000 for an individual or a maximum of two years in prison for a felony conviction, with a doubling of the penalties for organizations.

Fish and Wildlife Coordination Act (16 USC 661-666). This act applies to any Federal action (such as an application for a Section 404 permit from the USACE) where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. The Federal permitting agency is required to consult with the USFWS and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources. The term “wildlife” includes both animals and plants. Provisions of the Fish and Wildlife Coordination Act are implemented through the Section 404 permit process.

Executive Order 13112 Invasive Species (February 3, 1999). This order directs all Federal agencies to prevent and control the spread of invasive plants and animals and to avoid direct or indirect impacts whenever there is a practicable alternative.

4.4.3.2 State

California Endangered Species Act (Fish and Game Code 2050 et seq.). The CESA establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy.

CESA requires State lead agencies to consult with the CDFW to avoid jeopardy to threatened or endangered species. As an outcome of consultation, the CDFW is required to issue a written finding indicating if a project would jeopardize threatened or endangered species and specifying reasonable and prudent alternatives that would avoid jeopardy. CESA provides for joint consultations when species are listed by both the State and Federal governments.

Fully Protected Species & Species of Special Concern. The classification of “fully protected” was the CDFW’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The Fish and Game Code sections (fish at §5515, amphibians and reptiles at §5050, birds at §3503 and §3511, and mammals at §4150 and §4700) dealing with “fully

protected” species state that these species “...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species,” although take may be authorized for necessary scientific research. This language makes the “fully protected” designation the strongest and most restrictive regarding the “take” of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFW to authorize take resulting from recovery activities for state-listed species.

CSSC are broadly defined as animals not listed under the FESA or CESA, but which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing or because they historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologist, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA review of the project.

Native Plant Protection Act (Fish and Game Code 1900-1913). California’s Native Plant Protection Act (NPPA) requires all State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. Provisions of the act prohibit the taking of listed plants from the wild and require notification of the CDFW at least 10 days in advance of any change in land use. This allows the CDFW to salvage listed plant species that would otherwise be destroyed. The project sponsor is required to conduct botanical inventories and consult with the CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

Other Sensitive Plants. The CNPS is a non-profit plant conservation organization that publishes and maintains an Inventory of Rare and Endangered Vascular Plants of California in both hard copy and electronic version (www.cnps.org/rareplants/inventory/6thedition.htm).

The Inventory assigns plants to the following categories:

- 1A Presumed extinct in California;
- 1B Rare, threatened, or endangered in California and elsewhere;
- 2 Rare, threatened, or endangered in California, but more common elsewhere;
- 3 Plants for which more information is needed (i.e., a review list); and
- 4 Plants of limited distribution (i.e., a watch list).

Additional endangerment codes are assigned to each taxon as follows:

- 1 Seriously endangered in California (over 80% of occurrences threatened/high degree of immediacy of threat).
- 2 Fairly endangered in California (20-80% occurrences threatened).
- 3 Not very endangered in California (<20% of occurrences threatened or no current threats known).

Plants that are Rank 1A, 1B, and 2 of the CNPS Inventory consist of plants that may qualify for listing by the CDFW, as well as other state agencies (e.g., California Department of Forestry and Fire Protection). As part of the CEQA process, such species should be fully considered, as they meet the definition of threatened or endangered under the NPPA and Sections 2062 and 2067 of the California Fish and Game Code. California Rare Plant Rank 3 and 4 species are considered to be plants about which more information is needed or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for State listing, and CNPS and CDFW recommend that these species be evaluated for consideration during the preparation of CEQA documents.

California Oak Woodland Statute. In September 2004, State Bill 1334 was passed and added to the State Public Resources Code as Statute 21083.4, requiring all California counties to determine in their CEQA documents whether a project in its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment. The California Fish and Game Code (Section 1361) defines oak woodland habitat as “an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover.”

Sensitive Vegetation Communities. Sensitive vegetation communities are natural communities and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, state, and local conservation plans, policies or regulations. The CDFW ranks sensitive communities as “threatened” or “very threatened” and keeps records of their occurrences in the CNDDDB. Sensitive vegetation communities are also identified by CDFW on its List of California Natural Communities recognized by the CNDDDB. Impacts on sensitive natural communities and habitats identified in local or regional plans, policies, regulations or by federal or state agencies must be considered and evaluated under the CEQA (California Code of Regulations [CCR]: Title 14, Div. 6, Chap. 3, Appendix G).

Porter-Cologne Water Quality Control Act. Waters of the State are defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The RWQCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. These waterbodies have high resource value, are vulnerable to filling, and may not be regulated by other programs, such as Section 404 of the CWA. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to waters of the State, the RWQCB has the option to regulate such activities under its State authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

California Oak Woodland Conservation Act. The California Oak Woodlands Conservation Act was enacted in 2001. The Oak Woodlands Conservation Program constituted formal recognition on behalf of California lawmakers that oak woodlands are a vital statewide resource that provide benefits such as, crucial plant and wildlife habitat, reduced soil erosion, and enhanced water quality. The Oak Woodlands Conservation Act acknowledges that oak woodlands are being removed throughout California. In addition, to the legislative effort to protect oak woodlands provided by the Oak Woodlands Conservation Act, the state of California passed Senate Bill 1334 (Chapter 732, and Statutes of 2004) which required a modification to the Public Resource Code regarding oak woodlands. As of January 2005, the Public Resource Code (Section 21083.4) required that when a county is determining the applicability of CEQA to a project, it must determine whether that project would result in a conversion of oak woodlands that would have a significant effect on the environment. If such effects (either individual impacts or cumulative) are identified, the law requires that they be mitigated.

Acceptable mitigation measures include, but are not limited to, conservation of other oak woodlands through the use of conservation easements and planting replacement trees, which must be maintained for seven years. One notable exemption to this law is for the “conversion of oak woodlands on agricultural land that includes land that is used to produce or process plant and animal products for commercial purposes”.

Sections 1601-1603 of the Fish and Game Code. Under these sections of the Fish and Game Code, the project sponsor and other agencies are required to notify the CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occurs during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Lake and Streambed Alteration Agreement (LSAA) that becomes part of the plans, specifications, and bid documents for the project.

Sections 3503 and 3513 of the Fish and Game Code (Birds). According to Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey) from “take”. Section 3513 essentially overlaps with the MBTA, prohibiting the “take” or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by the CDFW.

Section 4150 of the Fish and Game Code (Mammals). According to Section 4150 of the California Fish and Game Code, “[a]ll mammals occurring naturally in California which are not game mammals, fully protected mammals, or fur-bearing mammals, are nongame mammals. Nongame mammals or parts thereof may not be taken or possessed except as provided in this code or in accordance with regulations adopted by the commission.”

4.4.3.3 County

Sonoma County General Plan

The Sonoma County General Plan Open Space and Resource Conservation (OSRC) Element provides the guidance and vision for Sonoma County as set by its citizens and elected officials. The plan includes the following goals and policies regarding biotic resources:

Goal OSRC-7: Protect and enhance the County’s natural habitats and diverse plant and animal communities.

- **Objective OSRC-7.1:** Identify and protect native vegetation and wildlife, particularly occurrences of special status species, wetlands, sensitive natural communities, woodlands, and areas of essential habitat connectivity.
- **Objective OSRC-7.4:** Where appropriate, support regulatory efforts by other agencies to protect biotic habitat.
- **Objective OSRC-7.5:** Maintain connectivity between natural habitat areas.
- **Objective OSRC-7.6:** Establish standards and programs to protect native trees and plant communities.
- **Objective OSRC-7.7:** Support use of native plant species and removal of invasive exotic species.
- **Objective OSRC-7.8:** Encourage voluntary efforts to restore and enhance biotic habitat.
- **Objective OSRC-7.9:** Preserve and restore the Laguna de Santa Rosa, San Pablo Bay and Petaluma marshes and other major marshes and wetlands.

Goal OSRC-8: Protect and enhance Riparian Corridors and functions along streams, balancing the need for agricultural production, urban development, timber and mining operations, and other land uses with the preservation of riparian vegetation, protection of water resources, flood control, bank stabilization, and other riparian functions and values.

- **Objective OSRC-8.2:** Provide standards for land use and development in streamside conservation areas that protect riparian vegetation, water resources and habitat values while considering the needs of residents, agriculture, businesses and other land users.
- **Objective OSRC-8.3:** Recognize and protect riparian functions and values of undesignated streams during review of discretionary projects.
 - **Policy OSRC-8d:** Allow or consider allowing the following uses within any streamside conservation area:
 - (2) Streamside maintenance and restoration
 - (4) Road crossings, street crossings, utility line crossings
 - (11) Creekside bikeways, trails, and parks within Urban Residential, Commercial, Industrial, or Public-Quasi Public land use categories.

Sonoma County Heritage or Landmark Trees (Ordinance No. 3651).

The Sonoma County Heritage or Landmark Tree Ordinance (Chapter 26D of Sonoma County Municipal Code) protects heritage and landmark trees. A heritage tree is any tree or grove of trees designated by the Sonoma County board of supervisors because of historical interest of significance. A landmark tree is any tree or grove of trees designated by the Sonoma County board of supervisors because of its outstanding characteristics in terms of size, age, rarity, shape, or location. The ordinance requires that a tree permit be obtained prior to the removal of any heritage or landmark tree in Sonoma County.

VOH Valley Oak Habitat Combining District (Ordinance No. 4991)

The VOH Valley Oak Habitat Combining District (Chapter 26, Article 67 of Sonoma County Municipal Code) protects and enhances valley oak woodlands and requires mitigation for any person that cuts down or removes any large or small valley oaks having a cumulative DBH greater than 60 inches on any property in the VOH district. Mitigation required includes retaining other valley oaks on the subject property, planting replacement valley oaks on the subject property or another site in the County having the geographic, soil, and other conditions necessary to sustain a viable population of valley oaks, a combination of the previous mitigation measures, or paying an in-lieu fee, which can only be used for valley oak planting programs in the County.

The requirements for each mitigation measure are specified in the Table 4.5-3 below. The mitigation measure must be completed within one year after the valley oak(s) are cut down or removed. This section shall not apply to the cutting down or removal of any valley oak within the VOH district that is (1) determined necessary by emergency personnel engaged in emergency procedures or (2) dead or irretrievably damaged or destroyed by causes beyond the property owner's control, including, without limitation, fire, flood, wind, lightning, or earth movement. The project area is located within the VOH district.

Table 4-3: Mitigation Requirements for Cutting Down or Removing Valley Oaks

DBH of Large Valley Oak Being Cut Down or Removed (Inches)	Valley Oak Retention Requirement ³	Valley Oak Replacement Requirement ⁴	Valley Oak Retention and Replacement Requirement	In-Lieu Fee Requirement
Greater than 20	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the diameter at breast height being cut down or removed	Plant 16 trees	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than one-half the diameter at breast height being cut down or removed and plant 8 trees	\$ 50.00
60 or less	None	None	None	None
Greater than 60 up to and including 80	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed	Plant 16 trees	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed and plant 8 trees	\$ 50.00

³ All retained trees shall be valley oaks.

⁴ All replacement trees shall be valley oak acorns, seedlings, saplings, or container grown stock.

DBH of Large Valley Oak Being Cut Down or Removed (Inches)	Valley Oak Retention Requirement ³	Valley Oak Replacement Requirement ⁴	Valley Oak Retention and Replacement Requirement	In-Lieu Fee Requirement
Greater than 80 up to and including 100	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed	Plant 20 trees	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed and plant 10 trees	\$ 75.00
Greater than 100 up to and including 120	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height	Plant 24 trees	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height	\$100.00
Greater than 120 up to and including 140	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed	Plant 28 trees	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed and plant 14 trees	\$125.00

DBH of Large Valley Oak Being Cut Down or Removed (Inches)	Valley Oak Retention Requirement ³	Valley Oak Replacement Requirement ⁴	Valley Oak Retention and Replacement Requirement	In-Lieu Fee Requirement
Greater than 140	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed	Plant 32 trees plus additional 4 trees for each 20 inches of cumulative diameter at breast height being cut down or removed over 140 inches	Retain 1 or more trees having a cumulative diameter at breast height equal to or greater than the cumulative diameter at breast height being cut down or removed and plant 16 trees, plus additional 2 trees for each 20 inches of cumulative diameter at breast height being cut down or removed over 140 inches	\$150.00, plus additional \$25.00 for each 20 inches of cumulative diameter at breast height being cut down or removed over 140 inches
Source: Chapter 26, Article 67 of Sonoma County Municipal Code				

4.4.4 Impacts and Mitigation Measures

This subsection analyzes impacts related to biological resources that could result from implementation of the project. It begins with the criteria of significance, which establish the thresholds for determining whether an impact is significant, and concludes with biological resource impacts associated with the project.

4.4.4.1 *Criteria of Significance*

The proposed project would have a significant effect on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The proposed project includes the development of infrastructure, trails, roadway access, parking areas, and the restoration of aquatic habitats, as well as operation and maintenance and recreation activities, as identified in the Project Description (Section 3.0). The development of infrastructure and the implementation of the allowable uses would occur over time, as funding becomes available. In addition, development of infrastructure and the implementation of allowable uses would occur in four phases over a 35-year period (Table 3-7). Potential project impact areas have been categorized by the construction phase (e.g., development of access, parking, buildings, infrastructure, campgrounds, and trails) and operational phase (e.g., operations, maintenance, restoration, and recreational use).

The discussion of potential impacts is based on review of conceptual designs in the proposed Master Plan. The Master Plan includes provisions to refine designs of recreation facilities and trails and further protect biological resources from both potential direct and indirect impacts, so these potential impacts have been evaluated conservatively. The Master Plan also recommends restoring aquatic and riparian habitats in the project area. Resource Management Plan (RMP) objectives, guidelines, and standards that serve to reduce or avoid impacts are referenced and

summarized below. RMP protection objectives, guidelines, and specific details of standards are outlined in the Master Plan and provided in **Appendix D**.

4.4.4.2 Less Than Significant Impacts

Project implementation would result in the following less than significant biological resource impacts.

Impact BIO-1: The project would not have a substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (LTS)

As described below, although special-status plant and wildlife species are found in the project area, impacts from implementation of the Master Plan would be less than significant due to the low level of proposed development in sensitive habitat areas, avoidance of habitat areas when feasible, and requirements for resource protection and restoration.

Plants

Special-status plant species, including fragrant fritillary, Lobb's aquatic buttercup, and marsh zigadenus, have been observed in the project area within the Tolay Creek Ranch. In addition, suitable habitat (e.g., cismontane woodland, grassland, wetland, serpentine soils) for other special-status plant species (**Appendix D**) is present in the undeveloped portions of the project area; therefore, several other special-status plant species are likely to occur in the project area and warrant protection. Special-status plants are not expected to occur within the developed portion of the Park Complex within the project area, because no suitable habitat for special-status plant species is present in this area. As a result, no impacts to special-status plants would occur in the Park Complex. However, impacts to special-status plants in areas outside the Park Complex could result from the construction and operation phase of the project. Specific impacts from each phase are discussed further below.

Construction Phase

Impacts to special-status plants would result from construction activities including, but not limited to, vegetation clearing, grading, bridge construction, building construction or reconstruction, and trail construction. Impacts could be temporary or permanent, depending on the type of activity proposed and the extent of area of disturbance.

The presence and persistence of non-native invasive species in the project area poses a threat to native habitats throughout the project area by providing a seed source that can be transported from the Park Complex and other disturbed areas with non-native, invasive species to less disturbed habitats. As result, construction of the project could result in the introduction of non-native, invasive species to the less disturbed areas when transporting materials from the Park Complex or other disturbed areas. Non-native, invasive species can compete with native special-status plant species for water and nutrients resulting the direct loss of individuals. Non-native, invasive species can also compete with other plant species within suitable habitat making the habitat less suitable for special-status plant species or by dominating the area and shading out special-status plant species.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O21, RMP-O44, RMP-G2, RMP-G52, RMP-G54, RMP-S31, RMP-S32, RMP-S70, RMP-S72, RMP-S74, RMP-S76, and RMP-S80, would be implemented during construction to ensure that potentially significant impacts to special-status plants would be *less than significant*.

Operation Phase

Impacts to special-status plants would result from operation activities including, but not limited to, trail maintenance, vegetation removal, and mowing. Impacts could be temporary or permanent, depending on the type of activity proposed and the extent of area of disturbance. In addition, similar to the construction phase, operation of the project could result in the introduction of non-native, invasive species to the project area when travelling from a developed or disturbed area to native habitat. In addition, recreation activities could result in the introduction of non-native, invasive species to the project area when people, horses, or dogs travel from a developed or disturbed area to native habitat.

Recreational use in the project area, including pedestrians, horses, and dogs could trample special-status plant species, resulting in the direct loss of individuals. In addition, these activities could compact soils making them less suitable for special-status plant species. Furthermore, grazing and human visitation, could affect the health, numbers, vigor, and reproductive potential of special-status plant species.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O1, RMP-O22, RMP-O23, RMP-O36, RMP-O37, RMP-G17, RMP-G31, RMP-G32, RMP-G33, RMP-G34, RMP-G35, RMP-S1, RMP-S53, and RMP-S54, would be implemented during operation activities and would be implemented during operations to ensure that potentially significant impacts to special-status plants would be *less than significant*.

Special-status Wildlife Species

Special-status species, including California red-legged frog, western pond turtle, golden eagle, burrowing owl, and other special-status avian species have been observed in the project area. In addition, suitable habitat several other special-status species is present in the project area; therefore, other special-status species are likely to occur in the undeveloped portions of the project area and warrant protection. The majority of the special-status wildlife species are not expected to occur within the developed portion of the Park Complex within the project area, because limited suitable habitat for special-status wildlife is available in this area. However, nesting birds and bats could be present within the buildings and trees in the developed portion of the Park Complex. Specific information regarding special-status wildlife species is provided in the following subsections.

Amphibians and Reptiles

Numerous aquatic resources are present in the project area that provide suitable breeding, foraging, basking, and/or refuge habitat for California red-legged frog and western pond turtle. In addition, Tolay Creek provides suitable habitat for foothill yellow-legged frog. Grassland and woodland habitats within the project area also provide suitable dispersal habitat for these species. Therefore, California red-legged frog, western pond turtle, and foothill yellow-legged frog could be impacted from the construction and operation phase of the project. Specific impacts from each type of activity are discussed further below.

Construction Phase

Construction activities could result in temporary or permanent loss of aquatic habitat for California red-legged frog, western pond turtle, and foothill yellow-legged frog, as well as upland dispersal habitat (e.g., grasslands, woodlands) for these species. Construction activities within aquatic habitat could release sediments and contaminants accidentally into water during construction, which could affect aquatic special-status amphibian and reptile species by suspending sediments in the water and/or decreasing water quality. Suspended sediments could affect these species by impacting respiratory functions, burying food sources, decreasing visibility and ability to find food items, altering pool-riffle habitats, and impacting smaller riparian and in-stream vegetation that provides refuge habitat. Although unlikely, refueling operation and storage of construction equipment near aquatic habitat could result in accidental spills of pollutants (e.g., oil, fuel, concrete). Pollutants entering aquatic resources could cause mortality to, and reduced growth of, the egg, larva, juvenile, and adult life stages of these species.

Additionally, construction activities could disturb (or remove) suitable upland habitat. Construction activities could also result in the loss of individuals (e.g., individuals could be crushed by equipment) and/or the disruption of movement patterns during breeding or migration (e.g., noise from construction activities could scare individuals from the area).

Construction could result in the introduction of non-native, invasive plant species to less disturbed areas within the project area (e.g., if equipment is not properly washed when moving from a developed or disturbed area to a more undisturbed area). Non-native, invasive plant species can compete with other plant species within suitable habitat making the habitat less suitable for special-status wildlife species.

Lastly, construction activities in water could facilitate the introduction of amphibian chytridiomycosis. Amphibian chytridiomycosis is a disease caused by the zoospore fungus pathogen *Batrachochytrium dendrobatidis* (Bd), which can cause lethargy and weakness in adult frogs and usually results in death of tadpoles. Amphibian chytridiomycosis is transported in water or mud, including in muddy footwear.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O25, RMP-O44, RMP-G21, RMP-G52, RMP-G54, RMP-S35, RMP-S70, RMP-S73, RMP-S74, RMP-S77, and RMP-S80, would be implemented during construction to ensure that potentially significant impacts to special-status amphibian species are *less than significant*.

Operations Phase

Habitat restoration activities in Tolay Lake, creeks, and riparian habitats could temporarily impact California red-legged frog, western pond turtle, and foothill yellow-legged frog by temporarily removing suitable breeding, foraging, basking, refuge, and dispersal habitat. In addition, habitat restoration could result in the loss of individuals or the temporary disruption of movement patterns. However, overall, restoration activities are expected to *benefit* these species by providing additional habitat for refuge, foraging, dispersal, and breeding.

Invasive species control could require draining stock ponds and applying herbicide to invasive species. Draining stock ponds would temporarily remove habitat for California red-legged frog and could result in the temporary displacement of individuals. Herbicide treatment could result in

decreased water quality, which could cause mortality to, and reduced growth of the egg, larva, juvenile, and adult stages of special-status amphibian and reptile species.

Recreation and operations activities could introduce non-native, invasive plant species to aquatic habitat, especially if people, dogs, or horses move from developed and disturbed areas to more undisturbed areas and enter aquatic habitat. Of particular concern in the project area is water primrose (*Ludwigia* sp.), which grows in stock ponds and forms extensive mats on the water's surface. This species can displace native plants, lower oxygen in the water column, and reduce water quality; therefore, reducing habitat quality for California red-legged frog. In addition, invasive plant species can provide shelter for predators of California red-legged frog, western pond turtle, and foothill yellow-legged frog, such as bullfrogs and warm water fish.

Recreation activities could also introduce non-native, invasive wildlife species through accidental release (e.g., during fishing activities). Introduced non-native, invasive wildlife species can prey on the eggs, larvae, juvenile, or adult California red-legged frogs, foothill yellow-legged frogs, and/or western pond turtle. In addition, non-native wildlife species can compete with native wildlife species for habitat and food sources, making the habitat less suitable for native wildlife species.

Similar to construction activities (discussed above), operation and recreation activities in water could facilitate the introduction of amphibian chytridiomycosis. In addition, similar to construction activities (discussed above), operation and recreation activities in water could affect aquatic amphibian and reptile species by suspending sediments in the water.

However, RMP objectives, guidelines, and standards objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O26, RMP-O27, RMP-O28, RMP-G22, RMP-G23, RMP-G38, RMP-G56, RMP-G57, RMP-S36 through RMP-S40, RMP-S51 through RMP-S52, RMP-S81, and RMP-S85, would be implemented during operations to ensure that potentially significant impacts to special-status amphibian species are *less than significant*.

Burrowing Owl

Burrowing owls in California generally breed from February 1 to August 31. Breeding burrowing owls are not anticipated to occur within the project area. Therefore, no impacts to breeding burrowing owls would occur.

Burrowing owls are also found in burrows outside the breeding season from September 1 to January 31. Suitable habitat for wintering burrowing owl is present in the rock outcrop and grassland habitats in the project area, and wintering burrowing owls have been observed near the rock outcrops in the project area. Therefore, wintering burrowing owls could be impacted during the construction and operation phases of the project near the rock outcrops. Specific impacts from each type of activity are discussed further below.

Construction Phase

Construction activities (e.g., grading, excavation, staging) could result in temporary and permanent impacts to burrowing owl. Burrows could be crushed if they are present in the work area and burrowing owl individuals could be injured or killed. In addition, construction of trails, roads, and other infrastructure could result in the temporary or permanent removal of burrowing owl wintering habitat. Furthermore, noise and increased activity, grading, and excavation could

temporarily disturb burrowing owls, potentially resulting in the abandonment burrows. However, implementation of RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O44, RMP-G54, RMP-S74, RMP-S77, and RMP-S80, as well as Mitigation Measure (MM) BIO-1 described below, would reduce impacts to western burrowing owl to *less than significant*.

Operation Phase

Operation activities (e.g., grading, mowing, vegetation removal) could result in temporary and permanent impacts to burrowing owl. Burrows could be crushed if they are present in the maintenance area and burrowing owl individuals could be injured or killed. In addition, noise associated with operation activities could disturb burrowing owls, potentially resulting in the abandonment of burrows.

Human foot traffic, vehicle traffic, the presence of dogs, and other repeated surface activities in the project area could disturb burrowing owls, potentially resulting in the abandonment of burrows or disturbing foraging/resting behavior. Use of herbicides in the project area can degrade burrowing owl foraging habitat by decreasing the amount and type of prey available to foraging owls. In addition, use of herbicides and other toxins in the project area could degrade burrowing owl wintering habitat and ultimately increase burrowing owl mortality. Increased recreation and human visitation to the project area could potentially increase predation and harassment from dogs. Dogs can kill or harass ground-dwelling burrowing owls.

However, implementation of RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-S51, RMP-S52, and RMP-S81, as well as MM BIO-1 described below, would reduce impacts to western burrowing owl to *less than significant*.

MM-1: During the non-breeding season (September 1 to January 31) for burrowing owls, surveys would be conducted near suitable burrowing owl habitat in accordance with the CDFW Staff Report on Burrowing Owl Mitigation (CDFW 2012) prior to construction of trails, roads, and other project area infrastructure. Should burrowing owls be detected, a qualified avian biologist would make a recommendation to Regional Park staff to avoid impacts to burrowing owl.

Migratory Birds

Migratory birds and nesting raptors, which includes the white-tailed kite, northern harrier, golden eagle, California horned lark, grasshopper sparrow, saltmarsh common yellowthroat, tricolored blackbird, yellow warbler, and loggerhead shrike could occur within the aquatic (e.g., lake, marsh and swamp, wetland) and/or upland (e.g., woodland, grassland, wildflower fields) habitat within the project area. Migratory nesting birds could also occur within the trees, shrubs, and buildings in the Park Complex. Therefore, nesting migratory birds could be impacted during the construction and operation phases of the project. Potentially significant impacts from each type of activity are discussed further below.

Construction Phase

If construction activities occur during the nesting season, tree or vegetation (e.g., grass or shrubs) removal could result in the direct loss of a nest. In addition, noise and increased activity, grading, and excavation could temporarily disturb nesting or foraging activities, potentially resulting in the abandonment of nests.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O30, RMP-O44, RMP-G52, RMP-G54, RMP-S41, RMP-S70, RMP-S72, RMP-S74, RMP-S77, RMP-S78, and RMP-S80, would be implemented during construction to protect nesting migratory bird species and ensure that potentially significant impacts to these species would be *less than significant*.

Operation Phase

If operation activities occur during the nesting season, tree or vegetation (e.g., grass or shrubs) removal or mowing could result in the direct loss of a nest. In addition, noise and increased activity associated with operation activities could temporarily disturb nesting or foraging activities, potentially resulting in the abandonment of nests.

Repeated human visitation, as well as the presence of dogs and horses during the avian breeding season, may disturb nesting or foraging activities and, therefore, reduce nest survival by reducing parental attendance rates and leaving nests more vulnerable to predation or inclement weather. In addition, in areas where disturbance is frequent and/or prolonged, nests could be abandoned.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O29, RMP-O31, RMP-G24 through RMP-G27, RMP-S42, and RMP-S43, would be implemented during operations to protect nesting migratory bird species and ensure that potentially significant impacts to these species would be *less than significant*.

American Badger

American badgers have not been recorded in the project area or immediate vicinity; however, the potential exists for American badgers to be present on hillsides (i.e., East and West ridges) in the project area. Several suitable large burrows for American badger have been observed in these areas. Therefore, American badger could be impacted by the construction or operation phases of the project. Specific impacts from each phase are discussed further below.

Construction Phase

Construction of trails in grassland habitat could result in temporary and permanent loss of grassland habitat used by American badgers. In addition, construction, such as grubbing and grading of trails, in grassland habitat (especially near the East and West ridges) could result in injury or mortality of American badgers.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O34, RMP-O44, RMP-G54, RMP-S48, RMP-S49, RMP-S72, RMP-S77, and RMP-S80, would be implemented during construction to protect American badger and ensure that potentially significant impacts to these species would be *less than significant*.

Operation Phase

American badgers are sensitive to repeated human activities, particularly actions that alter soil integrity. Operations activities and repeated human visitation associated with recreation activities in the project area could affect the routine behavior of American badgers and ultimately result in burrow abandonment and relocation. In addition, dog walking and horseback riding in the project area could result in injury or mortality of American badgers, crushed American badger dens, and/or disturbance of American badgers that results in burrow abandonment and relocation.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O35 and RMP-G30, would be implemented during operations to protect American badger and ensure that potentially significant impacts to these species would be *less than significant*.

Bats

The potential exists for bats, including pallid bat and Townsend's big-eared bat, to roost in buildings in the Park Complex, as well as in the trees and bridges throughout the project area. Therefore, bats could be impacted by the construction and operation phase of the project. Specific impacts from each phase are discussed further below.

Construction Phase

Construction activities associated with the demolition of buildings and removal of trees could injure or kill bats. Many bat species exhibit high site fidelity and the removal or damage to roosts can lead to roost abandonment or exposure. In addition, noise and vibrations associated with construction of project components could disturb nearby roosting bats.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O32, RMP-O44, RMP-G52, RMP-G54, RMP-S45, RMP-S46, RMP-S70, RMP-S72, RMP-S74, RMP-S79, and RMP-S81, would be implemented during construction to protect roosting bats and ensure that potentially significant impacts to these species would be *less than significant*.

Operation Phase

Maintenance activities associated with the removal of trees could kill or injure bats. In addition, noise and vibrations associated with maintenance activities near suitable habitat could disturb nearby roosting bats.

Bats are known to forage over livestock water troughs. Most bats are unable to support themselves on their hind legs and; therefore, drink water by swooping over the water source. As a result, water troughs can create potential hazards to flying bats and bats can be injured or killed if they collide with the water trough or structures that have been added to modify the water trough.

Bats are particularly susceptible to perturbations from human activities which have contributed to the decline in several species. Disturbance from ongoing operations and recreation during hibernation and rearing can result in roost abandonment and mortality, particularly to young bats. Light pollution can alter foraging behavior and compromise bat populations. However, bats forage at night when the project area would be closed to most visitors. Overnight camping would be allowed in certain locations within the project area. Overnight camping can alter foraging behavior at night by creating noise and light pollution. In addition, noise associated with overnight camping can lead to roost abandonment and exposure.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O33, RMP-G23, and RMP-G29, would be implemented during operations to protect roosting bats and ensure that potentially significant impacts to these species would be *less than significant*.

Restoration activities associated with Tolay Creek and Cardoza Creek riparian areas and the East Ridge could disturb bat roosting in these areas. In addition, restoration activities associated with

Tolay Lake and other aquatic resources could temporarily reduce or disturb bat foraging habitat. Restoration activities would not occur at night when bats are foraging; therefore, these activities are not expected to alter bat foraging behavior. The planting of native trees along Tolay Creek, Cardoza Creek, and the East Ridge is expected to provide additional roosting opportunity for bats in the project area. In addition, the restoration of Tolay Lake would improve the ecosystem around Tolay Lake and, ultimately, improve bat foraging habitat in the area. Overall, the preservation of existing roosts, the creation of roosts, protection the project area's diverse habitats, and minimization of the use of chemical insecticides would contribute to the enhancement and protection of the bat population in the area. Therefore, potentially significant impacts associated with restoration activities would be *less than significant* and would, ultimately, *benefit* bat species.

Impact BIO-2: The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (LTS)

Implementation of the RMP would minimize disturbance of riparian and other sensitive habitats through site design and adherence to RMP objectives, guidelines, and standards. Specific impacts to each habitat type during the construction and operation phase of the project are described further below. RMP objectives, guidelines, and standards to protect sensitive natural communities during the construction and operation phase of the project are provided at the end of this section.

Riparian Woodland Habitat

Riparian habitat within the project area includes willow thickets along Tolay Creek and Cardoza Creek. Approximately 8.3 acres of riparian habitat is present in the project area (WRA 2013). Riparian habitat within the project area provides bank stabilization, increased filtration of runoff into the soil, nutrient input, improved water quality, and buffering from flood events. Riparian habitat also could act as migratory corridors for wildlife by providing cover and foraging habitat.

Construction Phase

During project construction, riparian habitat could be impacted by bridge and trail construction. Impacts could be temporary or permanent, depending on the type of activity proposed.

Currently, riparian vegetation is absent along many of the project area streams where it would normally be expected. Head-cuts and down-cuts contribute to the loss of riparian vegetation. Construction activities could indirectly cause erosion and degradation of riparian areas, contributing to the loss riparian vegetation in the project area.

Construction activities could also introduce non-native, invasive species into native habitat when vehicles, equipment, and people travel from more developed and disturbed areas to less disturbed area. Non-native, invasive species could compete with native riparian vegetation and degrade the quality of riparian habitat. Non-native species such as Himalayan blackberry (*Rubus armeniacus*) frequently cover both banks of the upper reaches of streams in the project area and exclude native shrubs and herbs.

Construction activities could also indirectly cause the degradation of water-quality in the project area due to erosion and transport of fine sediments downstream of the construction area and

unintentional release of contaminants into jurisdictional waters and, thus, riparian areas that are outside of the footprint of work site. These discharges could indirectly impact riparian habitat in the project area.

During restoration activities associated with Tolay Creek and Cardoza Creek, riparian habitat would be impacted. Impacts would be temporary and permanent. Impacts include, but are not limited to, planting native riparian vegetation, installing exclusionary fencing, and removing invasive plants. However, restoration activities are expected to *benefit* riparian habitat in the project area overall by ultimately creating additional riparian areas and improving species diversity.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-G52, RMP-S5 through RMP-S7, RMP-S70, RMP-S74, and RMP-S82, would be implemented during construction to protect riparian habitats and ensure that potentially significant impacts would be *less than significant*.

Operation Phase

Human and livestock uses can alter riparian vegetation and exacerbate erosion issues. Livestock and human visitors in the project area could trample riparian vegetation and/or compact soils making them less suitable for native vegetation. Erosion from trampling and runoff from trails around waterbodies can also increase sediment delivery into riparian habitats. Human and livestock uses can also introduce non-native, invasive plant species that can out-compete native riparian vegetation.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O6, RMP-O7, RMP-O14, RMP-G1, RMP-G45, RMP-G48, RMP-G52, RMP-S2, RMP-S10, and RMP-S61, would be implemented during operations to protect riparian habitats and ensure that potentially significant impacts would be *less than significant*.

Buckeye and Oak Woodland Habitat

Other sensitive woodland habitat within the project area includes California buckeye woodlands and oak woodlands. Approximately 113 acres of other sensitive woodland habitat is present in the project area (WRA 2013). These woodlands provide valuable cover and forage for a suite of wildlife species, including small mammals, amphibians, birds, and reptiles. Woodland trees also maintain soil integrity and water quality through the prevention of erosion and filtration.

Construction Phase

During project construction, woodland habitat could be impacted by trail construction. Impacts could be temporary or permanent, depending on the type of activity proposed.

Construction activities could result in the fragmentation of woodland habitat by bisecting the habitat with trails and other infrastructure. Fragmentation of woodland habitat could ultimately diminish migratory habitat for wildlife and decrease cover available to wildlife.

Currently, the project area woodlands are relatively free of invasive plant species. Isolated populations of Himalayan blackberry and Italian thistle (*Carduus pycnocephalus*) are present and pose a threat to native understory flora. Construction activities could introduce non-native, invasive species into woodland areas, which could compete with native vegetation and degrade the quality of woodland habitat.

During restoration activities associated oak woodland habitat, both temporary and permanent impacts could occur. Impacts include, but are not limited to, planting native vegetation, installing exclusionary fencing, and removing invasive plants. However, restoration activities are expected to **benefit** oak woodland habitat in the project area overall by ultimately improving species diversity and the quality of oak woodland habitat.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O11, RMP-G52, RMP-S14, RMP-S15, RMP-S74, RMP-S76, and RMP-S83, would be implemented during construction to protect woodland habitats and ensure that potentially significant impacts would be **less than significant**.

Operation Phase

Maintenance activities in woodland habitat could result in temporary or permanent impacts, depending on the type of maintenance activity proposed.

Currently, the project area woodlands are relatively free of invasive plant species. Isolated populations of Himalayan blackberry and Italian thistle are present and pose a threat to native understory flora. Human and livestock uses can introduce non-native, invasive species into woodland habitat, which could compete with native vegetation and degrade the quality of woodland habitat.

Repeated visitation to oak woodlands through human uses can introduce sudden oak death, which is caused by a water mold (*Phytophthora ramorum*) and is a threat to oaks, as well as some other native tree species. Currently, sudden oak death has not been documented in the project area. Human visitors can spread *P. ramorum* by tracking infected mud along trails and between locations within the project area.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O12 through RMP-O14, RMP-G12, RMP-G13, RMP-G45, RMP-G48, RMP-G52, RMP-G57, RMP-S16, RMP-S18, RMP-S61, RMP-S83, and RMP-S84, would be implemented during operations to protect woodland habitats and ensure that potentially significant impacts would be **less than significant**.

Rock Outcrop Habitat

Rock outcrops in the project area consist of boulder fields, large emergent rocks, and man-made rocks. Approximately 11 acres of rock outcrop habitat is present in the project area (WRA 2013). Rock outcrops provide habitat for many fossorial mammals and bird species, unique substrate for plants, and aesthetic value for people.

Construction Phase

During project construction, rock outcrop habitat could be impacted by trail construction. Impacts could be temporary or permanent, depending on the type of activity proposed.

Construction activities could introduce more or new non-native, invasive species into areas that are predominately native, which could compete with native vegetation and degrade the quality of plant and wildlife habitat.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-G52, RMP-S27, RMP-S70, RMP-S74, and RMP-S76, would be implemented

during construction to protect rock outcrop habitats and ensure that potentially significant impacts would be *less than significant*.

Operation Phase

Rock outcrops frequently attract human visitation that can have a deleterious effect on native vegetation and wildlife functions in the area. Livestock and human visitors in the project area could trample vegetation, remove rocks, and/or compact soils making the area less suitable for native vegetation and wildlife. Human and livestock uses can also introduce more or new non-native, invasive plant species into areas that are predominately native that can out-compete the native vegetation.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O14, RMP-O20, RMP-G16, RMP-G45, RMP-G48, RMP-G52, RMP-S28, RMP-S29, and RMP-S61, would be implemented during operations to protect rock outcrop habitats and ensure that potentially significant impacts would be *less than significant*.

Grassland and Wildflower Habitat

The majority of the project area is composed of grassland habitats including non-native grassland and native grasslands. Native grasslands are considered sensitive vegetation communities. Approximately 213 acres of native grassland habitat is present in the project area (WRA 2013). Wildflower habitat is not ranked as a sensitive community; however, it provides habitat for many unique plant and wildlife species within the project area. Approximately, 87 acres of wildflower habitat is present in the project area (WRA 2013). Native grasslands and wildflowers within the project area provide rainfall infiltration, as well as soil and nutrient retention. They also buffer erosion in waterways and wetlands and provide food, forage, cover, and dispersal habitat for several wildlife species.

Construction Phase

During project construction, grassland and wildflower habitat could be impacted by road and trail construction. Impacts could be temporary or permanent, depending on the type of activity proposed. Although the extent of the impact is largely unknown at this time some native grassland habitat would be permanently removed by both roads and trails in the project area.

Construction of trails and roads could fragment native grassland and wildflower habitat and threaten the integrity of the vegetation communities, making them less desirable habitat for special-status plants and wildlife species. In addition, trails and roads can provide pathways for erosion, sediment migration, and compacted soils within these vegetation communities.

Construction of trails and roads could remove cream cups or Johnny jump-up wildflower habitat, which are host plants to unique invertebrate species (e.g., Opler's longhorn moth and Zerene silverspot butterfly). Removal or degradation of these wildflower species would remove foraging habitat and limit the occurrence of these species in the project area. In addition, a decline in the population of these host plants could threaten the status of these invertebrates overall.

Grasslands are particularly susceptible to infestation by non-native plants. Construction activities could introduce non-native, invasive species, which could compete with native grassland vegetation and wildflowers, reduce habitat complexity and diversity, and decrease habitat value for livestock and wildlife. The loss of perennial native grasses to non-native, invasive species can

lead to soil erosion. While, the loss of both native grasses and wildflowers diminishes valuable forage and cover resources for native mammals, birds, and invertebrates. Some non-native, invasive species within grassland habitats can also increase fire hazards. Well-managed livestock grazing may help suppress some non-native plant species in these habitats and facilitate some native species.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O15, RMP-G14, RMP-G15, RMP-G52, RMP-S19, RMP-S20, RMP-S34, RMP-S70, RMP-S74, and RMP-S76, would be implemented during construction to protect grassland and wildflower habitats and ensure that potentially significant impacts would be *less than significant*.

Operation Phase

Livestock and human visitors in the project area could trample native grassland and wildflower vegetation and/or compact soils making them less suitable for native vegetation. Human and livestock uses can also introduce non-native, invasive plant species that can out-compete native vegetation.

Managed grazing the project area can confer *benefits* to native grassland and wildflower habitats by reducing non-native annual thatch, providing fire hazard prevention, and maintaining bare areas. However, when not managed properly, these same effects from livestock grazing can be deleterious and contribute to erosion, nutrient runoff, invasive species spread, and soil compaction.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O14, RMP-O16 through RMP-O19, RMP-G14, RMP-G45, RMP-G48, RMP-G52, RMP-S21 through RMP-S24, and RMP-S61, would be implemented during operations to protect grassland and wildflower habitats and ensure that potentially significant impacts would be *less than significant*.

Impact BIO-3: The project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. (LTS)

Potential jurisdictional wetlands, including vernal pool, freshwater seeps, marshes, ponds, lakes, ephemeral streams, and perennial streams are present in the project area. Impacts to wetland and non-wetland resources protected by Section 404 of the CWA could result from both the construction and operation phase of the project. Specific impacts from each type of activity are discussed further below.

Construction Phase

During project construction, wetlands and non-wetland waters could be impacted by recreation facility, bridge and trail construction. Impacts could be temporary or permanent, depending on the type of activity proposed.

Construction activities could also indirectly cause the degradation of water-quality in the project area due to erosion and transport of fine sediments downstream of the construction area and unintentional release of contaminants into jurisdictional waters that are outside of the footprint of

work site. These discharges could indirectly impact adjacent or downstream wetland and non-wetland waters in the project area.

During restoration activities associated with Tolay Lake, Tolay Creek, and Cardoza Creek, wetlands and non-wetland waters would be impacted. Impacts would be temporary and permanent. Impacts include, but are not limited to, planting native riparian vegetation, installing exclusionary fencing, removing invasive plants, increasing Tolay Lake area and depth, and installing culverts. In addition, construction activities associated with the restoration of these areas could temporarily degrade water quality due to transport of fine sediments or unintentional release of contaminants. However, restoration activities are expected to **benefit** federally protected wetlands and non-wetland waters overall by ultimately improving the function and water quality in these areas.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O9, RMP-G52, RMP-S6, RMP-S11, RMP-S12, RMP-S70, RMP-S73 through RMP-S75, and RMP-S82 would be implemented during construction to protect wetlands and other waters and ensure that potentially significant impacts would be **less than significant**.

Operation Phase

During maintenance activities (e.g., grading, vegetation removal, invasive species removal), wetlands and non-wetland waters could be impacted. Impacts could be temporary or permanent, depending on the type of activity proposed.

The storage and use of potential contaminants (e.g., gasoline, oil, solvents) is a necessary function of project operations and maintenance in and around the Park Complex. The compacted and impervious surfaces in and around this location, including roads, could provide a conduit for water and sediment runoff and pose an erosion hazard to the project area. In addition, the use of herbicides within the project area to remove invasive species could degrade water quality.

Human and livestock uses can alter wetland and non-wetland hydric regime and exacerbate erosion issues. Livestock and human visitors in the project area could trample wetlands, resulting in soil compaction, degradation of water quality through elevated sedimentation. Erosion from trampling and runoff from trails around waterbodies can also increase sediment delivery into wetland habitats and adjacent receiving waters. In addition, livestock, dogs, and horses can degrade water quality through nutrient input from waste.

Indirect impacts on wetland associated with the project can also result from trails during rain events. Trails can concentrate runoff by acting as conduits for flow and diverting water into a single area. When overland flows concentrate they can cause soil erosion and gulying. In addition, increases in the amount of water delivered to the drainage in the project area can exacerbate channel bank erosion and headcut movement. Channeling flows on trails and into creeks can also reduce the amount of rainfall that infiltrates the soil and that is available to recharge groundwater.

However, RMP objectives, guidelines, and standards in Table 4.5-4 including, but not limited to, RMP-O2, RMP-O10, RMP-G1, RMP-G4, RMP-G7 through RMP-G11, RMP-G55, RMP-S2, RMP-S8, RMP-S9, and RMP-S81 would be implemented during operations to protect wetlands and other waters and ensure that potentially significant impacts would be **less than significant**.

Impact BIO-4: The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (LTS)

The project area provides a habitat core and several linkages, including from Cougar Mountain to Sonoma Mountain, and between the Petaluma and Sonoma-Napa marshes. The northern portion of the Tolay Lake property is within the Marin Coast to Blue Ridge Critical Linkage. The project area is largely undeveloped and is connected with other large tracts of undeveloped space. Part of its considerable biological value lies in its function as a large area that is in a relatively natural condition largely free of human presence. It, therefore, functions as an important migratory corridor for the movement and dispersion of species in the region.

Construction of the project would locate most of the infrastructure development in the Park Complex where buildings are already present. Therefore, development of this area is not anticipated to impede wildlife movement once constructed.

Construction of the trails and roads could fragment some habitat; however, the trails and road would be composed of relatively narrow linear features that would not present significant barriers to wildlife movement. Overall, the project would maintain the open character of the area and protect contiguous habitat that serves as a migration corridor (see RMP measures for Sensitive Natural Communities).

Human visitation could disrupt wildlife movement in the project area; however, dogs will be kept on a leash and humans would remain on trails. Many wildlife species migrate at night and the project area would be closed at night, other than a small area reserved for camping. Therefore, impacts to fish and wildlife or their movement corridors would be ***less than significant***.

Impact BIO-5: The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. (NI)

There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that apply to the project area. Therefore, the project would have ***no impact*** with the provisions of such plans.

4.4.4.3 Significant Impacts

Project implementation would result in the following significant biological resource impacts.

Impact BIO-6: The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (LTS/M).

The project would not conflict with any of the biological goals or policies in the Sonoma County General Plan. Although the removal of trees would be avoided to the extent feasible, the project would require the removal of some native trees within the project area. These trees may be protected under a local ordinance. However, implementation of RMP-S15 in Table 4.4-4, as well as MMs BIO-6a and BIO-6b described below, would reduce this impact to ***less than significant***.

Mitigation Measures

- **MM BIO-6a:** Prior to project implementation, a qualified arborist would inventory trees in areas proposed for development and determine whether they are protected.
- **MM BIO-6b:** Valley oak trees removed would be replaced at the ratios detailed in Table 4.4-3.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
Developed and Disturbed Area Objectives, Guidelines, and Standards				
RMP-O1	<p>Prevent the spread of non-native plant species from developed and disturbed areas into natural areas of the Park.</p> <p>Non-native plants intended for aesthetics or agricultural purposes can escape and come to out-compete native species and invasive plants are highly adaptable to disturbed areas of human development. To ensure that the ornamentals, agricultural plants, and invasive species in and around developed and disturbed areas do not escape into natural areas, monitoring and control should be implemented.</p>		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-O2	<p>Prevent erosion, sediment migration, and migration of pollutants from developed and disturbed areas into natural areas.</p> <p>The storage and use of potential contaminants (e.g., gasoline, oil, solvents) is a necessary function for operations and maintenance in and around the Park Complex. The compacted and impervious substrates in and around the Park Complex, roads, trails, and other infrastructure provide a conduit for water and sediment runoff and pose an erosion hazard. Measures to prevent water and sediment migration, erosion, and potential contaminants will be implemented in and around the Park Complex as well as during construction of infrastructure and regular park maintenance operations.</p>	X	X	Limits soil erosion and sediment migration and lowers the risk of chemical spills or pollutant transport. Reduces impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.
RMP-G1	<p>Periodic monitoring will be conducted in and around the Park Complex to document and repair point-source erosion and pollutant hazards.</p>		X	Allows for the identification and prevention of future potential erosion and/or pollutant transport. Reduces impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-G2	Landscape planting in the Park Complex should be preferentially native species, particularly species native to the Park. A preferred native plant species list will be developed and species from the list will be used for new and replacement plantings. Where non-native and non-regional plants are selected for landscaping or agricultural uses, they will be drought tolerant. Plants likely to escape into the natural areas of the Park will not be used.	X	X	Limits the spread of non-native plant species by preferentially planting native species and ensuring non-native plants that could spread into other areas are not planted. Reduces impacts to special-status plant species and sensitive natural vegetation communities.
RMP-S1	Monitoring will be conducted monthly through the dry season and spot treatment of invasive plants will be conducted to eradicate them before they escape into natural areas.		X	Allows for the identification and prevention of future potential spreading of non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-S2	Point-source erosion or pollution will be halted immediately, and any remedial actions will occur as soon as feasible.	X	X	Lowers the risk of soil erosion and/or pollutant transport by ensuring these issues are addressed immediately. Reduces impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.
Blue Gum and Monterey Cypress Groves Objectives, Guidelines, and Standards				
RMP-O3	Prevent the spread of blue gum and Monterey cypress into natural areas. The fast-growing blue gum can reach heights of upwards of 200 feet under prime conditions, over-topping shorter native vegetation. Additionally, blue gum may have allelopathic chemicals that hinder the viability of understory vegetation. Blue gum in particular poses a more distinct threat because it reproduces rapidly, spreads into natural habitats and quickly over-tops shorter shrub and herbaceous native	X	X	Lowers the risk of spreading blue gum and Monterey cypress into natural areas. Reduces impacts to special-status plant species and sensitive natural vegetation communities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	communities.			
RMP-S3	Monitoring of blue gum and Monterey cypress will be conducted throughout the Park, particularly in areas of these non-native groves. Seedlings and saplings will be eradicated by mechanical removal, possibly followed by herbicide treatment. Monitoring for blue gum and Monterey cypress will occur at a minimum of every five years.		X	Allows for the identification and prevention of future potential spreading of blue gum and Monterey cypress into natural areas. Reduces impacts to special-status plant species and sensitive natural vegetation communities.
Streams, Ponds, and Riparian Habitats Objectives, Guidelines, and Standards				
RMP-O6	Enhance native plants in existing riparian areas and expand riparian vegetation in areas where it is absent. Typical riparian vegetation is absent along many seasonal streams where ordinarily it might be expected. The loss of riparian vegetation can be contributed to head-cuts and down cuts, the lowering of the water table, and impacts from grazing and other anthropogenic disturbances. Supplemental planting of native species in existing riparian habitats can increase species diversity and provide additional forage and cover for wildlife. Restorative riparian plantings along streams will contribute to bank stabilization, decrease water velocity, and lower water temperature.		X	Lowers the risk of erosion and sediment migration into wetland and non-wetland waters.
RMP-O7	Monitor, remove, and control invasive species that threaten habitat quality in riparian areas. Invasive species can out-compete the native flora in riparian habitats. Himalayan blackberry (<i>Rubus armeniacus</i>) is common throughout the Park, frequently covering both banks of the upper reaches of streams,		X	Allows for the identification and prevention of future potential spreading of non-native plant species into riparian areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	excluding native shrubs and herbs. Water primrose (<i>Ludwigia</i> sp.) is a particular problem in the stock ponds where it forms extensive mats on the water’s surface. This species can displace native plants, lower oxygen in the water column, and reduce water quality. Aggressive removal and control efforts should be administered for water primrose to improve water quality of the stock ponds and increase the quality of habitat for California Red Legged Frog (CRLF). Himalayan blackberry should be controlled to prevent its spread, and when feasible targeted for complete removal.			
RMP-G4	Livestock troughs, feeding areas, and loafing areas should be discouraged near head-cuts.		X	Reduces the risk of aggravated erosion and potential for sediment transport to waterbodies due to livestock concentration in areas of feeding, drinking, or loafing. Reduces the impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.
RMP-G6	A targeted restoration plan to halt the continued advance of head-cuts will be developed. Check dams of stone and native brush cuttings may be used as an effective means to trap sediment migration and rebuild the soil surface. Livestock exclusion fencing may be used as necessary to reduce continued impacts from grazing animals.		X	Ensures observed impacts to riparian habitats and wetland and non-wetland waters associated with head-cuts are addressed so that impacts over time are minimized.
RMP-S5	Minimum setbacks from the top of bank and outer extent of the riparian canopy dripline will be maintained to the greatest extent feasible.	X	X	Reduces risk of bank erosion and riparian vegetation impacts. Reduces impacts to riparian habitat and wetland and non-wetland waters.
RMP-S6	Trails, roads, and other Park infrastructure will avoid streams, stock	X		Reduces the risk of erosion to stream and pond banks from

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	ponds, and riparian habitats to the greatest extent feasible.			visitor traffic and park maintenance and operation activities thereby limiting the potential for sediment transport to the stream and ponds. Lowers the risk of riparian vegetation trampling from visitor traffic and park maintenance and operation activities.
RMP-S7	Where roads and trails must intersect with ponds, streams, and riparian habitats ground disturbing activities will be accompanied by best management practices to avoid unnecessary soil erosion, soil compaction, and invasive species encroachment. A restoration plan for any proposed trail within riparian habitat, near or across streams will be developed and implemented.	X	X	Reduces the risk of soil erosion, soil compaction, and invasive species encroachment in riparian habitat. Ensures impacts to riparian habitats associated with temporary ground disturbing activities and/or future operation of riparian trails and crossings are appropriately addressed. Reduces impacts to riparian habitats and wetland and non-wetland waters.
RMP-S8	Erosion prone areas, bridges, and stream and culvert crossings will be evaluated to determine if repair and/or restoration are necessary. Areas where concentrated flow is occurring will be repaired by re-grading slopes, re-vegetating, and/or installing flow dispersal devices.		X	Facilitates the identification and repair of erosion “hot spots” to maintain water quality protection and provide adequate infiltration and conveyance. Reduces impacts to riparian habitats and wetland and non-wetland waters.
RMP-S9	In areas of new or recent erosion, a restoration and prevention plan should be developed in consultation with a qualified ecologist and civil engineer or landscape architect. Treatments may include willow walls, check dams of native natural materials (e.g., cut brush, limbs, stone), and/or re-grading and shaping of the erosion feature followed by native species plantings.		X	Ensures mitigation of and appropriate response to impacts to riparian habitat and wetland and non-wetland waters associated with new or recent erosion.
RMP-S10	High priority invasive plants will be eradicated or controlled in riparian habitats and along stream corridors to the greatest extent feasible. The spread of invasive plant populations into riparian habitats		X	Lowers the risk of spreading non-native plant species into riparian habitats. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	will be prevented to the greatest extent feasible. Currently, Himalayan blackberry (<i>Rubus armeniacus</i>) and poison hemlock (<i>Conium maculatum</i>) pose the greatest threat to riparian habitats.			vegetation communities.
Tolay Lake and Other Wetlands Objectives, Guidelines, and Standards				
RMP-O8	<p>Monitor and reduce head-cutting in drainages upstream from wetlands; monitor for and protect from sediment migration, nutrient runoff, and other contaminants into wetlands.</p> <p>Head-cuts can deliver large sediment loads and increase the velocity of flowing waters contributing to erosion or filling in downstream wetlands. Increased soil volume and flow velocity can create incisions in wetlands channelizing the wetland and eventually converting it to upland habitat. Reducing head-cuts at upstream locations and within wetlands can prevent habitat type conversion and retain the ecologic and hydrologic function and integrity of the parks wetland habitats. Roads, cattle loafing areas, trails, and other sites with shallow or easily lifted soils are particularly susceptible to runoff during the wet season, and soil migration into adjacent wetland areas can threaten wetlands ability to perform water and habitat quality functions. Preventing or reducing excessive soil, water, nutrient, and contaminant runoff can be achieved through physical or temporal restrictions, grazing rotations, and/or road and trail design.</p>		X	Allows for the identification and reduction of head-cuts at upstream locations and within wetlands, which would prevent habitat type conversion and retain the ecological function and integrity of wetland and non-wetland waters. Prevents or reduces excessive soil, water, nutrient, and contaminant runoff. Reduces impacts to wetland and non-wetland waters.
RMP-O9	<p>Monitor, remove, and control invasive species that threaten habitat and water quality in wetlands.</p> <p>The species composition of wetlands varies with their location, soil chemistry and texture, slope gradient, hydro-period, and distance to</p>		X	Allows for the identification and prevention of future potential spreading of non-native plant species into wetland areas. Lowers risk of water quality degradation. Reduces impacts to special-status plant species, special-status wildlife species, and

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	<p>repeated disturbance, but most are dominated by or have substantial cover of native hydrophytes. These species are specially adapted to saturated and/or inundated conditions of the wetlands. However, several invasive plant species occur within wetlands, and in some instances dominate the native species cover, including: Himalayan blackberry (<i>Rubus armeniacus</i>), poison hemlock (<i>Conium maculatum</i>), Fuller’s teasel (<i>Dipsacus fullonum</i>), bristly ox-tongue (<i>Helminthotheca echioides</i>), harding grass (<i>Phalaris aquatic</i>), curly dock (<i>Rumex crispus</i>), and several non-native annual grasses tolerant of seasonally saturated conditions. While it is not possible to completely remove these annual grasses, controlling the spread of them and other invasive species into wetlands will maintain native floral and habitat diversity. See Section 6.3.1.10 for specific actions for invasive species management.</p>			<p>sensitive natural vegetation communities.</p>
RMP-O10	<p>Re-vegetate wetlands with native hydrophytes.</p> <p>While the wetlands contain a prevalence of native perennial hydrophytes, enhancing with planting of additional native plants can bestow several benefits to habitat quality. In contrast to the shallow and short-lived root systems of non-native annual grasses, native perennial rushes, sedges, bulrushes, and grasses typically have deep and complex root systems that maintain soil integrity, buffer wetlands from erosion, and assist in filtering nutrients and sediment. Wetland areas dominated by non-native annual grasses and areas of invasive species removal should be targeted for planting with native perennial hydrophytes.</p>	X	X	<p>Reduces the presence of non-native and/or invasive species by promoting the growth of native species. Restores and preserves ecological and hydrologic function in wetland waters.</p>
RMP-G7	<p>Livestock troughs, feeding areas, and loafing areas will be located</p>		X	<p>Reduces the risk of aggravated erosion and potential for</p>

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	away from wetlands a minimum of 100 feet.			sediment transport to waterbodies due to livestock concentration in areas of feeding, drinking, or loafing. Reduces the impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.
RMP-G9	Targeted restoration will be developed to halt the continued advance of head-cuts that affect wetlands. The plan will prioritize areas for restoration and will consider measures such as exclusionary fencing, vegetation and check dams of stone or native brush cuttings and will be used as possible effective means to trap sediment migration and rebuild the soil surface.		X	Ensures observed impacts to hydrology or water quality associated with head-cuts are addressed and minimized over time. Reduces impacts to wetland and non-wetland waters.
RMP-G10	Monitoring and assessment on effectiveness of livestock grazing on wetlands will be conducted periodically. If livestock grazing is contributing to a decline in native species, compromising water quality, causing erosion, or other deleterious effects on the wetland, techniques to deter livestock from entering wetlands will be implemented. Deterrence may include relocation of troughs, mineral supplements and supplemental feeding areas away from wetlands, and possibly exclusionary fencing around wetlands. Monitoring will then be done where livestock has been excluded to assess changes in non-native and native plants in the wetland.		X	Allows for the identification and prevention of future potential water quality impacts in wetland areas. Lowers risk of deleterious effects to water quality and bank stabilization. Informs and improves response actions to wetland and non-wetland waters impacts associated with livestock grazing.
RMP-G11	Prioritize wetland areas for enhancement. Enhancement sites should be in or around areas where impacts from infrastructure building has occurred or in areas of targeted invasive plant removal. Informational signage or pamphlets should highlight these restorative actions and		X	Increases enhancement of impacted wetland areas such that the ecologic and hydrologic function and integrity of the project area’s wetland habitats is maintained. Reduces impacts to wetland and non-wetland waters.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	educate the public on the function and values of wetlands.			
RMP-S11	Trails, roads, and other Park infrastructure will avoid wetland habitats to the greatest extent feasible. Where infeasible, ground disturbing activities will be accompanied by best management practices to avoid unnecessary soil erosion, soil compaction, and invasive species encroachment. Trails that bisect wetlands will be designed for minimal impact by using features such as boardwalks and viewing platforms.	X		Reduces the risk of erosion in wetland and non-wetland habitats by minimizing recreation access. Minimizes temporary impacts to water quality during construction impacts. Ensures impacts to wetland and non-wetland waters associated with temporary ground disturbing activities and/or future operation of trails and crossings are appropriately addressed. Reduces impacts to wetland and non-wetland waters.
RMP-S12	A restoration plan will be developed for any proposed road, trail, or other ground-breaking project within wetland habitats. This may include salvaging native perennial hydrophytes, collecting live seed, purchasing genetically (i.e., local) appropriate seed, and/or top soil to be relocated at or near the project area.	X	X	Ensures observed impacts to hydrology or water quality associated with ground-breaking activities are addressed and minimized over time. Ensures mitigation of and appropriate response to impacts to wetland and non-wetland waters associated with new or recent erosion.
RMP-S13	Should wetland habitat be considered jurisdictional by federal or state agencies, the appropriate permits will be acquired. Impacts to jurisdictional wetlands will likely require a habitat mitigation and monitoring plan along with mitigation for wetland losses. Mitigation ratios will depend upon the type, functional value, and extent of wetland impacted, and will be arranged during the permitting process.	X	X	Ensures mitigation of and appropriate response to impacts to wetlands and non-wetland waters in accordance with federal and state regulations.
Oak and Buckeye Woodlands Objectives, Guidelines, and Standards				
RMP-O11	Maintain healthy woodland habitat by preventing or reducing impacts from habitat fragmentation.	X	X	Ensures the ecological function and integrity of the project area's woodland habitats are maintained.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	Woodlands provide important cover and migratory habitat for wildlife, but existing roads and trails can diminish this essential function. Minimizing the number of roads and trails through the woodlands, and maintaining the existing roads and trails for erosion and invasive species conduits will maintain healthy woodland habitat.			
RMP-O12	<p>Monitor and facilitate the natural regeneration of native woodland species, particularly trees and shrubs.</p> <p>Healthy native woodlands contain both species and structural diversity. Multiple vegetation strata provide habitat for several species of woodland birds that utilize specific elevations in the canopy. Herbaceous strata provide forage and browse for mammals while offering cover. Maintaining and enhancing a diverse understory and facilitating regeneration of overstory species will ensure that vertical structure remains a healthy component of wildlife habitat.</p>		X	Informs and improves response actions to impacts in woodland habitats. Increases enhancement of impacted woodland areas such that the ecologic function and integrity of the project area’s woodland habitats are maintained. Reduces impacts to native woodlands.
RMP-O13	<p>Monitor and implement pathogen controls to minimize the spread of Sudden Oak Death.</p> <p>Sudden oak death has not been formally documented in the Park, but the prevalence of <i>Phytophthora ramorum</i> in coastal California, the extensive stands of coast live oak, and the repeat visitation within the park woodlands, suggest that this pathogen is a likely threat. Implement monitoring and pathogen controls to reduce the incursion and spread of sudden oak death into woodlands.</p>	X	X	<p>Allows for the identification and prevention of future potential impacts to woodlands from sudden oak death. Lowers risk of introducing and spreading sudden oak death in woodlands.</p> <p>Informs and improves response actions to impacts in woodland habitats associated with sudden oak death.</p>
RMP-O14	Monitor invasive species, prevent colonization of invasive species, and remove or control existing invasive species populations.	X	X	Allows for the identification and prevention of future potential spreading of invasive species into native woodland habitats.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	Currently, woodlands are relatively free of invasive plant species. Isolated populations of Himalayan blackberry and Italian thistle are present and pose a threat to the native understory flora. Other invasive species documented can pose a threat to park woodlands; therefore, monitoring the woodlands for invasive species, and preventing their colonization will help maintain the integrity of woodland habitat.			
RMP-G12	Young trees, particularly oak species, should be encouraged in the understory and on the fringe of existing woodlands. Openings within woodlands provide habitat complexity and therefore may not be a desired location for targeted oak woodland restoration. A historical and cultural records study may reveal the extent of park woodlands, which would help guide any restoration efforts.		X	Ensures the ecological function and integrity of the project area’s woodland habitats are maintained. Informs and improves response actions to impacts in woodland habitats.
RMP-G13	Should oak and other woodland tree regeneration become a desired goal, fostering vegetation succession could be the chosen approach. Planting or seeding open scrub species such as coyote brush (<i>Baccharis pilularis</i>), California coffeeberry (<i>Frangula californica</i>), and toyon (<i>Heteromeles arbutifolia</i>), and raising these species to maturity provides a “nursery” for young oaks and other woodland trees. Protect these shrubs from grazing livestock and wildlife until established. Planting woodland trees directly into grasslands should protect new plantings from grazing wildlife. Protections include exclusion fencing or plastic tree shelters, weed mats, mulching, and possibly supplemental irrigation to stimulate robust root development.		X	Promotes adaptive management in woodland habitats. Lowers risk of deleterious effects to woodland habitats. Informs and improves response actions to woodland habitat impacts associated with livestock grazing.
RMP-S14	New trail, road, and other Park infrastructure will avoid woodland habitats to the greatest extent feasible. Where infeasible, ground	X		Minimizes temporary impacts to woodland habitats during construction impacts. Reduces the risk of erosion, soil

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	disturbing activities will be accompanied by best management practices to avoid unnecessary soil erosion, soil compaction, and invasive species encroachment.			compaction, and invasive species encroachment in woodland habitats by minimizing recreation access.
RMP-S15	Removal of individual woodland trees will be avoided to the greatest extent feasible with the exception of diseased or hazardous trees. Replacement planting of like species for native woodland trees will be encouraged; replacement ratio should be at least 3:1. Removal of native woodland shrubs will be replaced with like species.	X	X	Ensures mitigation of and appropriate response to impacts to woodland habitats.
RMP-S16	Park staff, visitors, and other guests will receive educational materials regarding the prevention and spread of sudden oak death. Current best management practices for pathogen prevention controls will be in place for all who work within the Park.	X	X	Lowers risk of introducing and spreading sudden oak death in woodlands. Informs and improves response actions to impacts in woodland habitats associated with sudden oak death.
RMP-S17	Prevent the spread and establishment of invasive plant species within woodland habitats to the greatest extent feasible by physically eradicating exotic species and with installation of exclusionary fencing.	X	X	Reduces impacts to woodland habitats from invasive plant species introduction.
RMP-S18	Limited populations of high and medium priority invasive plants will be eradicated or controlled to the greatest extent feasible. In particular, seedlings and saplings of blue gum or Monterey cypress will be eradicated, while mature trees may be left standing.		X	Reduces impacts to woodland habitats from invasive plant species introduction.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
Grasslands and Wildflower Fields Objectives, Guidelines, and Standards				
RMP-O15	<p>Protect native grasslands and wildflower fields during construction of infrastructure.</p> <p>The fragmentation of native grasslands and wildflower fields with trails and roads threatens the integrity of these vegetation communities. Trails and roads can provide pathways for invasive plants as well as erosion, sediment migration, and soil compaction that can further threaten native species.</p>	X		Reduces impacts from erosion, soil compaction, and invasive to grassland and wildflower fields during construction activities.
RMP-O16	<p>Monitor and maintain stands of native grasses and wildflowers. Minimize soil erosion from park development activities and visitation.</p> <p>Despite being long-lived and resilient, perennial native grasses, ground disturbance can diminish their viability and provide a pathway for competitive non-native annual grasses. Non-native grasses frequently respond positively to disturbance such as road and trail building activities, and once established they produce dense mats of thatch that stymie or prevent the establishment/re-establishment of native grasses and annual wildflowers. The loss of perennial native grasses with their deep and extensive rooting systems can lead to soil erosion, while the loss of both native grasses and wildflowers diminish valuable forage resources for native mammals, birds, and invertebrates.</p>		X	Allows for the identification and prevention of future potential impacts to grassland and wildflower habitats from project area visitation and development activities. Lowers risk of introducing and spreading invasive species in grassland and wildflower habitats. Informs and improves response actions to impacts in grassland and wildflower habitats associated with project area development and visitation activities.
RMP-O17	<p>Monitor and establish native grasses and wildflowers in targeted locations.</p> <p>Complete restoration of native grasslands and wildflower fields is</p>		X	Allows for the identification and prevention of future potential spreading of non-native plant species into grassland and wildflower habitats. Ensures the ecological function and integrity of the project area’s grassland and wildflower

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	<p>infeasible given the extent of non-native grasslands in the Park. However, targeted locations with favorable conditions (e.g., serpentine soil, prevalent native herbaceous cover) offer the potential to increase native grass and wildflower cover that may establish and expand into native dominated habitat. Planting and seeding of native species in coordination with invasive species eradication and controlled grazing will be implemented in these areas.</p>			<p>habitats are maintained. Informs and improves response actions to impacts in grassland and wildflower habitats.</p>
RMP-O18	<p>Monitor and prevent invasive species incursion into native grasslands and wildflower fields, and eradicate dense infestations of invasive species.</p> <p>The majority of the invasive species documented is within grassland habitats and/or pose the greatest threat to these habitats. These species can form monotypic stands that out-compete native herbs and less aggressive non-native species, resulting in increased fire hazard, diminished wildlife resources, and reduced species diversity and habitat complexity. Additionally, Medusahead (<i>Elymus caput-medusae</i>) and purple and yellow star thistles (<i>Centaurea calcitrapa</i>, <i>C. solstitialis</i>), severely diminish the quality of forage for grazing livestock. See Section 6.3.1.10 for specific actions for invasive species management.</p>		X	<p>Allows for the identification and prevention of future potential spreading of non-native plant species into grassland and wildflower habitats. Ensures the ecological function and integrity of the project area’s grassland and wildflower habitats are maintained.</p>
RMP-O19	<p>Manage the beneficial effects of grazing on native grassland and wildflower field habitat.</p> <p>Managed grazing can confer benefits to native habitats through the reduction of non-native annual thatch, nutrient cycling, fire hazard prevention, and creation or maintenance of bare areas. However, when not managed properly, these same effects can become deleterious on</p>		X	<p>Ensures that grazing will have beneficial impacts on sensitive natural communities and negative impacts are avoided.</p>

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	native habitats contributing to erosion, nutrient runoff, invasive species spread, soil compaction, and wildlife browsing of tree and shrub saplings. Grazing timing, intensity, duration, and rotation are essential factors in the successful management of natural habitats with livestock, as well as the vegetation composition and density in areas where livestock loaf, travel, water, and graze. Creating and maintaining structural complexity in herbaceous communities (e.g., bare areas, varying grass heights) is important for wildlife and native flora habitat, and can be achieved through well managed grazing.			
RMP-G14	Where invasive species are removed from grasslands, native grasses and wildflowers will be planted and/or seeded.		X	Ensures mitigation of and appropriate response to impacts to grassland and wildflower habitats are implemented.
RMP-G15	Select native grassland and wildflower field areas for restoration. Restoration sites will be located in or around areas where impacts from infrastructure building has occurred or in areas of targeted invasive plant removal. Informational signage or pamphlets will highlight these restorative actions and educate the public on the function and values of native habitats.		X	Ensures mitigation of and appropriate response to impacts to grassland and wildflower habitats are implemented.
RMP-S19	Trail, roads, and other infrastructure will avoid native grassland and wildflower habitats to the greatest extent feasible. When avoidance is infeasible, ground disturbing activities will be accompanied by best management practices to avoid unnecessary soil erosion, soil compaction, and invasive species encroachment.	X		Minimizes temporary impacts to grassland and wildflower habitats during construction impacts. Reduces the risk of erosion, soil compaction, and invasive species encroachment in grassland and wildflower habitats by minimizing recreation access.
RMP-S20	A restoration plan will be developed for any proposed road, trail, or other ground-breaking project within native grasslands and mixed	X	X	Ensures observed impacts to grassland and wildflower habitats associated with ground-breaking activities are addressed and

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	wildflower fields. Restoration measures may include salvaging perennial grasses, collecting live seed, purchasing genetically (i.e., local) appropriate seed, and/or top soil to be relocated at or near the project area.			minimized over time. Ensures mitigation of and appropriate response to impacts to grassland and wildflower habitats associated with new or recent development.
RMP-S21	Develop a long-term management plan evaluating the effects of livestock grazing on grasslands, with results intended to guide and alter grazing management. Evaluation of livestock animals alternative to cattle (i.e., sheep), and no grazing alternatives.		X	Ensures observed impacts to grassland and wildflower habitat associated with project activities are identified, addressed, and minimized over time. Ensures mitigation of and appropriate response to impacts to grassland and wildflower habitats.
RMP-S22	Livestock will be rotated throughout the park, and as-well distributed as feasible. Supplemental feeding locales will be relocated periodically to discourage long-term loafing areas. Long-term loafing areas at water troughs will be monitored at least every two years to assess damage to native grasslands. Consideration will be given to moving trough locations to protect resources at that time..		X	Lowers risk of deleterious effects to grassland and wildflower habitats. Informs and improves response actions to grassland and wildflower habitat impacts associated with livestock grazing.
RMP-S23	Invasive plant species in supplemental feeding (weed free hay) will be minimized in coordination with the grazing lessee to the greatest extent feasible.		X	Reduces impacts to grassland and wildflower habitats from invasive plant species introduction.
RMP-S24	The introduction and spread of invasive plants within grasslands and wildflower fields will be prevented to the greatest extent feasible with adaptive land management including: adaptive grazing plan, exclusionary (temporary) fencing, native seed propagation, and manual removal of invasive species.		X	Promotes adaptive management in grassland and wildflower habitats. Lowers risk of deleterious effects to grassland and wildflower habitats. Informs and improves response actions to grassland and wildflower habitat impacts associated with livestock grazing.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S25	Limited populations of high and medium priority invasive plants will be eradicated or controlled to the greatest extent feasible with adaptive land management including: adaptive grazing plan, exclusionary (temporary) fencing, native seed propagation, and manual removal of invasive species.		X	Reduces impacts to grassland and wildflower habitats from invasive plant species introduction. Promotes adaptive management in grassland and wildflower habitats.
RMP-S26	Widely distributed populations of high and medium priority invasive plants will be controlled to the greatest extent feasible with adaptive land management including: adaptive grazing plan, exclusionary (temporary) fencing, native seed propagation, and manual removal of invasive species.		X	Reduces impacts to grassland and wildflower habitats from invasive plant species introduction. Promotes adaptive management in grassland and wildflower habitats.
Rock Outcrops and Scrub				
RMP-O20	Monitor rock outcrops for graffiti, trampling, erosion, and other effects of visitation.		X	Minimizes impacts to rock outcrops from recreation and visitation activities.
RMP-G16	In rock outcrops where native species exhibit a lower diversity and/or non-native species dominate, native species plantings should be accompanied non-native species removal.		X	Reduces impacts to rock outcrop habitats from invasive plant species introduction. Ensures the appropriate mitigation of and response to invasive species impacts are implemented.
RMP-S27	Trails, roads, and other developed infrastructure will be located away from rock outcrops and walls, and their associated scrub. Where ground-breaking disturbance is unavoidable, best management practices should be implemented to avoid soil erosion, soil compaction, rock loss, and incursion of invasive species.	X		Minimizes temporary impacts to rock outcrop habitats during construction impacts. Reduces the risk of erosion, soil compaction, and invasive species encroachment in rock outcrop habitats by minimizing recreation access.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S28	The spread and establishment of invasive plants into rock outcrop and wall, and their associated scrub habitat will be prevented to the greatest extent feasible with adaptive land management including: adaptive grazing plan, native seed propagation, and manual removal of invasive species.		X	Reduces impacts to rock outcrop habitats from invasive plant species introduction. Promotes adaptive management in rock outcrop habitats.
RMP-S29	Human visitation to rock outcrops and rock walls will be discouraged or not allowed, with the possible exception of those with particularly important educational or recreational opportunities. Potential impacts from human visitation will be monitored and managed adaptively including techniques such as interpretive signage.			Reduces impacts to rock outcrop habitats from visitation. Ensures impacts from visitation to rock outcrop habitats are identified and promotes adaptive management in rock outcrop habitats.
RMP-S30	Limited populations of high priority invasive plants will be eradicated from rock outcrops to the greatest extent feasible with adaptive land management including: adaptive grazing plan, native seed propagation, and manual removal of invasive species.		X	Reduces impacts to rock outcrop habitats from invasive plant species introduction. Promotes adaptive management in rock outcrop habitats.
Special-Status Plants Objectives, Guidelines, and Standards				
RMP-O21	Protect existing and potential occurring special-status plant species during Park development activities. Although several protocol-level surveys and incidental site visits have resulted in the observations of special-status plant populations, other populations may occur within the Park. Locating new or overlooked populations would be a positive sign for the overall health special-status species, and would merit further protection.	X	X	Lowers the risk of impacting special-status plants by identifying new populations and protecting them.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-O22	<p>Periodically monitor and census existing special-status plant populations and their habitats, including potential effects from grazing, human visitation, and park development.</p> <p>Grazing, human visitation, development, drought stress, and other physical environmental factors can affect the health, number, vigor, and reproductive potential of plant species. Inter-annual variation in the number of individuals within populations of special-status species is common. Periodic observation and documentation of the special-status plant populations can form the basis for understanding these species' response to their physical and biologic environment, and can result in successful management of their habitats to ensure their populations are sustained.</p>		X	Reduces the risk of exacerbating impacts to special-status plant species during development and visitation activities and improves response actions to any observed impacts.
RMP-O23	<p>Monitor, control, and eradicate invasive plants that threaten special-status plant populations.</p> <p>Frequently, non-native invasive species out-compete special-status plants for water and nutrients, over-top natives eventually shading them out, and increase the fire risk that can kill desirable native species. Monitoring and controlling aggressive invasive species in the vicinity of special-status plant species populations will eliminate the threat of their loss from invasive species.</p>		X	Lowers the risk of spreading non-native, invasive plant species into natural areas. Reduces impacts to special-status plant species and sensitive natural vegetation communities.
RMP-G17	<p>Propagules from the Park's special-status plant species should be collected, propagated, and redistributed in analogous habitats within the Park where these species are absent. This should be conducted under guidance of local experts and may incorporate volunteer networks.</p>		X	Ensures mitigation of and/or appropriate response to impacts to special-status plants can be implemented.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S31	Trails, roads, and other developed infrastructure will be located away from special-status plant species. Where ground-breaking disturbance in the general vicinity of special-status plant species is unavoidable, best management practices will be implemented to avoid soil erosion, soil compaction, and incursion of invasive species. Protocol-level rare plant surveys will be conducted along the course of proposed trails, roads, and other development projects to ensure that such species are not present.	X		Reduces impacts to special-status plant species and habitat that supports special-status plant species. Ensures special-status plant species are identified in the work area prior to development activities.
RMP-S32	Should translocation efforts occur (see Guidelines above), CDFW will be consulted for said translocation, permitting requirements, and a review of the status of nearby special-status plant populations.	X	X	Ensures mitigation of and/or appropriate response to impacts to special-status plants can be implemented in accordance with state regulations.
Special Status Wildlife: Invertebrates Objectives, Guidelines, and Standards				
RMP-O24	Monitor and enhance significant patches of cream cups and Johnny jump-up, which both serve as host and nectar wildflowers. Lepidoptera are closely associated with host and nectar wildflowers, requiring these resources through certain periods of the year. A decline in the population of their host plants would threaten these special-status invertebrates. Enhancing and expanding cream cups and Johnny jump-up populations will help sustain the populations of these special-status invertebrates.		X	Ensures the ecological function and integrity of the project area's wildflower habitats are maintained.
RMP-S33	Trails, roads, and other developed infrastructure will be located to the greatest extent feasible away from cream cup, Johnny jump-up, and other dense wildflower populations. If ground disturbing activities in the general vicinity of dense wildflowers are unavoidable, best	X		Reduces impacts to wildflower and invertebrate species (e.g., Opler's longhorn moth). Ensures wildflower host species are identified in the work area prior to development activities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	management practices will be implemented to avoid soil erosion, soil compaction, trampling, and incursion of invasive species. Surveys for wildflowers will be conducted along the course of proposed trails, roads, or other Park development projects to ensure that such species are not present.			
RMP-S34	If Park development has the potential to cause adverse impacts to cream cups, Johnny jump-ups, and/or other potential nectar resources for special-status invertebrates, a management and monitoring plan will be developed. Seeding and/or planting of such species may need to be conducted, as well as monitoring of success criteria following restoration efforts.		X	Ensures mitigation of and/or appropriate response to impacts to wildflower host species can be implemented.
Special-Status Wildlife: Amphibians and Reptiles Objectives, Guidelines, and Standards				
RMP-O25	Protect potentially occurring amphibian and reptiles, and their habitat during construction of park infrastructure, trail building, and regular maintenance. These species require protective measures to ensure that they are not impacted during construction or normal maintenance activities.	X	X	Lowers the risk of impacting special-status amphibian species. Ensures appropriate avoidance and/or minimization measures are implemented to protect special-status amphibian and reptile species.
RMP-O26	Monitor, remove, and control invasive plant species that threaten special-status herpetofauna habitat. Prevent the establishment of and control the existing populations of predatory wildlife. Invasive plant species, particularly water primrose, negatively affects the quality of CRLF and other wildlife dependent on aquatic environments. Aquatic invasive plants can alter water chemistry and		X	Allows for the identification and prevention of future potential spreading of non-native plant species into aquatic habitats. Ensures the ecological function and integrity of the project area's aquatic habitats are maintained. Informs and improves response actions to impacts in aquatic habitats. Reduces impacts to special-status amphibian and aquatic reptile (e.g.,

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	de-oxygenate the water column. Although they can provide strata for egg masses, they also provide shelter for predators, such as the introduced American bullfrog and warm water fish. Bullfrogs and fish have been implicated in exacerbating the decline in CRLF. See Section 6.3.1.11 for specific actions for invasive wildlife species management.			western pond turtle) species.
RMP-O27	Protect special-status herptofauna from parasites, pathogens, and chemical pollutants. Pathogens such as the fungus chytrid (<i>Batrachochytrium dendrobatidis</i>) have been implicated in the decline of CRLF and other native amphibians, as well as chemical pollutants. To protect CRLF and other wildlife in the Park, measures to prevent the introduction and spread of pathogens and chemical pollutants will be implemented. See Section titled Natural Resources: Invasive Wildlife Species for specific actions for invasive wildlife species management.		X	Minimizes the risk of introducing and spreading aquatic pathogens, such as chytrid. Minimizes the risk of degrading water quality through the introduction of chemical pollutants. Reduces impacts to special-status amphibian and aquatic reptile species.
RMP-O28	Conduct protocol-level surveys to determine the presence of special-status herpetofauna in the Park in areas where new development is planned. Periodically monitor population trends of these species. Possibly introduce CRLF into the Park.	X	X	Ensures special-status amphibian and reptile species individuals and habitat are identified prior to new development. Reduces the risk of impacting special-status amphibian and reptile species.
RMP-G21	For any ground disturbing activities Protocol-level baseline surveys will be conducted determine the presence and extent of CRLF and other special-status herpetofauna in the Park.	X	X	Ensures special-status amphibian and reptile species individuals and habitat are identified prior to ground disturbing activities. Reduces the risk of impacting special-status amphibian and reptile species.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-G22	If determined to be on-site, continued monitoring will be conducted to determine population trends, potential relationship with off-site populations, migratory patterns, and the effects of grazing and other management activities on CRLF and/or other special-status herpetofauna.		X	Ensures observed impacts to suitable habitat for special-status amphibian and reptile species are identified, addressed, and minimized over time. Ensures mitigation of and appropriate response to impacts to special-status amphibian and reptile habitats.
RMP-G23	Develop a management plan specifically for CRLF and/or other special-status herpetofauna. The plan will monitor the interaction between amphibian populations and Park use, livestock grazing, and infrastructure development. Targeted eradication and/or control of invasive species will be accompanied with specific pathogen, such as chytrid, should they become established. If constituent elements exist, a plan will be developed to reintroduce CRLF to the Park. Reintroduction would require extensive consultation with the USFWS and CDFW.		X	Ensures mitigation of and/or appropriate response to impacts to special-status amphibian and reptile species can be implemented.
RMP-S35	Trails, roads, and other developed infrastructure will be located away from special-status herpetofauna species to the greatest extent feasible. Where ground-breaking disturbance in the general vicinity of special-status herpetofauna is unavoidable, best management practices will be implemented to avoid soil erosion, spread of pathogens, and incursion of invasive species. Protocol level surveys for special-status herpetofauna will be conducted along the course of proposed trails, roads, or other park development projects to ensure that such species are not present. Biological monitors may need to be on-site during activities if there is the potential to directly impact special-status herpetofauna.	X		Reduces impacts to special-status amphibian and aquatic reptile species. Ensures special-status amphibian and reptile species are identified in the work area prior to development activities. Reduces risk of special-status amphibian and aquatic reptile species being impacted during construction and/or maintenance activities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S36	Effects of foot traffic and other visitor uses near stock ponds and other potential special-status herpetofauna habitat will be monitored periodically. Excessive native vegetation trampling, soil compaction, sediment migration, and/or other deleterious effects on habitat will be corrected immediately.		X	Allows for the identification and prevention of future potential visitor impacts on suitable special-status amphibian and reptile aquatic habitats. Informs and improves response actions to impacts in aquatic habitats. Reduces impacts to special-status amphibian and reptile species.
RMP-S37	Dogs will be excluded from stock ponds and other potential special-status herpetofauna habitat. Dogs will be confined to approved trails on no longer than 6' lead at all times.		X	Reduces the risk of water quality degradation in aquatic habitat from off-leash dogs. Reduces impacts to special-status amphibian and reptile species.
RMP-S38	Educational materials, either through brochures or signage, will be provided to park visitors, staff, volunteers, and contractors to clearly convey the importance of minimizing impacts and visitation to CRLF and other special-status herpetofauna habitats.	X	X	Reduces the risk of impacts to special-status amphibian and reptile species.
RMP-S39	CDFW and USFWS will be consulted during project development to identify and implement any additional measures to avoid and minimize direct and indirect impacts to CRLF and/or other special-status herpetofauna.	X	X	Ensures mitigation of and/or appropriate response to impacts to special-status amphibian and reptile species can be implemented.
RMP-S40	Any alteration of vegetation within 500 feet of the stock ponds and/or other potential special-status herpetofauna habitat will occur outside of these species' dispersal periods.	X	X	Reduces the risk of impacts to special-status amphibian and reptile species.
Special-Status Wildlife: Common and Special Status Birds Objectives, Guidelines, and Standards				
RMP-O29	Protect and enhance nesting, foraging, cover, and migratory bird		X	Ensures the ecological function and integrity of the project

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	<p>habitat in the Park.</p> <p>Species diversity is correlated with habitat diversity and complexity, with healthier and richer ecosystems supporting diverse species populations. Managing the several different habitats of the Park will benefit and sustain diverse bird populations.</p>			<p>area’s nesting bird habitats are maintained.</p>
RMP-O30	<p>Prevent impacts to individual birds, nests, and eggs during construction of infrastructure, trail building, and routine maintenance.</p> <p>Under the federal Migratory Bird Treaty Act (MBTA) it is unlawful to take, kill, and/or possess migratory birds, as well as their nests, eggs, and young in the nests. The California Fish and Game Code protect nests, eggs, and birds as well. Special-status birds are protected under a variety of federal and state codes. Therefore, birds and their nests require protection during construction and Park operations.</p>	X	X	<p>Ensures the project remains in compliance with federal and state regulations protecting nesting birds.</p>
RMP-O31	<p>Continue monitoring migratory activity and census to evaluate long-term trends of birds in the Park.</p> <p>The Park is a popular attractant for bird watchers and ornithologists. The Petaluma Wetland Alliance (PWA) has performed numerous bird surveys in the Park, and LSA summarized their observations in a report to Regional Parks (LSA 2009b). Updated observations and analysis will be synthesized and then utilized as a baseline for overall bird diversity and population health.</p>		X	<p>Allows for the identification and prevention of future potential visitor impacts on suitable nesting bird habitats. Informs and improves response actions to impacts in nesting bird habitat. Ensures mitigation of and/or appropriate response to impacts to nesting bird species can be implemented.</p>
RMP-G24	<p>Nesting boxes will be manufactured and installed on the edge of seasonal wetlands and grasslands near trails and other high visibility areas. Educational materials either through signage or brochures to</p>		X	<p>Increases enhancement of impacted nesting bird habitat such that the ecologic function and integrity of the project area’s</p>

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	inform the Park’s visitors and volunteers of the efforts to provide nesting habitat for birds. Owl boxes will be installed in the Park Complex. Should these boxes be installed, preventative measures will be necessary to prevent invasive species from colonization and annual monitoring and maintenance outside of the active nesting season to reduce pathogens.			nesting bird habitats are maintained.
RMP-G25	Non-native birds (e.g., European starlings) and feral cats that pose a potential threat to native birds will be monitored and managed.			Ensures the ecological function and integrity of the project area’s nesting bird habitats are maintained. Reduces the risk of nesting bird predation and/or competition with non-native species.
RMP-G26	Continued coordination with bird-watching and volunteer groups such as PWA and Audubon Society to perform regular monitoring of the avian fauna of the Park. A comprehensive monitoring program will be developed, and incorporative of volunteer work, to collect information on species abundance, species composition, habitat use, population distribution, population size, breeding status, and inter-annual variation.		X	Allows for the identification and prevention of future potential visitor impacts on suitable nesting bird habitats. Informs and improves response actions to impacts in nesting bird habitat. Ensures mitigation of and/or appropriate response to impacts to nesting bird species can be implemented.
RMP-G27	Develop a management plan for common and special-status bird species to account for park activities and uses, grazing management, infrastructure development, and the potential eradication and/or control of invasive species and pathogens if they become established and pose a deleterious effect on nesting bird populations.		X	Ensures mitigation of and/or appropriate response to impacts to nesting bird species can be implemented.
RMP-S41	During the nesting season (approximately February 1 through August 31), breeding bird surveys will be conducted prior to the construction	X	X	Ensures nesting birds are identified prior to construction. Ensures the appropriate avoidance and/or minimization

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	of trails, roads, and all other park infrastructure with the potential to impact nesting birds. Should breeding birds be detected, a qualified avian biologist will make recommendations to park staff to avoid impacts to breeding birds.			measures are implemented to protect nesting birds. Ensures the project remains in compliance with federal and state regulations protecting nesting birds.
RMP-S42	Dogs will be confined to approved trails only and on no longer the 6' lead at all times.		X	Reduces the risk of impacts to nesting bird species from off-leash dogs.
RMP-S43	Educational materials, either through brochures or signage, will be provided to park visitors, staff, volunteers, and contractors to clearly convey the importance of avoiding breeding birds and bird nests.	X	X	Reduces the risk of impacts migratory nesting bird species.
RMP-S44	CDFW and USFWS will be consulted during project development to identify and implement any additional measures to avoid and minimize direct and indirect impacts to common and special-status birds within the Park.	X	X	Reduces the risk of impacts to migratory nesting bird species. Ensures the appropriate avoidance and/or minimization measures are implemented and that the project remains in compliance with federal and state regulations protecting nesting birds.
Common and Special-Status Bats Objectives, Guidelines, and Standards				
RMP-O32	Prevent impacts to individual bats and their roosting habitat during construction of infrastructure, trails, and routine maintenance. Bats are particularly susceptible to perturbations from human activities which have contributed to the decline in several species. Disturbance during hibernation and rearing can result in roost abandonment and mortality, particularly to young bats. Light pollution can alter foraging behavior and compromise bat populations. Many bat species exhibit	X	X	Ensures the appropriate avoidance and/or minimization measures are implemented to reduce impacts to bats and their roosting habitat. Reduces impacts to bats and their roosting habitat.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	high site fidelity and the removal or damage to roosts can lead to roost abandonment or exposure. Therefore, avoidance and minimization measures will be required when conducting potentially impacting activities in areas of bat roosts.			
RMP-O33	Protect and enhance roosting and foraging habitat in the Park. Similar to birds, habitat complexity supports healthier and more diverse populations of bats. Bats forage at night for night-flying insects, many of which are agricultural and human health pests (e.g., mosquitos). The preservation of existing roosts, the creation of roosts, protecting the Park’s diverse habitats, and minimizing the use of chemical insecticides will contribute the enhancement and protection of bat populations.		X	Contributes to the enhancement and protection of bat populations in the project area.
RMP-G28	Roosting boxes will be manufactured and installed on the edge of seasonal wetlands, grasslands, and Park Complex. The boxes will be regularly monitored to determine their use and if special-status bat species have taken residency.			Increases enhancement of impacted bat habitat such that the ecologic function and integrity of the project area’s bat roosting habitats are maintained.
RMP-G29	Livestock troughs will be reviewed and modified to accommodate access and safety for bat species and other wildlife, including escape structures, water-level management, and removal of hazardous obstacles.		X	Reduces the risk of impacts to bat species associated with livestock troughs and loafing.
RMP-S45	During the roosting season, bat surveys will be conducted prior to the construction of trails, roads, and all other park infrastructure with the potential to impact roosting bats. Should roosting bats be detected, a qualified biologist will make recommendations to park staff to avoid	X	X	Ensures bat roosts are identified prior to construction. Ensures the appropriate avoidance and/or minimization measures are implemented to protect bats.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	impacts to bats.			
RMP-S46	If active roosts are located, impacts will be postponed or cancelled. Avoidance measures may include postponing removal of trees, snags, buildings, bridges, or other structures supporting bats; establishing buffers around roost sites; or construction of replacement roosting habitat.	X	X	Ensures the appropriate avoidance and minimization measures are in places so that impacts to roosting bats are avoided.
RMP-S47	CDFW will be consulted during project development to identify and implement any additional protection measures specific to special-status bat species.	X	X	Reduces the risk of impacts to bat species. Ensures the appropriate avoidance and/or minimization measures are implemented and that the project remains in compliance with state regulations protecting bats.
American Badger Objectives, Guidelines, and Standards				
RMP-O34	Prevent impacts to individual American badger during construction of Park infrastructure, trail building, and regular operations. Minimize impacts to woodland and grassland habitat. American badgers are sensitive to repeated human activities, particularly actions that alter soil integrity. Repeated human visitation may affect routine behavior of American badger, resulting in burrow abandonment and relocation. Therefore, park activities should avoid extensive burrow network that may potentially support American badger.	X	X	Ensures the appropriate avoidance and/or minimization measures are implemented to reduce impacts to American badgers or their habitat. Reduces the risk of impacts to American badgers.
RMP-O35	Protect and enhance open foraging and range habitat in open woodlands and grasslands for American badger.		X	Increases enhancement American badger habitat (e.g., grasslands and open woodlands) such that the ecologic function and integrity of the project area’s open habitats are

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	American badgers have extensive ranges in open habitat and require robust prey populations of smaller fossorial mammals. Boom and bust cycles of ground squirrels (i.e., prey) are expected, but unnecessary controls of American badger prey should be avoided.			maintained.
RMP-G30	Surveys for the presence of American badger should be conducted. If located within the Park, periodic monitoring should occur to determine the population size, health, migratory patterns, utilization of the site, and interactions with grazing livestock.			Ensures American badger are identified in the project area. Informs and improves response actions to impacts in American badger habitats. Reduces impacts to American badger.
RMP-S48	Pre-construction surveys by a qualified mammal biologist will be conducted prior to ground-breaking activities that have the potential to impact American badger dens.	X	X	Reduces impacts to American badger. Ensures American badger are identified in the work area prior to development activities.
RMP-S49	Trails, roads, and other developed infrastructure will be located away from potential American badger dens. Where ground-breaking disturbance in the general vicinity of potential dens is unavoidable, best management practices should be implemented to avoid direct and indirect impacts to American badger.	X	X	Reduces impacts to American badger and American badger habitat. Ensures appropriate avoidance and/or minimization measures are implemented during ground breaking activities.
Invasive Plant Prevention and Management Objectives, Guidelines, and Standards				
RMP-O36	Prevent the establishment of invasive plant species within the Park. Invasive plant species pose a significant challenge to land managers because of their competitive advantage over native species, prodigious reproduction, and rapid dispersal mechanisms.		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-O37	Control the spread of invasive plants and eradicate populations of targeted invasive plants within the Park.		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-G31	High and medium priority invasive species with limited distributions should be eradicated, with exception of blue gum.		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-G32	High and medium priority invasive species with extensive distributions as well as blue gum should be controlled to prevent new infestations and weaken existing populations.		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-G33	If eradicating and/or controlling all of the Park’s invasive species proves infeasible, then the following prioritization should be followed: Recently established or young infestations; Infestations within high quality and sensitive native habitats; Edges of existing infestations, working inward.		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-G34	Annual monitoring of the Park for invasive species, existing infestations, and treated areas. The invasive plant map should be updated annually, and copies provided to staff, volunteers, and visitors soliciting any new observations be logged with park staff.		X	Allows for the identification and prevention of future potential spreading of invasive species into natural areas. Reduces impacts to special-status plant species and sensitive natural vegetation communities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-G35	Notes and observations should be recorded regarding control and eradication techniques, results, labor and financial costs, timing, etc. to develop an internal methodology for best treatment outcomes for each invasive plant species.		X	Allows for the identification and prevention of future potential spreading of invasive species into natural areas. Reduces impacts to special-status plant species and sensitive natural vegetation communities.
RMP-S50	Prioritization and management of invasive plants will follow the standards specified below.		X	Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.
RMP-S51	A licensed Pest Control Advisor will be consulted prior to implementation of control and eradication methods to refine appropriate quantities and methods of herbicide application. Licensed Pesticide Applicators will conduct any herbicide treatment within the Park.		X	Minimizes pollution risk and other deleterious effects associated with pesticides, herbicides, and other potentially hazardous chemicals. Reduces impacts to special-status plants, sensitive natural communities, burrowing owls, and special-status amphibian and reptile species (e.g., western pond turtle, California red-legged frog, and foothill yellow-legged frog).
RMP-S52	Herbicide treatment will be confined to limited uses for spot treatments; extensive infestations of invasive plants will be controlled by mechanical or other means.		X	Minimizes pollution risk and other deleterious effects associated with pesticides, herbicides, and other potentially hazardous chemicals. Reduces impacts to special-status plants, sensitive natural communities, burrowing owls, and special-status amphibian and reptile species (e.g., western pond turtle, California red-legged frog, and foothill yellow-legged frog).
RMP-S53	Mechanically removed invasive plants will be either burned on-site or hauled off-site in a manner to prevent propagule (i.e., seed, rhizome) escape. Every feasible attempt will be made to remove all vegetative propagules; repeat and spot treatment may be necessary.			Lowers the risk of spreading non-native plant species into natural areas. Reduces impacts to special-status plant species, special-status wildlife species, and sensitive natural vegetation communities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S54	Native species will be immediately planted and/or seeded into treated areas once it is confirmed that the infestation has been eradicated. Back-planting will reduce the potential for secondary invasion.		X	Limits the spread of non-native plant species by preferentially planting native species and ensuring non-native plants that could spread into other areas are not planted. Reduces impacts to special-status plant species and sensitive natural vegetation communities.
Grazing Management Objectives, Guidelines, and Standards				
RMP-O41	Ensure that livestock grazing confers maximum benefit while minimizing impacts to natural and cultural resources.		X	Ensures that grazing will have beneficial impacts on sensitive natural communities and negative impacts are avoided.
RMP-G44	Livestock movement should be encouraged to reduce trampling effects. The strategic location of supplemental feeding, watering, and mineral supplements can encourage livestock to distribute more broadly across a pasture.		X	Reduces the risk of aggravated erosion and compacted soil, and potential for sediment transport to waterbodies due to livestock concentration in areas of feeding, drinking, or loafing. Reduces the risk of livestock trampling special-status plant species. Reduces the impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.
RMP-G45	Livestock attractants such as troughs and mineral supplements should be located away from known pre-historic archaeological sites, wetlands, riparian habitats, oak regeneration sites, etc. to prevent or reduce grazing and trampling on or near sensitive resources.		X	Reduces the risk of aggravated erosion and potential for sediment transport to waterbodies due to livestock concentration in areas of feeding, drinking, or loafing. Reduces the impacts to sensitive natural vegetation communities and jurisdictional wetland and non-wetland waters.
RMP-G47	Targeted exclusion fencing should be considered for existing sensitive resources, such as riparian, wetlands and prehistoric cultural		X	Ensures that sensitive natural communities and aquatic resources will be protect from livestock impacts/trampling.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	resources.			
RMP-G48	Stream crossings and extensive wetland use by livestock should be evaluated and if deemed an impact or impairment to these features, corrective measures should be adopted.		X	Promotes oversight and adaptive management to livestock grazing practices such that any impacts to hydrology and/or water quality from livestock are minimized. Reduces impacts to wetland and non-wetland habitats.
RMP-S62	Exclusion fencing may be erected as needed to protect pre-historic cultural resources from cattle, and restoration and enhancement areas to allow for the establishment of native vegetation. In some cases the fencing may act as enclosures for flash or high intensity grazing as part of the enhancement activity (e.g., reduction of non-native grass thatch, reduction of invasive species).		X	Improves effectiveness of restoration efforts which reduce and/or mitigate hydrology and water quality impacts in wetland and/or non-wetland habitats.
Fire Management Objectives, Guidelines, and Standards				
RMP-O43	Prescribed burning should be a consideration for native resources management including native grassland restoration, invasive species management, and wildlife habitat enhancement. And consideration should be given to bring back cultural fire burning.		X	Reduces the risk of impacts to sensitive natural communities associated with fire management.
RMP-S64	Off-road vehicles operated by the Park, their contractors, and volunteers will have spark arrestors. Operators of street vehicles will park vehicles in low fire risk areas (e.g., low-growing vegetation, bare ground). During high and very high fire hazard days, the use of power tools for regular maintenance and vehicle access to undeveloped areas will be prohibited unless in the case of emergencies.	X	X	Reduces the risk of impacts to sensitive natural communities associated with maintenance or construction vehicles/equipment.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S67	Vegetation management for fire protection will consider native dominated habitats and all feasible protections for native plants will be considered. Where it is essential to remove native species, replacement and/or translocation planting of native plants should be conducted elsewhere in the Park.		X	Reduces the risk of impacts to sensitive natural communities associated with fire management. Ensures the appropriate mitigation of and/or response to impacts is implemented.
Avoidance and Minimization of Potential Impacts Objectives, Guidelines, and Standards				
RMP-O44	Prevent direct and indirect impacts to sensitive cultural and natural resources by placing setbacks on these resources. In the instance where direct impacts to sensitive resources result, surveys or assessments need to be conducted to analyze the extent of the impact and determine appropriate minimization and mitigation to offset the impact. Furthermore, potential impacts from contaminants and pathogens to the resources should be minimized.	X	X	Reduces impacts to natural resources, including special-status plants and wildlife, sensitive natural communities, and wetland and non-wetland waters by avoiding these resources where feasible. Ensures the appropriate minimization measures are implemented to protect natural resources. Ensures mitigation of and/or appropriate responses to impacts can be implemented.
RMP-O45	Habitat restoration and enhancement areas should serve as the primary locations for mitigation for unavoidable impacts associated with park development and maintenance. Identified prehistoric archaeological resource sites should serve as primary locations for protection management and monitoring activities.		X	Ensures the appropriate mitigation of and/or response to impacts is implemented.
Natural Resource Setback Guidelines and Standards Objectives, Guidelines, and Standards				
RMP-G51	A qualified biologist, ecologist, and/or wetland scientist should be consulted when improvements and/or development are within the established setback buffers.	X	X	Ensures the appropriate minimization measures are implemented to protect natural resources. Ensures mitigation of and/or appropriate responses to impacts can be implemented. Reduces impacts to natural resources, including

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
				special-status plants and wildlife, sensitive natural communities, and wetland and non-wetland waters.
RMP-S70	To protect sensitive natural resources, minimum setback standards will be adhered to where feasible. The following standards summarize the suggested minimum vegetated buffer from the Park’s natural resources.	X	X	Reduces impacts to natural resources, including special-status plants and wildlife, sensitive natural communities, and wetland and non-wetland waters by avoiding these resources where feasible.
Habitat Type	Potential Development Density	Min. Buffer		Rationale
Wetland / Stream / Riparian Habitat	Low-medium: Trails, picnic tables, viewing platforms	50’ Centerline of stream		Reduces impacts to riparian and wetland and non-wetland habitats. Allows space for natural stream channel change. Buffers erosion into stream channel. Allows for natural and assisted regeneration. Maintains integrity of wildlife corridor.
	High: Built infrastructure	100’ Top of bank		Reduces impacts to riparian and wetland and non-wetland habitats. Buffers sediment and nutrient runoff. Allows for natural and assisted regeneration of trees and large shrubs. Buffers water temperature. Maintains connectivity between aquatic and terrestrial habitats.
Native Grassland	Low-medium: Trails, picnic tables, gathering (e.g., docent led hikes, large hiking groups)	25’		Reduces impacts to native grassland habitats. Reduces potential for invasive species establishment. Allows for natural and assisted regeneration.
	High: Built infrastructure	50’		Reduces impacts to native grassland habitats. Buffers native grassland habitats from trampling/foot traffic. Buffers

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
				potential changes in local hydrology. Buffers potential shade/sun impacts.
Rock Outcrop	Low-medium: Trails, picnic tables, viewing	25'		Reduces impacts to rock outcrop habitats. Reduces potential for invasive species establishment. Reduces potential disturbance to wildlife.
Special-status Plants	Low-medium: Trails, picnic tables	25'		Reduces potential for invasive species establishment. Allows for natural regeneration and recruitment.
	High: Built infrastructure	50'		Reduces impacts to rock outcrop habitats. Buffers from trampling/foot traffic. Buffers potential changes in local hydrology. Buffers potential shade/sun impacts.
Bat Roost	Low-medium: Trails, picnic tables	species dependent		Reduces roost abandonment and protects bat species, including special-status bat species.
	High: Built infrastructure	species dependent		Reduces roost abandonment and protects bat species, including special-status bat species.
Bird Nest	Low-medium: Trails, picnic tables	species dependent		Reduces nest abandonment and protects nesting migratory bird species.
	High: Built infrastructure	species dependent		Reduces nest abandonment and protects nesting migratory bird species.
General Biological Survey Guidelines and Standards Objectives, Guidelines, and Standards				

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-G53	Park staff, contractors, and volunteers should review the Biological Resources Report (WRA 2013) to become familiar with the various sensitive natural resources within the Park. Any proposed development or improvement that is located near (see Setbacks above) a suspected or documented sensitive natural resource should be avoided the maximum extent feasible.	X	X	Lowers the risk of impacting known natural resources in the project area. Reduces impacts to special-status plant and wildlife species, sensitive natural vegetation communities, and wetland and non-wetland waters.
RMP-S72	Where it is not feasible to avoid the proposed setbacks, qualified biologists, ecologists, and/or wetland scientists will be consulted to determine the extent of the resource and if the proposed activities will pose a direct or indirect impact.	X	X	Ensures the appropriate minimization measures are implemented to protect natural resources. Ensures mitigation of and/or appropriate responses to impacts can be implemented. Reduces impacts to special-status plant and wildlife species, sensitive natural vegetation communities, and wetland and non-wetland waters.
RMP-S73	If the qualified biologist, ecologist, and/or wetland scientist determines that an impact is unavoidable, the appropriate permit application must be submitted to the governing agency. In some cases, it may be necessary to apply for multiple permits to multiple agencies for a singular impact.	X	X	Ensures mitigation of and/or appropriate responses to impacts to special-status plant and wildlife species and wetland/non-wetland waters can be implemented in accordance with federal, state, and local regulations.
RMP-S74	Preconstruction Training: Before the construction, demolition, and/or decommission of trails, roads, fences, buildings, parking areas, and other infrastructural development and improvements, a qualified biologist will conduct a training session for all construction and/or volunteer crews working on the project. The training will include a description of sensitive habitats (e.g., wetlands), special-status species' habitats, and special-status species; basic identification will be part of the training. Protection and avoidance measures will be	X	X	Lowers the risk of impacting natural resources in the project area. Reduces impacts to special-status plant and wildlife species, sensitive natural vegetation communities, and wetland and non-wetland waters.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	thoroughly arranged prior to construction and clearly conveyed to all crews working on the project, and contingency/contact information will be provided to all construction crew members to ensure that incidental impacts are swiftly reported and mitigated.			
RMP-S75	Preconstruction Wetland Delineation: Prior to construction in areas within or near wetlands, a qualified wetland scientist will perform a wetland delineation sufficient to determine the extent of Waters of the U.S., Waters of the State, and stream and riparian habitat potentially jurisdictional under Section 404 of the Clean Water Act, Porter-Cologne Act, and Section 1600 of the California Fish and Game Code. Should impacts not occur due to the project, it is at the discretion of the Regional Parks to formally submit documentation to the governing resource agencies. Should impacts be unavoidable, formal submission of the delineation along with the necessary permit application. In this situation a Habitat Mitigation and Monitoring Plan will likely be required by the agencies.	X	X	Reduces the risk of impacting wetland and non-wetland waters. Ensures mitigation of and/or appropriate responses to impacts to wetland and non-wetland waters can be implemented in accordance with federal, state, and local regulations.
RMP-S76	Preconstruction Sensitive Natural Communities and Special-status Plant Surveys: Prior to construction in natural habitats, a protocol-level rare plant and sensitive natural communities will be performed. Although the extent of sensitive natural communities and special-status plants have been documented within the Park, new populations may occur within or near proposed project activities. If these resources are observed, they will be avoided by the project to the greatest extent feasible, and if impacts are unavoidable, then a mitigation and monitoring plan will be developed and implemented.	X	X	Allows for the identification of special-status plants and sensitive natural vegetation communities prior to project activities that occur during the nesting season. Ensures the appropriate avoidance and/or minimization measures are implemented to protect any special-status wildlife observed. Ensures the appropriate mitigation for and/or response to impacts are implemented. Reduces impacts special-status plants and sensitive natural vegetation communities.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-S77	Preconstruction Special-status Wildlife Surveys: Prior to construction in all natural habitats, surveys for CRLF and other potentially occurring special-status wildlife will be performed by a qualified biologist. If a wildlife species is observed within or near the proposed project activities, these areas must be avoided until the animal(s) has vacated and/or upon approval from the governing agency, the animal will be relocated away from the potential impact by an approved biologist.	X	X	Allows for the identification of special-status wildlife (e.g., California red-legged frog) prior to project activities that occur during the nesting season. Ensures the appropriate avoidance and/or minimization measures are implemented to protect any special-status wildlife observed. Reduces impacts special-status wildlife.
RMP-S78	Preconstruction Breeding Bird Surveys: Construction, demolition, and maintenance that require vegetation removal or ground-breaking will occur outside of the breeding bird season (February 1 through August 31) where feasible. Prior to construction and routine maintenance a qualified avian biologist will conduct a breeding bird survey. If active bird nests are located near the proposed activity, then the activity will be halted until young birds have fledged or upon approval by a qualified biologist. A buffer of 50 feet will be applied to nesting songbirds, and a buffer of 250 for raptors and large birds will be applied. If work areas are left unattended for greater than seven days during the breeding bird season following the initial survey, then a second breeding bird survey will be necessary.	X	X	Allows for the identification of nesting birds prior to project activities that occur during the nesting season. Ensures the appropriate minimization measures are implemented to protect any nesting birds observed. Reduces impacts to migratory nesting birds.
RMP-S79	Preconstruction Roosting Bat Surveys: Prior to construction or demolition in areas with the potential to support bat roosts (e.g., barns, snags, large overhanging rock outcrops, and bridges), a roosting bat survey will be conducted by a qualified bat biologist.	X	X	Allows for the identification of bat roost prior to removing potential roosting habitat. Ensures the appropriate minimization measures are implemented to protect any bat roosts observed. Reduces impacts to roosting bats.
RMP-S80	Exclusionary Fencing: During construction, temporary exclusionary	X	X	Ensures that sensitive natural resources, including sensitive

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	fencing will be installed around sensitive natural resources to prevent construction crews from incidentally entering the natural resource area and its established buffer. Temporary exclusionary wildlife fencing will be erected around work areas to prevent wildlife from entering the work area. Fencing should have one-way routes to allow wildlife to exit the work area and prevent wildlife from entering/re-entering the work area.			natural communities, special-status plants and wildlife, and wetland and non-wetland waters are avoided by making the buffer area visible and/or by preventing wildlife from entering into the work area.
Pathogen and Contaminant Control Guidelines and Standards Objectives, Guidelines, and Standards				
RMP-G54	Park Staff will be aware of potentially hazardous chemicals and be familiar with their material safety datasheets. Training in spill prevention and containment should be conducted for Park Staff that will handle potential contaminants, particularly near wetlands and other sensitive natural resources.	X	X	Reduces the potential for harmful spills to make their way to wetland and non-wetland resources by training park staff on proper handling and spill prevention techniques thereby reducing impacts to water quality.
RMP-G55	Volunteers, and visitors should be educated about the spread of pathogens and prevention measures. Educational materials should be posted at trailheads as well as provided in Park brochures, and should contain information about sudden oak death and chytrid (fungus associated with aquatic environments and amphibians). Emphasis should be placed on the modes of pathogen spread, consequences of infestations, and the role that visitors can play in assisting the prevention of these pathogens.	X	X	Minimizes the risk of spreading sudden oak death and/or chytrid. Ensures Park staff are able to identify symptoms of the pathogens so infestations can be addressed quickly.
RMP-G56	Areas of documented or suspected infestation should be closed to the public and any staff, volunteers, and contractors should take preventative measures before entering and upon leaving the infected		X	Minimizes the risk of spreading sudden oak death which in turn ensures woodlands remain healthy and viable. Reduces impacts to native woodlands.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	area. Exclusions may include temporary fencing, signage, brush fences, or other physical barriers.			
RMP-S81	Pesticides, herbicides, and other potentially hazardous chemicals will be used by qualified persons, and will be utilized for spot treatments only. Large infestations of invasive plant species will be treated by non-chemical means. Spill prevention measures should be exercised at all times that these products are used.		X	Minimizes pollution risk associated with pesticides, herbicides, and other potentially hazardous chemicals which in turn minimizes risk to water quality associated with project area activities. Reduces impacts to special-status plants, sensitive natural communities, burrowing owls, and special-status amphibian and reptile species (e.g., western pond turtle, California red-legged frog, and foothill yellow-legged frog).
RMP-S82	Fueling equipment will occur within Park Complex on impermeable surfaces where spill prevention measures can be deployed immediately. Refueling of equipment will occur at least 100 feet away from sensitive cultural and natural resources and will be on tarps, truck beds, or other impermeable surfaces where spill prevention measures can be deployed immediately in the event of a spill.	X	X	Minimizes pollution risk associated with fuel which in turn minimizes risk to water quality associated with project area activities. Reduces impacts to wetland and non-wetland habitats.
RMP-S83	Park staff and contractors working within woodlands will be trained about sudden oak death host species, disease transmission, and preventative measures necessary to minimize the spread of the pathogen, <i>Phytophthora ramorum</i> . The following best management practices will be exercised to the greatest extent feasible: Equipment will be cleaned in a 10 percent bleach solution, or similar inoculant, before working in oak woodlands. All equipment that will contact the ground and/or plants will be cleaned, such as boots, tires, saws, shovels, etc.	X	X	Minimizes the risk of spreading sudden oak death which in turn ensures woodlands remain healthy and viable. Reduces impacts to native woodlands.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	<p>Pruning oaks and other host plants will be avoided or minimized in wet weather, and work within oak woodlands will occur in the dry season to the greatest extent feasible.</p> <p>Infected trees within a broader infected area that are downed or pose a safety hazard can be left on site. Removal of trees should only occur if it is the only infected individual in an otherwise uninfected area. Removal will occur in dry weather only, personnel will take all preventative measures to prevent the spread within and outside of the Park, and the removed tree will be off-sited to an approved dump site.</p>			
RMP-S84	<p>Nursery stock for restoration plantings will be inspected at the point of purchase for symptoms of sudden oak death and other Phytophthora pathogens. Should large-scale restoration efforts be conducted, it may be beneficial to test the nursery stock for a range Phytophthora species that can pose significant risks to the restoration efforts and their surrounding habitats (Natesen et al. 2014).</p>		X	<p>Minimizes the risk of spreading sudden oak death which in turn ensures woodlands remain healthy and viable. Reduces impacts to native woodlands.</p>
RMP-S85	<p>Park staff, biologists, and contractors working within aquatic habitat will be trained about chytrid and other fungal diseases impacting amphibian populations to prevent the introduction and/or spread of pathogens throughout the Park. Decontamination protocols in accordance with the California/Nevada Amphibian Populations Task Force will be followed immediately following work within aquatic features in the Park.</p>	X	X	<p>Minimizes the risk of spreading aquatic pathogens which in turn ensures special-status amphibian populations to remain healthy and viable. Reduces impacts to special-status amphibians.</p>
Adaptive Monitoring and Management Objectives, Guidelines, and Standards				

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
RMP-O53	Monitor park visitation effects on pre-historic archaeological sites and natural communities and adjust management activities to meet new use demands, reinforce cultural resource protections, changes in habitat, discovery of new species, and other unpredictable changes within the Park.		X	Promotes adaptive management to address impacts to natural resources in the project area.
RMP-G57	Monitoring resources should occur at regular intervals, varying by resource type. Monitoring results should be analyzed to determine if management strategies are performing well or if changes are necessary.		X	Ensures impacts to natural resources are identified and addressed appropriately. Promotes adaptive management to address impacts to natural resources in the project area.
Climate Change Objectives, Guidelines, and Standards				
RMP-O54	<p>Preserve and enhance habitat connectivity and wildlife corridors.</p> <p>The Park provides a valuable pathway for the movement of terrestrial wildlife between the Petaluma and Sonoma valleys. Tolay Lake and other large seasonal wetlands and stock ponds provide foraging and cover habitat for migratory birds including several species of waterfowl. The elevation gradient from nearly sea level to over 700 feet may provide available niches for vegetation communities. Riparian areas and woodlands provide shading, cover, and corridors for wildlife movement.</p>		X	Ensures the integrity and ecological function of natural vegetation communities and wildlife corridors are maintained.
RMP-O56	<p>Protect water resources.</p> <p>Water resources for wildlife, plants, livestock, and human uses will likely be stressed with the projected increase in high temperatures, frequency of drought, and fewer storms to replenish surface and near</p>		X	Ensures that water quality, infiltration, and shading are maintained in riparian, wetland, and non-wetland waters habitats.

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	<p>surface waters. Amphibians, fish, and other aquatic organisms dependent upon cool surface waters for successful completion of their life-cycle may be negatively affected by increased water temperature. The protection and enhancement of riparian vegetation should assist in cooling waters through greater infiltration and direct shading.</p>			
RMP-O58	<p>Manage adaptively and collaboratively.</p> <p>It is impossible to determine the effects that climate change will have on resources, and therefore it will be necessary to periodically review and evaluate the monitoring approaches and management methods including the guidelines and standards. The continued collaboration between Regional Parks and the Tribe and developing partnerships and working relationships with neighbors, resource agencies, and other municipal departments will be essential to effective management of the Park.</p>			<p>Promotes adaptive management to address impacts to natural resources in the project area.</p>
RMP-G58	<p>All natural habitats should be preserved and enhanced within the Park to provide potential refugia for native species, maintain the diversity of plant functional groups (i.e., hydrophytes, annuals, perennials), and rely on diverse planting/seeding plants to achieve a higher native diversity and avoid native monocultures.</p>		X	<p>Ensures the integrity and ecological function of natural vegetation communities are maintained.</p>
RMP-G59	<p>Wetlands and their native vegetation should be preserved and enhanced to maintain their water quality, and water and soil retention functions.</p>		X	<p>Ensures the integrity and ecological function of wetlands are maintained.</p>
RMP-G61	<p>Native species restoration and enhancement should be from locally sourced seed and plant propagules from a variety of elevations,</p>		X	<p>Ensures the integrity and ecological function of natural</p>

Table 4.4-4: Proposed Master Plan Policies to Avoid or Reduce Impacts on Biological Resources

Policy Identifier	Policy Text	Construction	Operation	How the Policy Avoids or Reduces Impacts
	topographic gradients, and hydrologic regimes to maintain local genetic diversity while providing for robust populations potentially adaptable to changing conditions in the physical environment.			vegetation communities are maintained.
RMP-G62	Natural habitat extent and species composition should be monitored over time to detect changes. The use of LIDAR, aerial imagery, and ground surveys can serve as a useful method to determine these changes. Keystone species such as oaks and native perennial hydrophytes should be a focus of monitoring to determine their regeneration rate and health.		X	Ensures impacts to species and habitats are identified. Ensures appropriate mitigation of and responses to impacts are implemented.
RMP-S98	Habitat fragmentation will be minimized to allow for the exchange and migration of species and maintain genetic diversity. Trails and roads will be planned to minimize the impacts of fragmentation on species and habitats.	X	X	Ensures the integrity and ecological function of natural vegetation communities are maintained.
RMP-S99	Riparian buffers and stream channel integrity will be maintained to ensure water quality, reduce erosion, and water cooling.	X	X	Reduces impacts to riparian and wetland and non-wetland habitats. Allows space for natural stream channel change. Buffers erosion into stream channel. Buffers sediment and nutrient runoff. Allows for natural and assisted regeneration. Maintains integrity of wildlife corridor.

4.5 CULTURAL RESOURCES

This section provides background context regarding the ecology, prehistory, ethnography, and history of the Tolay Lake Regional Park (Park). The following section also summarizes the results of previous cultural resources investigations and meetings with tribal representatives from the Federated Indians of Graton Rancheria (the Tribe), including a summary of resources within the Park and the various phases of fieldwork conducted for the Master Plan process.

The most effective way for the Sonoma County Regional Parks to manage cultural resources within the Park, is to implement the Master Plan that integrates avoidance measures with construction and operation requirements for the Park. Section 4.5.3.3 identifies the key project components and the potentially significant impacts that could occur to cultural resources, and lists the objectives and standards in the Master Plan Resource Management Plan to reduce such impacts to a less-than-significant level

4.5.1 Environmental Setting

4.5.1.1 Ecological Context

Several thousands of acres of conserved lands surround the Park (see Figures 3-5 and 3-6 in Section 3 of this DEIR). The Park is critical to providing habitat linkages and wildlife corridors between Petaluma and Sonoma-Napa Marshes, and Cougar Mountain and the greater Mayacama Mountain region. Tolay Lake and the east and west ridgelines fill Tolay Creek through the wet season supporting and sustaining life from the lake to San Pablo Bay. The historically rich biodiversity of flora and fauna contribute to diversity and resiliency of species within the regional context.

Tolay Lake Regional Park is within the Coast Miwok and Southern Pomo territories. The federally recognized tribe the Federated Indians of Graton Rancheria (Tribe) is made up of families of both the Coast Miwok and Southern Pomo communities. The Tribe through partnership with project partners is dedicated to be protecting and preserving the land. With the acquisition of the parklands that make up the Park the bulk of the Tolay watershed has been protected and preserved. Tolay Lake at the northern center of the valley is the heart of the watershed, elemental to the valley's hydrological systems, forage and shelter for biotic life, and a focal point of Native American culture and history that respected, was sustained by, and spiritually nourished by the lake, wildlife and land.

4.5.1.2 Prehistoric Context

The following provides a brief context of prehistoric history in the North Bay Area that is relevant to the project area. Significant efforts to construct a prehistoric cultural chronology for the North Bay Area can be traced to the 1930s during excavations in the Lower Sacramento and Upper San Joaquin Valley (Lillard, Heizer, and Fenenga 1939). The observations of three culturally stratified artifact assemblages and burial lot-associated grave goods led to the development of what would become the Early, Middle, Late taxonomy of the Central California Taxonomic System (CCTS) (Gerow 1968). The system of the CCTS was refined and applied to the Bay Area by Beardsley (1954) based on his extensive excavations along Point Reyes and the Marin Coast.

Cultural chronologies of the Bay Area typically define the Early Period as beginning in approximately 3500 BC. However, there is evidence for occupations extending much earlier in time in the North Bay Area. Little is known of the life ways representing this time period and no evidence of occupation has been found in Sonoma County. In Sonoma County, there is some evidence of the Pleistocene/Holocene Transition period, as seen in prehistoric archaeological sites. (Moratto 1984)

During the Middle Period there were numerous marshes, tidal wetlands, and inland areas that offered an abundant resource base due to the slightly wetter environmental pattern during the late Holocene. Larger occupation sites located near water sources with the presence of projectile points and atlatls¹ emerged during the Berkeley Pattern (Fredrickson 1989).

The Middle to Late transition and the Late Period in the North Bay area are characterized by evidence of elaborate social organization and the formation of small, autonomous socio-political groups called tribes. Late Period archaeological sites are characterized by a general increase in population and settlements, a more regularized exchange system, and greater evidence of ceremonialism. A widespread series of droughts from AD 800 to 1300, known as the Medieval Climatic Anomaly, likely had significant effects on the environment and resources that the native populations relied upon throughout the San Francisco Bay Area and surrounding regions (Fagan 2003; Lightfoot and Luby 2002). Local populations became more dependent on acorn during this period, evident through the prevalence of mortars, pestles, and hopper mortars throughout the archaeological record.

The Coast Miwok village of *Olompali*, is perhaps one of the most important examples of this type of site. The site is located north of the city of Novato in Marin County and is the largest coastal site in the region and was occupied through European contact. (Moratto 1984:273). This village site is located approximately 16 miles south of the Park.

4.5.1.3 Ethnographic Context

The Coast Miwok and Southern Pomo had much in common; similar culture, economy and language where communities or tribes lived in separate territories. The Coast Miwok and Southern Pomo dispersed across the region from approximately Sonoma Creek at San Pablo Bay through Marin; west to the Pacific Coast from Marin headlands to Jenner; and from San Pablo Bay north through Sonoma Mountain and the Santa Rosa plain to the Russian River. The Alaguali was the tribe dwelling in the Tolay Valley prior to colonization.

The Alaguali living in the Tolay Valley were integral to the land for many thousands of years. Traditionally the tribe's principal village was central to camps distributed throughout the territory in outlying areas near water and resources that were used seasonally to sustain life and economy. Tolay Lake is included in a chain of lakes through Sonoma County that begin north of Santa Rosa down to Tolay Lake just above San Pablo Bay. Each of the lakes served a specific ceremonial purpose and tribal oral histories are associated with them; Tolay Lake the southernmost lake was for 'holding sicknesses and doctoring.' (Peter Nelson: 4) the lake and the valley was also a place for prayer and reflection. Its geographical position at the top of San Pablo Bay providing incredible views of Coast Miwok sacred mountains: Cougar Mountain, Mt. Tamalpais,

¹ Tool used to throw spears

Mt. Diablo, Mt. Burdell, and north to Mt. St. Helena.

The Alaguali hosted gatherings inviting people that came from as far away as Oregon to Mexico, for healing and ceremonies at Tolay Lake. Doctors from tribes throughout the greater region came to share, research, and learn from peers and in advancement of medicine. Tolay Lake was renowned and people traveled many hundreds of miles seeking the best medicine, and knowledge of healing at the sacred lake.

Tribal oral histories, ethnography, ethnohistory, and archaeological and biological studies reconstruct a picture of the Tolay Valley pre-European contact. Open grassland dominated the landscape with extensive stands of shrubs and oak groves on hilltops and in ravines. Plant and animal life used by the Alagulai for economy and sustenance included grasses, acorns, elk, deer, fish and sea life.

The Alaguali valued their place within the greater environment of flora and fauna and evidence tells the story of them actively managing the land for restorative purposes. Archaeological data supports tribal oral knowledge, that the land was routinely managed including through controlled burning. Jose Altimira's journal notes in 1823, of burned/blackened hillsides through the Petaluma and Sonoma area, also supports this theme. Tribal management practices included controlled burning, tending, weeding, pruning, and seed broadcasting used to balance and provide a sustainable environment supporting all life.

4.5.1.4 Historic Context

The earliest known visit of a non-native person to [Tolay Lake] occurred in June 1823. At this time, Governor Arguello advised Father Jose Altamira to establish a new mission at Sonoma and transfer the missions at San Francisco and San Rafael there due to the deteriorating conditions of the *neophytes*², at these missions Father Altamira, who arrived from Spain in 1819 to assist at Mission San Francisco de Asis, promptly traveled north to explore sites for the new mission. Altamira's June 27, 1823 diary entry noted his visit to Laguna de Tolay while en route to found the new mission, so named after the Coast Miwok man who was chief of the tribe from this area.

In 1833, Lieutenant Mariano G. Vallejo was ordered by Governor Jose Figueroa to explore and settle the country north of Mission San Rafael, largely as a means to monitor the nearby Russian colony at Fort Ross. Vallejo applied for and received a 44,000-acre land grant for Rancho Petaluma, which encompassed Lake Tolay, from the governor in 1834. The land grant was confirmed and its size increased by 22,000 acres by Governor Manuel Micheltorena in 1843. This sprawling rancho, one of the largest in the state, stretched eastward from the Petaluma River to Sonoma Creek, from the bayshore north to approximately present-day Glen Ellen. Vallejo's Rancho Petaluma operation relied on Native American labor to produce hides and tallow, agricultural products, blankets, candles, and shoes. The Tolay Lake margins and foothills would have served as rangeland for the large herds of cattle, horses, and sheep owned by Vallejo."

The ranch changed ownership several times through the ensuing years and was eventually purchased from Fair's heirs by Arthur W. Foster in 1905, who operated it for the next two decades. Foster operated the ranch as the Lakeville Stock Farm, and eventually owned most of the land between Petaluma and Sonoma Creek, purchasing small homesteads and combining

² Term used by the church to describe people not educated in the church and faith

them into his large landholdings along his railroad line. He also planted the eucalyptus trees along Lakeville Road, with hired men carrying barrels of water to irrigate them. The trees also line the Foster/Cardoza Road (a segment of the Sears Point-Lakeville Road), the original ranch entrance from Lakeville Road, as Foster reputedly didn't like to ride in the full sun. Foster apparently constructed the elaborate irrigation and drainage system at the ranch, as the date "1907" is incised in some of the concrete work, although some of it may have been constructed earlier.

The ranch was granted to the North Bay Farms Company in 1922, which retained ownership until 1943, the year that it was sold to John S. Cardoza Sr., George S. Cardoza, and John S. Cardoza Jr., natives of the Azores, who acquired the property in partnership. John Cardoza Sr. was a dairyman who also raised sheep and Hereford cattle on the ranch. According to descendant Marvin Cardoza, the ranch was in poor condition, undoubtedly due to absentee owners, when John Cardoza Sr. purchased the property. During the late 1940s and early 1950s, John set about restoring the ranch as a viable livestock and dairy operation, demolishing many of the old buildings and using the timber, lumber, windows, and other architectural elements to build new structures and rebuild others, including barns, equipment sheds, and other amenities. Many other buildings that are present today were either moved, altered in some manner or constructed by the Cardoza family.

4.5.1.5 Native American Consultation

Native American consultation between the Sonoma County Regional Park and the Tribe has been ongoing since the start of the planning process for the Master Plan in 2012. Prior to that time, archaeologists consulted with the Tribe during studies carried out for the Tolay Creek Ranch and Tolay Lake Ranch properties (LSA 2008 and 2009). A summary of the previous consultation and the ongoing efforts between the Sonoma County Regional Park and the Tribe is described below.

Regional Parks initiated consultation with the Federated Indians of Graton Rancheria in January 2005 during acquisition of the property and communicated the general intent and objectives of the Tolay Lake Regional Park project. The initiation of consultation was under the auspices of Senate Bill 18 because, at the time, Parks believed a General Plan Amendment would be required for the Tolay Lake Regional Park project.

Sonoma County Regional Parks (Parks) sent a formal letter to the Native American Heritage Commission November 29, 2005, requesting a review of their Sacred Lands File for any Native American cultural resources that might be affected by future projects and a list of Native American individuals and organizations who may have knowledge of cultural resources. Parks formally reached out to the listed Tribes in March and April of 2006, pursuant to Senate Bill 18. The Federated Indians of Graton Rancheria responded to Regional Parks later that month by formal letter that they would like to consult with Regional Parks on the project. Parks and the Tribe have continuously engaged in the consultation process since initiation.

Regional Parks and the Tribe entered into a Memorandum of Understanding (MOU) for the Park Interim Plan in October 2010. The MOU in summary establishes protocols for communication and notification, tribal monitoring during ground disturbing activities, and process for incidental pre-historic cultural resource discoveries.

On May 15, 2008, the Land Trust sent a letter describing the Tolay Creek Ranch property with maps depicting the area to the Native American Heritage Commission (NAHC) in Sacramento, requesting a review of their Sacred Lands File for any Native American cultural resources that might be affected by future projects and a list of Native American individuals and organizations who may have knowledge of cultural resources. The NAHC responded in a faxed letter on May 21, 2008, that a review of the Sacred Lands File did not “indicate the presence of Native American cultural resources in the immediate project area.” The NAHC response letter identified five Native Americans representatives who may have knowledge of cultural resources. On June 11, 2008, letters were sent to the Native American individuals and organizations identified by the NAHC.

In 2008, the Tribe’s representatives submitted comments to the Land Trust which identified the area as sacred, requested a meeting to discuss the survey methodology. In August 6, 2008, the Tribe requested consideration of a cultural landscape evaluation and included the determination of eligibility for the Tolay Valley Historic District (TVHD).

In 2012, Sonoma County Regional Parks began consulting with the Tribe to discuss the park master plan development, design components, land use objectives, construction and operation phases, and preservation and restoration goals. These meetings were held on a semi-regular basis over the course of four years, and included three public outreach workshops in June 2013, January 2014, and April 2015. The Master Plan project components were developed, in coordination with the Tribe, to avoid and protect cultural resources in the Park. Sonoma County Regional Parks submitted copies of the Master Plan to the Tribe on July 7, 2016, and December 21, 2016 and addressed two round of comments from Buffy McQuillen, Tribal Heritage Preservation Officer, Gene Buvelot Tribal Elder, and Lorelle Ross, Tribal Council Vice-Chair. Peter Nelson, Chair of the Sacred Sites Committee, also provided a narrative about Tolay Valley from the tribe’s perspective and a letter report with descriptions and maps for three unrecorded sites. The background information provided by Mr. Nelson about Tolay Valley is used as a reference in the Master Plan.

Sonoma County Regional Parks will continue to collaborate and consult with the Tribe to ensure the avoidance of impacts to cultural resources and to maintain tribal participation in the operations and management of the Park. Sonoma County Regional Parks recognizes the traditional values and resources within the Park and the ongoing ceremonial and sacred practices important to the Tribe.

4.5.1.6 Cultural Resources Within the Park

This section presents a summary of cultural resources investigations that have been conducted within the Park and lists the recorded sites in Table 4.5-1. The historic and pre-historic resources located in the Park are considered non-renewable resources and are the source of the Parks extensive past and ongoing research and documentation, as such, due to the sensitive nature of information related to cultural resources, specific details cannot be provided here.

The Tolay Lake Regional Park consists of two properties that were acquired in 2005 and 2008 (Tolay Lake Ranch and Tolay Creek Ranch), the archival and records searches were conducted over the course of many years by several different researchers. As such, the information presented here reflects a compilation of the documented cultural resources located in the Park.

The documented resources include historic-era buildings and structures, cultural landscape features, native plant gathering areas, views and vistas, water features, tribal cultural resources, and archaeological sites. A list of the relevant previous studies is presented below, due to the sensitive nature of cultural resources detailed descriptions of many sites are confidential. Department of Parks and Recreation forms (DPR 523) were prepared for cultural resources described in these reports and are on file at the Northwest Information Center (NWIC) of the California Historical Resources Information System in Rohnert Park, California.

- *A Cultural Resources Study for the Tolay Lake Regional Park Project* (LSA 2008). Confidential
- *Cultural Resources Study Tolay Creek Ranch, Near Petaluma, Sonoma County, California* (LSA 2009). Confidential
- *Cultural Resources Investigations at, Tolay Lake Regional Park* (Origer 2011). Confidential
- *Tolay Lake Cordoza Ranch Historic Structures Report* (Architectural Resources Group, Inc., 2012).
- *Tolay Lake Cordoza Ranch Cultural Landscape Inventory Report* (MIG 2013). Confidential
- *Summary of Unrecorded Archaeological Sites at Tolay Lake Regional Park* (Peter Nelson, Federated Indians of Graton Rancheria, Chair of the Sacred Sites Protection Committee 2016). Confidential

A total of 70 cultural resources (exclusive of the Cardoza Ranch buildings in the Park Complex) and those that do not contain confidential information have been identified within the Park and are listed below in Table 4.5-1 by site number, description, and location within the Park (Park Complex, Tolay Lake Ranch, and Tolay Creek Ranch). Of the 70 resources, four are multi-component sites containing both prehistoric and historic-era resources, 35 are prehistoric/tribal resources, and 31 are historic-era built environment resources and features.

In 2008, the Tolay Valley Historic District (TVHD) was formally recorded and evaluated as an NRHP-eligible district, encompassing the Tolay Lake Ranch property (formerly Cardoza Ranch), which contains numerous historic-era built environment resources, archaeological sites, and tribal cultural resources. In 2009, a study of the Tolay Creek Ranch property resulted in the recommendation that TVHD boundary be updated to encompass both the Tolay Lake Ranch and Tolay Creek Ranch properties and all cultural resources identified from the 2008 and 2009 LSA reports. The Tribe also stated at the time of these studies, that the “Tolay Lake Watershed (Tolay Lake and Tolay Creek Ranch) is the most sacred place located within our Tribal territory.” As a result of this previous work, the TVHD boundary corresponds with the current Park boundary (refer to Figures 3-5 and 3-6 in Section 3 of this DEIR) and the 70 previously recorded cultural resources within the Park. The majority of archaeological sites and tribal cultural resources have been inventoried, however they have not been evaluated for listing in the NRHP/CRHR. The historic-era built environment resources have been evaluated for the NRHP/CRHR and were the subject of the Historic Structures Report (Architectural Resources Group, Inc., 2012) and the Cultural Landscape Inventory Report (MIG 2013). The CLI essentially filled the documentation gap between resources documented by LSA and ARG.

All resources within the Park are assumed to be eligible for listing in the NRHP and the CRHR and are considered contributors to the TVHD. Formal eligibility determinations, if not previously prepared, will be considered on a project specific basis and may require further identification or evaluation efforts.

Table 4.5-1: Tolay Valley Historic District: Cultural Resources in Tolay Lake Regional Park

Type	Description	Park Location
Historic	Ranch outbuilding	Tolay Creek Ranch
Historic	possible dam/stacked rock feature in drainage	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Lake Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Dry-laid stone fence	Tolay Creek Ranch
Historic	Sears Point to Lakeville Road	Tolay Creek Ranch
Historic	Sears Point to Lakeville Road System	Tolay Lake Ranch
Historic	Wooden bridge, abandoned road segment, dry-laid stone abutments	Tolay Lake Ranch
Historic	Wooden bridge, dry-laid stone walls	Tolay Lake Ranch
Historic	Eucalyptus wind break, stone foundation, trash scatter	Tolay Creek Ranch
Historic	Stone foundation	Tolay Creek Ranch
Historic	Semi subterranean duck blinds surrounding artificial pond	Tolay Creek Ranch
Historic	Collapsed plywood shack w/associated trash scatter, wooden bed frame, and small appliances	Tolay Creek Ranch
Historic	Semi subterranean duck blinds surrounding wetland	Tolay Creek Ranch
Historic	Dry-laid stone dam and bridge	Tolay Creek Ranch
Historic	Fruit trees; collapsed corrugated metal structure	Tolay Creek Ranch
Historic	Fruit trees; collapsed wooden/corrugated metal structure	Tolay Creek Ranch
Historic	Military crash site; eucalyptus stumps & cypress; scatter glass/ceramic, and iron; dry-laid stone fence	Tolay Creek Ranch
Historic	Collapsed water tank	Tolay Lake Ranch

Table 4.5-1: Tolay Valley Historic District: Cultural Resources in Tolay Lake Regional Park

Type	Description	Park Location
Historic	Eucalyptus windbreaks, possible homestead site	Tolay Lake Ranch
Historic	Collapsed barn	Tolay Lake Ranch
Historic	Collapsed building	Tolay Lake Ranch
Historic	Trash scatter	Tolay Lake Ranch
Historic	Former artificial duck pond, hunting blinds, & well	Tolay Lake Ranch
Historic	Cardoza Ranch	Tolay Lake Ranch
Historic	Stone-lined features, trash scatter, eucalyptus trees	Tolay Creek Ranch
Historic	Stone foundation; ceramic, glass, & metal scatter; eucalyptus & ornamental trees & shrubs	Tolay Creek Ranch

4.5.1.7 Cultural Resource Field Methods and Results

Archaeological Survey

LSA archaeologists conducted pedestrian field surveys for both the Tolay Lake Ranch and Tolay Creek Ranch properties both of which encompass the current Park boundary. The Tolay Lake Ranch was surveyed on May 5, 12, 16-19, 24; July 20, 25; August 7; and October 2, and 3, 2006. During that investigation, eighteen (18) previously recorded cultural resources were revisited and twelve (12) newly recorded resources were identified. The Tolay Creek Ranch property was surveyed on September 30; October 1- 2, 6-7, and 21-22; and November 19, 2008. Six (6) previously recorded cultural resources were revisited and 27 newly identified resources were documented. Both surveys included the documentation of prehistoric archaeological sites and historic-era built environment resources. These resources were not formally evaluated for the NRHP/CRHR, however they were recommended as contributing features to the TVHD. Built environment surveys were carried out by Architectural Resources Group, Inc., and MIG and are discussed in Section 4.5.1.3.

Peter Nelson, Chair of the Sacred Sites Protection Committee conducted surveys from 2012-2016 in the Park, as part of his research for at the University of California, Berkeley Ph.D., dissertation. As a result of his efforts, three additional prehistoric sites were recorded and mapped. All the mapped and recorded sites are shared and updated by Parks and Tribal staff in coordinated effort. Due to the sensitive nature of the cultural resources the information is confidential.

Archaeological Testing

Early archaeological excavations were conducted at the Cardoza Ranch (Tolay Lake Ranch) by the University of California, Berkeley and by George Phebus during the 1950s and 1960s (Elsasser 1954a; Phebus 1965, 1990). During this time, archaeologists excavated three test pits (Elsasser 1954a) and at least nine sites on the Cardoza Ranch (Phebus 1965:2, 1990:121-148). Cultural material from these early excavations yielded a variety of subsistence related artifacts

that included tools for hunting and food preparation, rock piles, baked clay, hearths with charred acorns, and shell beads.

In 2011, Tom Origer & Associates conducted subsurface testing located within the old lakebed of Tolay Lake. As many as 2,000 charmstones have been identified and collected during the historic cultivation of the drained lake bed. Many of the charmstones remain in personal collections and a large assemblage of these artifacts are housed at the Smithsonian Institution in Washington D.C. Charmstones are considered sacred to the Tribe and are described as large (several inches long) shaped cylinder artifacts. Archaeological testing occurred in the the former lake bed. A total of four shovel test pits (STP) were excavated to first establish the presence and/or absence of cultural materials. STPs were excavated to depths of 80, 71, and 73 feet below the ground surface and were terminated when archaeologists encountered water in each unit. Archeologists did not identify any subsurface cultural deposits or materials in any of the testing locations.

Archaeological testing was conducted at a midden site near Tolay Lake to determine the site boundary. Several 1x1 meter surface scrapes were excavated, three of which contained obsidian flakes.

Historic Architecture

The Historic Built Environment in the Park Complex was documented and evaluated by Architectural Resources Group, Inc. (ARG) in 2012. ARG documented and developed condition assessments for 12 of the 16 buildings within Cardoza Ranch's historic core for the Tolay Lake/Cardoza Ranch Historic Structures Report. Buildings that were documented are included in Table 4.5-2. Buildings that were not documented included two that are not historic, Building 16 – New Shop and Building 17 – Modern Barn, and two that were excluded from the investigation since they are currently used for ranger housing and will continue to function that way under the master plan. Those include Building 3 – John Sr. House and Building 2 – Bunkhouse.

Table 4.5-2: Historic Ranch Buildings and Structures in Tolay Lake Regional Park

Primary	Field Number	Type	Characteristic	Park Location
P-49-001778		Historic	Building 1: Cottage/Julie's House/Little Green House	Tolay Lake Ranch
P-49-001778		Historic	Building 4: George and Vera's House/Green House	Tolay Lake Ranch
P-49-001778		Historic	Building 5: John Jr. and Beatrice's House/Yellow House	Tolay Lake Ranch
P-49-001778		Historic	Building 6: Hay Barn/Old Stone Floor Barn	Tolay Lake Ranch
P-49-001778		Historic	Building 7: Old Dairy Barn	Tolay Lake Ranch
P-49-001778		Historic	Building 8: Creamery/Wine Storage	Tolay Lake Ranch
P-49-001778		Historic	Building 9: Granary/Museum	Tolay Lake Ranch
P-49-001778		Historic	Building 10: Line Shack	Tolay Lake Ranch

Table 4.5-2: Historic Ranch Buildings and Structures in Tolay Lake Regional Park

Primary	Field Number	Type	Characteristic	Park Location
P-49-001778		Historic	Building 12: Old Shop/Workshop	Tolay Lake Ranch
P-49-001778		Historic	Building 13: Tractor Barn/Equipment Barn	Tolay Lake Ranch
P-49-001778		Historic	Building 14: Storage Shed/Equipment Shed	Tolay Lake Ranch
P-49-001778		Historic	Building 15: Slaughterhouse	Tolay Lake Ranch
		Historic	Cattle Scale	Tolay Lake Ranch
		Historic	Corrals and Fencing	Tolay Lake Ranch
P-49-1779	SP-B-2d	Historic	Bridge - small that spans drainage	Tolay Lake Ranch
P-49-1779	SP-B-2c	Historic	Bridge - wooden one-lane vehicular	Tolay Lake Ranch
		Historic	Farm Bridge	Tolay Lake Ranch

Paleontological Resources

Paleontological resources refer to the fossilized remains of plant and animal life, as well as fossil localities, and unique geological formations. On December 21, 2016, the results of a paleontological record search commissioned through the University of California, Berkeley's Museum of Paleontology (UCMP) indicate that there are no vertebrate fossil localities from the UCMP records that have been previously recorded within the Tolay Lake Regional Park Area or within a one-mile radius of the Park Area.

4.5.2 Regulatory Setting

The regulatory framework that mandates consideration of cultural resources in project planning includes federal, state, and local governments. Cultural resources include tribal cultural resources, prehistoric and historic archaeological sites and objects, as well as extant historic structures, buildings, and locations of important historic events or sites of traditional and/or cultural importance to various groups. Cultural resources may be determined significant under national, state, or local criteria.

4.5.2.1 Federal

National Register of Historic Places³The National Register of Historic Places (NRHP) is the United States federal government's official list of districts, sites, buildings, structures, and objects deemed worthy of preservation. Properties are added to the National Register through the following processes.

- 1) Those Acts of Congress and Executive orders which create historic areas of the National Park System administered by the National Park Service, all or portions of which may be determined to be of historic significance consistent with the intent of Congress;
- 2) Properties declared by the Secretary of the Interior to be of national significance and designated as National Historic Landmarks;
- 3) Nominations prepared under approved State Historic Preservation Programs, submitted by the State Historic Preservation Officer and approved by the NPS;
- 4) Nominations from any person or local government (only if such property is located in a State with no approved State Historic Preservation Program) approved by the NPS and;
- 5) Nominations of Federal properties prepared by Federal agencies, submitted by the Federal Preservation Officer and approved by NPS.

Section 106 of the National Historic Preservation Act (NHPA)

Section 106 of the NHPA (36 CFR §800) requires federal agencies and those they fund or have approval authority over, to consider the effects of their actions on properties that may be eligible for listing or are listed in the NRHP. To determine whether an undertaking could affect NRHP-eligible properties, cultural resources (including archaeological and architectural properties) must be inventoried and evaluated for listing in the NRHP. Although compliance with Section 106 is the responsibility of the lead federal agency, others may undertake the work necessary to comply with Section 106. The Section 106 process entails four primary steps, listed below.

1. Initiation of consultation with consulting parties (36 CFR §800.3).
2. Identification and evaluation of historic properties within the Area of Potential Effect (36 CFR §800.4).
3. Assessment of adverse effects on historic properties within the Area of Potential Effect (36 CFR §800.5).
 - If there are historic properties that will be affected, consult with the California State Historic Preservation Officer (SHPO) regarding adverse effects on historic properties.
 - If there are no historic properties that will be affected, implementation of the

³ Although not directly applicable to the project, the NRHP, and the significance criteria provided in 36 CFR 60.4 of the National Historic Preservation Act, were used to evaluate some of cultural resources identified for this project in anticipation of this regulation consideration being necessary in the future.

project in accordance with the findings of no adverse effect shall proceed (36 CFR 36 §800.5[d][1]).

4. Resolution of adverse effects and proceeds in accordance with the Memorandum of Agreement (MOA), if determined appropriate (36 CFR §800.6).

Traditional Cultural Property Designation

Under Section 106 of the NHPA, a traditional cultural property can be defined generally as one that is eligible for inclusion in the National Register of Historic Places (NRHP) because of its association with cultural practices or beliefs of a living community that

- (a) are rooted in that community's history, and
- (b) are important in maintaining the continuing cultural identity of the community or specific group of people.

Important aspects of identification and the required level of effort to evaluate a TCP include interviews, research, establishing a historic context, as well as identifying the potential effect that the project actually has on the potential resource. The entity evaluated must be a tangible property—that is a district, site, building, structure, or object. The relationship between the property and the beliefs or practices associated with it should be carefully considered because it is the beliefs and practices that may give the property its significance and make it eligible for inclusion in the National Register.

NRHP Criteria for Evaluation

Cultural resources significance is determined using the NRHP's four Criteria for Evaluation (Criteria A-D) at 36 CFR 60.4, which state that a historic property is any, site, building, structure, or object that:

- A. Is associated with events that made a significant contribution to the broad patterns of our history (Criterion A);
- B. Is associated with the lives of persons significant to our past (Criterion B);
- C. Embodies the distinctive characteristics of a type, period, or method of construction; or that represents the work of a master, or that possesses high artistic values; or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); and/or
- D. Has yielded, or may be likely to yield, information important in prehistory or history (Criterion D).

If the SHPO determines that a cultural resource is eligible for inclusion to the NRHP, then it is automatically eligible for the California Register of Historic Places (CRHR). For further definition see section 4.8.5.2 below.

NRHP Criteria Considerations

Ordinarily cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original

locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties *will qualify* if they are integral parts of the district that do meet the criteria or if they fall within the following categories:

- a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- b. A building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or
- d. A cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- g. A property achieving significance within the past 50 years if it is of exceptional importance.

NRHP Seven Aspects of Integrity

Cultural resources integrity is determined using the NRHP's seven aspects of integrity at 36 CFR 60.4, which state that a historic property must not only be shown to be significant under the NRHP criteria, but it also must retain historic integrity. The seven aspects of integrity include location, design, setting, materials, workmanship, feeling, and association. A property must meet one or more of the Criteria for Evaluation before a determination can be made about its integrity.

Native American Graves Protection and Repatriation Act (NAGPRA)

The Native American Graves Protection and Repatriation Act (NAGPRA) was enacted on November 16, 1990, to address the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to Native American cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony. The Act assigned implementation responsibilities to the Secretary of the Interior. Staff support is provided by the National NAGPRA Program, including:

- Publishing notices for museums and Federal agencies in the Federal Register,
- Creating and maintaining databases, including the Culturally Unidentifiable Human Remains Inventories (CUI) Database,
- Making grants to assist museums, Indian tribes, and Native Hawaiian organizations in fulfilling NAGPRA,

- Assessing civil penalties on museums that fail to comply with provisions of the Act,
- Providing staff support to the NAGPRA Review Committee and for the Annual Report to Congress,
- Providing technical assistance to Federal agencies where there are excavations and discoveries of cultural items on Federal and Indian lands,
- Promulgating implementing regulations, and
- Providing technical assistance through training, website information, reports prepared for the Review Committee, supporting law enforcement investigations and direct personal service.

4.5.2.2 State

California Environmental Quality Act

The CEQA Statutes and Guidelines (Title 14 of the California Code of Regulations 15064.5) include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the NRHP, the CRHR, or local registers. CEQA further defines a “historical resource” as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the NRHP or CRHR.
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code (PRC), unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- A resource identified as significant (e.g., rated 1-5) in a historical resource survey meeting the requirements of PRC Section 5024.1(g) (Department of Parks and Recreation [DPR] Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered “historically significant” if it meets the criteria for listing on the CRHR.

California Register of Historical Resources (CRHR) Criteria of Evaluation

The CRHR is a listing of State of California resources that are significant within the context of California’s history, and includes all resources listed in or formally determined eligible for the NRHP. The CRHR is a state-wide program of similar scope to the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR. A historic resource must be significant at the local, state, or national level under one or more of the following four criteria defined in the CCR Title 14, Chapter 11.5, Section 4850:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States (Criterion 1);

2. It is associated with the lives of persons important to local, California, or national history (Criterion 2);
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values (Criterion 3); or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation (Criterion 4).

The CRHR criteria are similar to the NRHP criteria, and are tied to CEQA, as any resource that meets the above criteria is considered a historical resource under CEQA.

Assembly Bill 52 (Native Americans: CEQA)

Assembly Bill 52 (AB 52) amended the California Environmental Quality Act (CEQA) to address California Native American tribal concerns regarding how cultural resources of importance to tribes are treated under CEQA. CEQA now specifies that a project that may cause a substantial adverse change in the significance of a “tribal cultural resource” [as defined in PRC 21074(a)] is a project that may have a significant effect on the environment. According to the AB 52, tribes may have expertise in tribal history and “tribal knowledge about land and tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources.”

The AB 52 process entails the following:

- The CEQA lead agency must begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project, if the tribe requested to the lead agency, in writing, to be informed by the lead agency of proposed projects in that geographic area and the tribe requests consultation.
- A proposed Negative Declaration, Mitigated Negative Declaration (MND), or a Draft EIR cannot be released for public review before the tribe(s) has had the opportunity to request consultation.
- If the tribe(s) requests formal consultation, a MND cannot be released for public review until consultation between the tribe(s) and the lead agency is completed and mitigation measures acceptable to the tribe(s) are incorporated into the MND and the related Mitigation Monitoring or Reporting Program (MMRP).

AB 52 further defines the following legislative terms:

- **Tribal Cultural Resource:** The passage of AB 52, created a new category of resource called a “tribal cultural resource” (TCR). The statute clearly identifies a TCR as a separate and distinct category of resource, separate from a historical resource. New PRC Section 21074 defines a “tribal cultural resource” as any of the following under its subsections (a) through (c):

(a) (1) Sites, features, places, and objects with cultural value to descendant communities or cultural landscapes that are any of the following:

- Included in the California Register of Historical Resources.
- Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
- Deemed to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1.

(a) (2) Sacred places, including, but not limited to, Native American sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines that meet either of the following criteria:

- Listed on the California Native American Heritage Commission’s Sacred Lands File pursuant to Section 5097.94 or 5097.96 and a California Native American tribe has submitted sufficient evidence to the lead agency demonstrating that the sacred places are of special religious or cultural significance to the California Native American tribe or contain known graves and cemeteries of California Native Americans.
- Listed or determined pursuant to criteria set forth in subdivision (g) of Section 5024.1 to be eligible for listing in the California Register of Historical Resources.

(b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 also may be a tribal cultural resource if it conforms with the criteria of subdivision (a).

- **California Native American Tribe:** New PRC Section 21074 defines a “California Native American Tribe” to mean a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission (NAHC). This definition is broader than the concept of a “federally recognized tribe” that is typically used in implementing with various federal laws, including the National Environmental Policy Act (NEPA).
- **Formal Tribal Consultation:** Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification notice that includes a brief description of the proposed project and its location as well as the lead agency contact information, and a notification statement that the federally recognized California Native American tribe has 30 days to request consultation.

- **Treatment of Mitigation Measures and Alternatives:** New PRC Section 21080.3.2 provides that as part of the consultation process, parties could propose mitigation measures. If the California Native American tribe requests consultation to include project alternatives, mitigation measures, or significant effects, the consultation would be required to cover those topics. New Section 21082.3 provides that any mitigation measures agreed upon during this consultation “shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring program” if determined to avoid or lessen a significant impact on a tribal cultural resource.

Regulations Concerning Discovery of Human Remains

California Public Resources Code §5097.98 (notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

- Whenever the Native American Heritage Commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 24 hours of their notification by the commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
- Whenever the Native American Heritage Commission is unable to identify a descendent, or the descendent identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendent, and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.
- Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act [Division 13 (commencing with Section 21000)].
- Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 [Division 20 (commencing with Section 30000)].

4.5.3 IMPACTS AND MITIGATION MEASURES

This subsection analyzes impacts related to cultural resources that could result from implementation of the Master Plan. It begins with the significance criteria, which establish the thresholds for determining whether an impact is significant and concludes with cultural resource impacts associated with the chosen project components.

4.5.3.1 Criteria of Significance

The proposed project would have a significant effect on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.
- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
 - a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
 - b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

CEQA provides that a project may cause a significant environmental effect where the project could result in a substantial adverse change in the significance of a historical resource (Public Resources Code, Section 21084.1). CEQA Guidelines Section 15064.5 defines a “substantial adverse change” in the significance of a historical resource to mean physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be “materially impaired” (CEQA Guidelines, Section 15064.5(b)(1)).

CEQA Guidelines, Section 15064.5(b)(2), defines “materially impaired” for purposes of the definition of “substantial adverse change” as follows:

The significance of a historical resource is materially impaired when a project:

- (a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

- (b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- (c) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

In accordance with CEQA Guidelines Section 15064.5(b)(3), a project that follows the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* or *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* or the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* is considered to have mitigated impacts on historic resources to a less-than-significant level.

Historical resources are usually 50 years old or older and must meet at least one of the criteria for listing in the California Register (such as association with historical events, important people, or architectural significance), in addition to maintaining a sufficient level of physical integrity (CEQA Guidelines Section 15064.5[a][3]).

4.5.3.2 Methodology

The first step in defining impacts is to identify whether existing resources and properties within the project study area are historical resources as defined by CEQA. The methods used in the cultural resources analysis included a literature review and field reconnaissance by Secretary of the Interior (36 CFR Part 61) qualified cultural resource personnel.

The assessment of project impacts on cultural resources under CEQA (CEQA Guidelines, Section 15064.5) is a two-step process:

1. Determine whether the project site contains an historical resource (defined as prehistoric archaeological, historic archaeological, or historic architectural resources of significance). If the site is found to contain a historical resource, then
2. Determine whether the project would cause a substantial adverse change to the resource.

The impact discussion reviews the criteria for significant impacts on cultural resources and assesses the project's impact on cultural resources. The criteria for establishing whether a project would cause a significant impact or substantial adverse change to a historic resource are provided in CEQA Guidelines, Section 15064.5(b)(2), discussed in the section above.

4.5.3.3 Impacts and Mitigation Measures

The Master Plan presents the conceptual plans for the development of a new open space regional park facility over the course of the next 35 years. The Master Plan discusses the physical improvements, such as the construction of trails, roadway access, parking areas, campsites, a

visitor center, ranger and educational facilities, a wastewater facility, and the restoration of buildings and habitat (see Project Description for more details). The development of infrastructure and the implementation of the allowable uses would occur in both the near and long term and has the potential to impact cultural resources as a result of both construction improvements and Park operation.

Project impacts are considered activities that may alter characteristics of a cultural resource that contribute to its CRHR/NRHP eligibility or cultural significance. There are proposed activities that could directly and indirectly impact archaeological and tribal resources in the Park. Certain types of Park-related activities may not have a direct impact, but may create the conditions by which damage occurs, which would be considered an indirect impact. For example, a new trail or access road may not directly impact an archaeological or tribal resource, however, the introduction of these elements would facilitate public access to areas that contain such resources and that were previously less accessible. The following section and Table 4.5-3 summarizes the key project components, presented under the categories of construction or operation, and the associated potential direct/indirect impacts that could occur

4.5.3.4 Construction

Regional Parks would implement construction activities in order to rehabilitate, restore, and relocate some of the existing Park structures and to construct new trails, parking areas, access roads, fences, ADA improvements, facilities and buildings, campgrounds, gardens, culverts, bridges, and interpretive signage. These physical improvements and new infrastructure have the potential to impact cultural resources. For example, ground disturbing activities such as grading and excavating for the construction of new buildings, trails, and drainages has the potential to disturb archaeological and tribal cultural resources and to expose undocumented subsurface resources within Park. The construction of certain project components such as the installation of signage may increase public access to sites within the Park. In addition, some historic resources are slated for removal and/or have proposed modifications which could alter the integrity of those resources.

4.5.3.5 Operation

The Park facilities would require ongoing maintenance to sustain operational efficiency. Ground disturbing activities associated with the maintenance or repair of Park structures has the potential to impact subsurface or near surface archaeological sites, particularly within the Park Complex, which includes the Cardoza Ranch and associated buildings. Structural improvements such as building foundation work, underground utility and fence line installation, and landscape planting, have the potential to disturb and/or expose both documented and undocumented cultural resources within the Park.

Recreational activities in the Park include hiking, outdoor education programs, docent led walks, horseback riding, mountain biking, picnicking, camping, and bird watching. These activities can lead to greater exposure of cultural resources to the public and lead to disturbances to cultural and tribal sites, increased erosion or deterioration of sites, unauthorized artifact collection, or more severe vandalism and looting. Ongoing maintenance at recreational facilities, formal and informal improvements, and infrastructure development can also impact cultural resources. The

more accessible archaeological and tribal resources are to public visitation, the more likely they are to be impacted by recreational activities.

Routine management of habitat in the Park, including restoration activities, invasive species management, grazing areas, and fire and erosion management, all have the potential to disturb prehistoric and historic resources. It is often the case that natural management activities pose direct and indirect impacts to pre-historic and historic resources. For example, hazard trees or invasive vegetation adjacent to or within the boundaries of documented sites may need to be trimmed or removed, and these activities all have the potential to impact such resources. In addition, the management of a historic resource (eucalyptus windbreak and groves) which doesn't maintain its form and structure can impact and inadvertently remove the historic resource.

The goal of the Tolay Lake restoration is to restore, enhance, and increase seasonal wetland habitat, and habitat for shorebirds, ducks, and waterfowl by returning the lake to a more natural, pre-agricultural condition. The Tolay Lake and associated cultural resources are considered sacred to the Tribe. Ground disturbing activities grading, altering drainage channels, raising the causeway, and replacing/constructing culverts and bridges have the potential to impact known resources. In addition, previously unidentified sites that have been buried as a result of historic dredging and draining of the lake may also be exposed through such activities.

Table 4.5-3 below listed the associated impacts to cultural resources for each of the key project components. There are generally four associated potential impacts as result of the construction and operation activities in the Park and include:

- Physical modification or removal of a resource associated with ground disturbance;
- Introduction of indirect impacts (e.g., visual) that diminish the integrity of a resources significant features;
- Change in the character of the resources use or physical features that covey its historical significance; and
- Removal of resource from its historic location.
- Alter the spatial organization of the buildings and structures in the Park Complex.

Table 4.5-3: Summary of Key Master Plan Activities and Associated Potential Impacts

Activity	Associated Potential Impacts
New Construction in the Greater Park Area	Physical modification of a previously undiscovered pre-historic resource associated with ground disturbance; Introduction of indirect impacts (e.g., visual) that diminish the integrity of a historic resources significant features.
New Building Construction within Park Complex	Physical modification of a previously undiscovered pre-historic resource Impact spatial organization of Park Complex by adding building in new location.
Repair and Renovation of Existing Park Complex Buildings	Physical modification or removal of a resource associated with ground disturbance; Change of the character of the physical features that covey its

Table 4.5-3: Summary of Key Master Plan Activities and Associated Potential Impacts

Activity	Associated Potential Impacts
	historical significance.
Relocation of Park Complex Features	Removal of resource from its historic location; Physical modification or removal of a resource associated with ground disturbance. Potential damage to historic materials when moving structure.
Construction of Utilities/Utility Infrastructure	Physical modification or removal of a resource associated with ground disturbance; Introduction of indirect impacts (e.g., visual) that diminish the integrity of a resources significant features. Impact to circulation of farm complex (P-49-001778) by adding new curvilinear path.
Construction of New Trails	Physical modification or removal of a resource associated with ground disturbance; Introduction of indirect impacts (e.g., visual/atmospheric) that diminish the integrity of a resources significant features. Impact to circulation by potential altering of historic width, materials and associated structures (stone culverts, retaining walls, bridges) of historic roads being converted into multi-use trails such as Cardoza Road, Causeway Road, Historic Lakeville Road, Pond Road, and East Ridge Road. Impacts circulation by potentially blurring distinction between historic circulation alignments with new ones.
Decommission Roads/Trails	Physical modification or removal of a resource associated with ground disturbance. Impact to circulation by obscuring through revegetation historic alignments of portions of roads such as East Ridge Road.
Plantings and Restoration Activities	Physical modification of a previously undiscovered pre-historic resource
Parking Areas	Physical modification or removal of a resource associated with ground disturbance; Introduction of indirect impacts (e.g., visual/atmospheric) that diminish the integrity of a resources significant features. Impact to spatial organization of farm complex (P-49-001778) by adding new vegetation.
Restore and improve lake hydrology and associated wetland meadows	Physical modification or removal of a resource associated with ground disturbance; Introduction of indirect impacts (e.g., visual/atmospheric) that diminish the integrity of a resources significant features.

4.5.3.6 Less Than Significant Impacts

Project implementation would result in the following less than significant cultural resource impacts.

CULT-1: The project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5. (LTS)

Cultural resources that have the potential to be impacted by the Master Plan are listed in Table 4.5-1 above. The Tolay Valley Historic District (TVHD) is considered eligible for listing in the NRHP and the CRHR and encompasses the 70 cultural resources identified within the Park. The location of cultural resources is considered confidential and sensitive information and therefore, is not included in this section. Sonoma County Regional Parks maintains a GIS database that is shared between Parks and the Tribe of all resources within the Park. The Master Plan objectives and standards have been developed to avoid and protect cultural and tribal resources in the Park. These resource protection objectives and standards are presented below in Table 4.5-4 and described in detail in Chapter 6 of the Master Plan. The standards for preserving cultural resources in place and avoiding damage to those resources is the objective of the Master Plan. Additionally, these measures are designed to address both the short and long-term effects that may threaten archaeological and tribal cultural resources. In instances where impacts are unavoidable, Parks would consult with the Tribe to determine suitable management and treatment measures in accordance with the Master Plan and coordinate in the preparation of future protective measures and plans. The Tribe has an ancestral connection to the Tolay Valley and serves as the stewards of the Tolay Lake Regional Park (Park) for heritage preservation activities, interpretation and to the extent feasible would serve as co-managers at the Park. Parks and the Tribe would continue to collaboratively work to continue development of cultural resource monitoring protocols, adaptive management strategies and assessments, protect and preserve the Park, and educate the community on the Park’s natural and historical cultural significance.

A total of 70 cultural resources have been identified within the Park. Of the 70 resources, four are multi-component sites containing both prehistoric and historic-era resources, 35 are prehistoric/tribal resources, and 31 are historic-era built environment resources. Although the project design is conceptual, Chapter 6 in the Master Plan requires new features be setback 150 feet or 500 feet from known cultural resources, depending on the project component. In addition, Sonoma County Regional Parks and the Tribe would collaboratively work to nominate the TVHD for listing in the NRHP/CRHR/TCP, including any resource specific studies should further identification or evaluation efforts become necessary on a project specific basis. As such, the objectives and standards in the Master Plan would avoid and protect cultural resources and ensure that impacts are *less than significant*; these standards are summarized below in table 4.5-4.

Table 4.5-4. Cultural Resource Avoidance Objectives and Standards

Cultural Resources
Objectives
<u>Objective 46</u> : In coordination of the Tribe protect cultural and tribal resources within the Park to ensure that they are not impacted to the extent feasible during construction of infrastructure, trail building,

Table 4.5-4. Cultural Resource Avoidance Objectives and Standards

Cultural Resources
<p>habitat restoration, and routine maintenance.</p> <p>Under the California Public Resources Code (PRC) 5097.5a it is unlawful to knowingly or willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, or archaeological sites on public lands, except with the express permission of the public agency having jurisdiction over said lands.</p>
<p><u>Objective 47:</u> Maintain the cultural landscape of the Park in such a manner that will not degrade the landscape condition or threaten cultural resources, and that, considers impacts from restoration and enhancement activities as part of the management and development of the Park.</p> <p>The cultural landscape of the Tolay Valley represents a breadth of natural and cultural significance and its link to the relationship between people and the environment.</p> <p>Paramount is the protection of the prehistoric cultural resources and of their sacred place in the valley.</p> <p>Protect and maintain historic ranch structures as feasible and visual historical aesthetic congruency with new infrastructure within the Park Complex.</p>
<p><u>Objective 48:</u> Maintain consultation and collaboration between Park staff and the Tribe to ensure the protection of tribal resources and sacred sites during the construction of buildings and infrastructure, trails; habitat restoration efforts, public use, and routine maintenance.</p> <p>The Tolay Creek watershed is revered by the Tribe as a place of spiritual health, healing, and gathering. Tribal resources within the Park include both tangible and intangible resources. Government-to-government consultation with the Tribe shall be carried out during all phases of Park management and development.</p>
<p><u>Objective 49:</u> Actively and adaptively manage through collaboration with the Tribe avoidance guidelines for cultural resources from park activities. To guide management and development review of cultural resources within the Park.</p>
<p><u>Objective 50:</u> Conduct surveys, or other special studies within the Park when necessary to evaluate, record, and preserve prehistoric and historic archaeological sites and tribal resources within the Park.</p> <p>Based on each specific project activity proposed in the Park, tribal representatives and professional archaeologists will conduct site specific archaeological and ethnographic analysis to assess potential impacts to cultural and tribal resources and address those potential impacts as necessary.</p>
<p><u>Objective 51:</u> Enhance public awareness and appreciation of the Parks cultural and tribal resources and highlight preservation activities.</p> <p>The Park will collaborate with the Tribe to develop appropriate interpretive materials and to best adaptively manage established preservation methods.</p>
<p><u>Objective 52:</u> Provide information on the use of native plants and habitat by the Tribe and incorporate ethnobotanical and traditional cultural knowledge into park restoration efforts.</p> <p>Archaeological and ethnobotanical studies have been conducted within the Park that have identified culturally significant plant and gathering areas. Possible culturally significant plants that occur, or could be planted include: Sedges, Soaproot, Mugwort, Clovers, Loamtium, Snowberry, Toyon Berry, Currants/Gooseberry, Wild Rose, Blue elderberry, Native Grapes and Willows.</p>
Standards
<p>Park staff will consult regularly with the Tribe to ensure that collaboration and cooperation occurs in the management and development of the Park and its cultural and tribal resources. An advisory committee and Monitoring Plan with park staff and tribal members will be created to oversee and monitor park activities especially how they are affecting (or not) sensitive sites, and to identify additional resources and protective measures.</p>

Table 4.5-4. Cultural Resource Avoidance Objectives and Standards

Cultural Resources
In collaboration with the Tribe, natural resource management plans regarding grazing, erosion, fire, remediation, and restoration and habitat efforts will be developed. It is often the case that natural management activities pose direct and indirect impacts to cultural and tribal resources.
Educational materials and interpretive signage will be developed to inform the public of the cultural landscape, archaeological sites, tribal resources, California Public Resource Code (PRC) 5097, and ongoing preservation measures within the Park.
Areas of documented cultural and tribal resources sensitivity or confidentiality will be closed to the public. New trails, roads, and other infrastructure will be located to avoid sensitive resources by distance, natural physical barriers, exclusionary fencing and capping of the resource. Existing park infrastructure located near archeological resource will be monitored and existing barriers will remain in place or be enhanced to protect the resource as necessary. A sensitive sites Monitoring Plan will be developed in collaboration with the Tribe and additional measures of protection maybe considered as necessary including enhancement of exclusionary fencing, field camera monitoring, and capping (covering with soil or gravel) for protection of sensitive sites.
Avoidance or setback standards for cultural and tribal resources will be maintained and adapted as necessary to best protect from park activities potential direct and indirect impacts. To protect resources, minimum setback standards shall be adhered to where feasible. The Setback Standards and Guidelines In Chapter 6 of the Management Plan, summarizes the suggested minimum setbacks for the Park’s cultural and tribal resources.
Avoidance measures, such as distance from resource, physical barriers (fencing and signage), and onsite monitoring including the use of field cameras, will be implemented for cultural and tribal resources and include temporary and long-term measures.
In collaboration with the Tribe project-specific development will be reviewed and assessed on a case-by-case basis for impacts to cultural and tribal resources. If deemed an impact to resources, avoidance or mitigation measures will be adopted. This review process may include surveys prior to and following construction, vegetation clearance, demolition, and fire in areas with known resources in the vicinity of cultural sensitivity.
Park staff, volunteers, and contractors will be aware of the potential for encountering cultural and tribal resources within the Park and will be trained on the appropriate communication and discovery protocols.
Chemicals and contaminants such as gasoline, motor oil, herbicides, solvents, and paints to the greatest extent feasible will not be used within native plant gathering areas or traditional gathering areas.
Define and provide access for the Tribe to sacred sites, plant gathering areas, and tribal resources within the Park and develop a policy to support native traditional gathering areas and management of those areas for culturally important plants.
Collection and curation policies shall clearly define procedures for identifying, handling, and storing archaeological materials, artifacts, human remains, and/or items of cultural significance, including final disposition and repatriation.

CULT-2: The project would not cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources,

or in a local register of historical resources as defined in Public Resources Code section 5020.1(k). (LTS)

As discussed in CULT-1, a total of 70 cultural resources have been identified within the Park. Of the 70 resources, four are multi-component sites containing both prehistoric and historic-era resources, 35 are prehistoric/tribal resources, and 31 are historic-era built environment resources.

Native American consultation between the Sonoma County Regional Park and the Tribe has been ongoing since the start of the planning process for the Master Plan in 2012. Sonoma County Regional Parks will continue to collaborate and consult with the Tribe to ensure the avoidance of impacts to cultural resources and to maintain tribal participation in the operations and management of the Park. Sonoma County Regional Parks recognizes the traditional values and resources within the Park and the ongoing ceremonial and sacred practices important to the Tribe. Although the project design is conceptual, Chapter 6 in the Master Plan requires new features be set back 150 feet or 500 feet from known cultural resources, depending on the project component. In addition, Sonoma County Regional Parks and the Tribe would collaboratively work to nominate the TVHD for listing in the NRHP/CRHR/TCP, including any resource specific studies should further identification or evaluation efforts become necessary on a project specific basis. As such, the objectives and standards in the Master Plan would avoid and protect cultural resources and ensure that impacts are *less than significant*.

CULT-3: The project would not cause a substantial adverse change in the significance of a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. (LTS)

As discussed in CULT-1 and -2, the objectives and standards in the Master Plan would avoid and protect cultural resources and ensure that impacts are *less than significant*.

4.5.3.7 Significant Impacts

Project implementation would result in the following significant cultural resource impacts.

CULT-4: The project would cause a substantial adverse change in the significance of an historical resource as defined in §15064.5 [§15064.5 generally defines historical resource under CEQA. (S)]

Historic resources that have the potential to be impacted by the Master Plan are listed in Table 4.5-1 above. Cardoza Ranch is considered eligible for listing in the NRHP and the CRHR and encompasses dozens of contributing features associated with eight characteristics including buildings and structures, circulation, land use, natural systems and features, small-scale features, vegetation, views and vistas, and water features. Those characteristics and features are documented in the Tolay Lake Cordoza Ranch Cultural Landscape Inventory Report (MIG 2013).

Regional Parks would use the Rehabilitation approach outlined in The Secretary of the Interior's Standards for the Treatment of Historic Properties to guide the treatment and management of the

property's contributing characteristics and features in accordance with the Master Plan. These standards and guidelines are presented below in Table 4.5-5 and described in Chapter 6 of the Master Plan. Parks would consult with architects and landscape architects who meet The Secretary of the Interior's Standards for Professional Qualifications when components of the Master Plan that involve historic characteristics and features are implemented.

Table 4.5-5 Historic Resource Rehabilitation Standards

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The mitigation measure listed below would protect historic resources and ensure that impacts would be *less than significant*.

MM CULT-4: Document by way of historic narrative, photographs and architectural drawings any built environment historic resources that are slated for removal, demolition or would be the focus of modifications and management approaches that significantly alter the resource.

CULT-5: *The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (S)*

A search of the UCMP database did not list any vertebrate or plant localities within the Tolay Lake Regional Park or the one-mile buffer zone around the Park. Although no vertebrate or plant locations were found, it is possible that intact paleontological resources exist at depth. As a result, recommended mitigation measures are provided below to reduce potentially significant

impacts to previously undiscovered paleontological resources or unique geological formations that may be accidentally encountered during project implementation to a *less than significant* level.

MM CULT 5: Cease Ground-Disturbing Activities and Implement Treatment Plan if Paleontological Resources Are Encountered. In the event that paleontological resources and or unique geological features are unearthed during ground-disturbing activities, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. A buffer area of at least 60 feet shall be established around the find where construction activities shall not be allowed to continue until appropriate paleontological treatment plan has been approved by the County. Work shall be allowed to continue outside of the buffer area. The County shall coordinate with a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, to develop an appropriate treatment plan for the resources. Treatment may include implementation of paleontological salvage excavations to remove the resource along with subsequent laboratory processing and analysis or preservation in place. At the paleontologist's discretion and to reduce construction delay, the grading and excavation contractor shall assist in removing rock samples for initial processing.

CULT-6: The project would disturb any human remains, including those interred outside of formal cemeteries. (S)

Human remains have been identified in the Park. Section 7050.5 of the California Health and Safety Code (CHSC) states that it is a misdemeanor to knowingly disturb a human burial. In keeping with the provisions provided in 7050.5 CHSC and California Public Resource Code (PRC) 5097.98 and the setback standards for avoidance in the Master Plan (see Chapter 6) cultural resources within the Park containing human remains would be avoided and specific avoidance measures would be determined in collaboration with the Tribe.

In addition, previously unrecorded and buried (or otherwise obscured) cultural deposits may be present within the Park. Therefore, there is the potential for construction and operation activities to result in degradation and/or destruction of such resources. As described above, the Master Plan contains objectives and standards to ensure that no impacts occur on inadvertent discoveries of cultural resources, including buried human remains, which is consistent with CEQA provisions. Additionally, the following mitigation measure would ensure any potential impacts to human remains would be *less than significant*.

MM CULT-6: Unknown Human Remains. In the event of accidental discovery of cultural resources, such as structural features or unusual amounts of bone or shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.), work shall be suspended and Sonoma County Regional Parks staff would be contacted (do not touch or remove the cultural material or human remains). A qualified cultural resource specialist and tribal representative, as appropriate, would be retained and would perform any necessary investigations to determine the significance of the find. The Parks would then implement the measures deemed necessary for the recordation and/or protection of the cultural resources. In addition, pursuant to Sections 5097.97 and 5097.98 of the California PCR and Section 7050.5 of the CHSC in the event of the discovery of human remains, all work shall be halted and the Sonoma County Coroner shall be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission would be adhered to in the treatment and disposition of the remains.

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4.6 HYDROLOGY AND WATER QUALITY

This section provides an evaluation of the potential effects to hydrology and water quality following implementation of the Tolay Lake Regional Park Master Plan (Plan). The existing hydrologic setting for Tolay Lake Regional Park [Park], including runoff, drainage, and water quality, is described in Section 4.7.1 below followed by the relevant regulatory setting in Section 4.7.2. The information provided is based on review of published materials and data, current regulatory requirements, site reconnaissance, and related project documents.

In support of the impact analysis hydrologic models of existing and proposed conditions were developed and used to evaluate the potential hydrologic impacts of the proposed Plan, particularly in regards to how the proposed restoration might impact water retention, conveyance, and flooding. The tool used to develop the hydrologic models is the United States Army Corp of Engineers (USACE) Hydraulic Engineering Center Hydrologic Modeling System (HEC-HMS) (Scharffenberg and Fleming 2013). A detailed description of the modeling effort and results are provided in the Hydrology and Hydraulic Technical Report in Appendix F.

Existing and future hydrology and water quality conditions were compiled and analyzed based on California Environmental Quality Act (CEQA) assessment criteria. Potential effects to water supplies arising from implementation of the Plan are evaluated in Section 4.11, of this Draft EIR.

4.6.1 Environmental Setting

The climate, topography, hydrology, stormwater drainage, water quality, floodplain, and groundwater conditions in the project site and vicinity are described below.

4.6.1.1 Climate, Precipitation, and Topography

The geographic area where the project is located has a coastal Mediterranean climate with cool, mild winters and warm, dry summers (Pacific Energy Center 2006). The climate along the North Bay coast is moderated by the Pacific Ocean and usually experiences even temperatures, frequent heavy fog, and prevailing winds from the west to northwest (KHE 2003). There are also local southerly winds that develop due to differential heating between adjacent land and water bodies on a seasonal basis in the Tolay Lake/Petaluma River/Sonoma Creek valleys because of their proximity to San Pablo Bay (KHE 2003). Based on historic climate monitoring data at Petaluma weather station (1893- 2011) northwest from the Park, the monthly average temperatures range from 37.6 to 81.8 degrees Fahrenheit (WRCC 2012). Temperatures display a wider range further inland, away from the moderating effects of the Ocean and San Francisco-San Pablo Bay and are also influenced by elevation and local topography (KHE 2003).

Precipitation in the San Francisco-San Pablo Bay area is seasonal with more than 80-percent of the total annual rainfall occurring between the months of November and March and little, if any, precipitation occurring during the period June through September (KHE 2003). No meteorological station is located within the Tolay Creek watershed (Florsheim 2009). Therefore, site-specific meteorologic data are not available and site precipitation must be estimated from regional atlases or nearby meteorological stations. The mean annual precipitation value at roughly the watershed centroid on the isohyetal map developed by Sonoma County Water Agency (http://www.sonoma-county.org/prmd/docs/landscape_ord/rainfall_map.pdf) is 25 inches.

Data from three nearby weather stations were obtained (Petaluma Fire Station 3, Station Number 046826, Mare Island, Station Number 045333, and the City of Sonoma, Station Number 048351). The average annual precipitation was about 25 inches (for the period 1893 and 2007), 20 inches (for the period between 1961 and 1975), and 29.2 inches (for the periods 1899 to 1907 and 1931 to 1997), respectively.

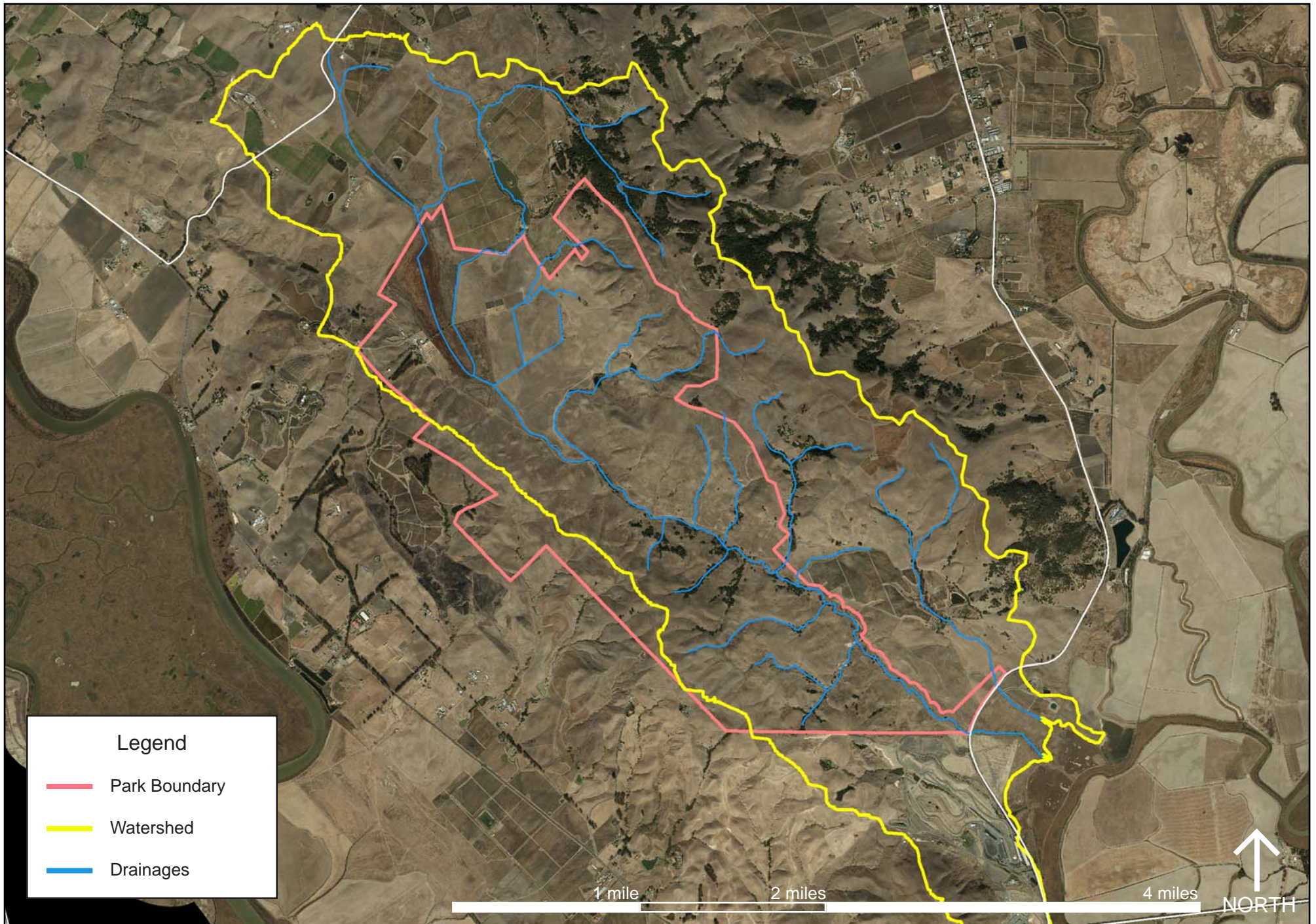
Topography in the Park is defined by rounded ridges and hilltops that encompass the wide valley that forms Tolay Lake. Elevations in the Park range from approximately 15 feet at the location where Tolay Creek crosses the Park boundary at Arnold Drive/Hwy 121 to approximately 800 feet at the top of an unnamed peak northeast of Tolay Lake.

4.6.1.2 Tolay Creek Watershed

The Tolay Creek watershed has a total drainage area of approximately 8.3 square miles and Tolay Creek has a total main channel length of about 6.3 miles (Florsheim 2009). Tolay Creek flows from northwest to southeast in a valley situated between, and roughly parallel to, both Sonoma Creek and the Petaluma River drainages. The watershed is bounded on the northeast by the Sonoma Mountains and on the southwest by a low line of hills that separate it from the Petaluma Valley to the west. The watershed divide in the headwaters has a relatively low elevation and in some places is somewhat indistinct from the adjacent Petaluma River watershed (Florsheim, 2009). Figure 4.7-1 displays the boundaries of the Tolay Creek watershed.

Runoff from Tolay Creek watershed discharges into a tidally influenced marsh complex at the southern end of Sonoma Valley (Arnold Drive/Hwy 121) before entering San Pablo Bay (Florsheim 2009). Based on USGS topographic maps of the area, Tolay Creek is a third-order channel with three zones of distinct slope: the upper basin, a wide reach approximately 3.0 miles in length with a relatively low average slope of 0.0013; the middle basin, a narrow reach approximately 1.2 miles in length with a steeper average slope of 0.0212; and the lower basin, which is wider than the middle basin and approximately 1.7 miles in length with an average slope of 0.0069 (Florsheim 2009). Figure 4.7-2, referenced from a 2009 geomorphic assessment of Tolay Creek (Florsheim 2009), illustrates these zones based on grade breaks determined using USGS topographic maps.

The project area encompasses the majority of the Tolay Creek watershed, from the downstream Park boundary at Arnold Drive/Hwy 121 to the upstream Park boundary, which roughly parallels the northwest boundary of Tolay Lake (when full) and separates the Park from the private properties in the watershed headwaters to the north/northwest.



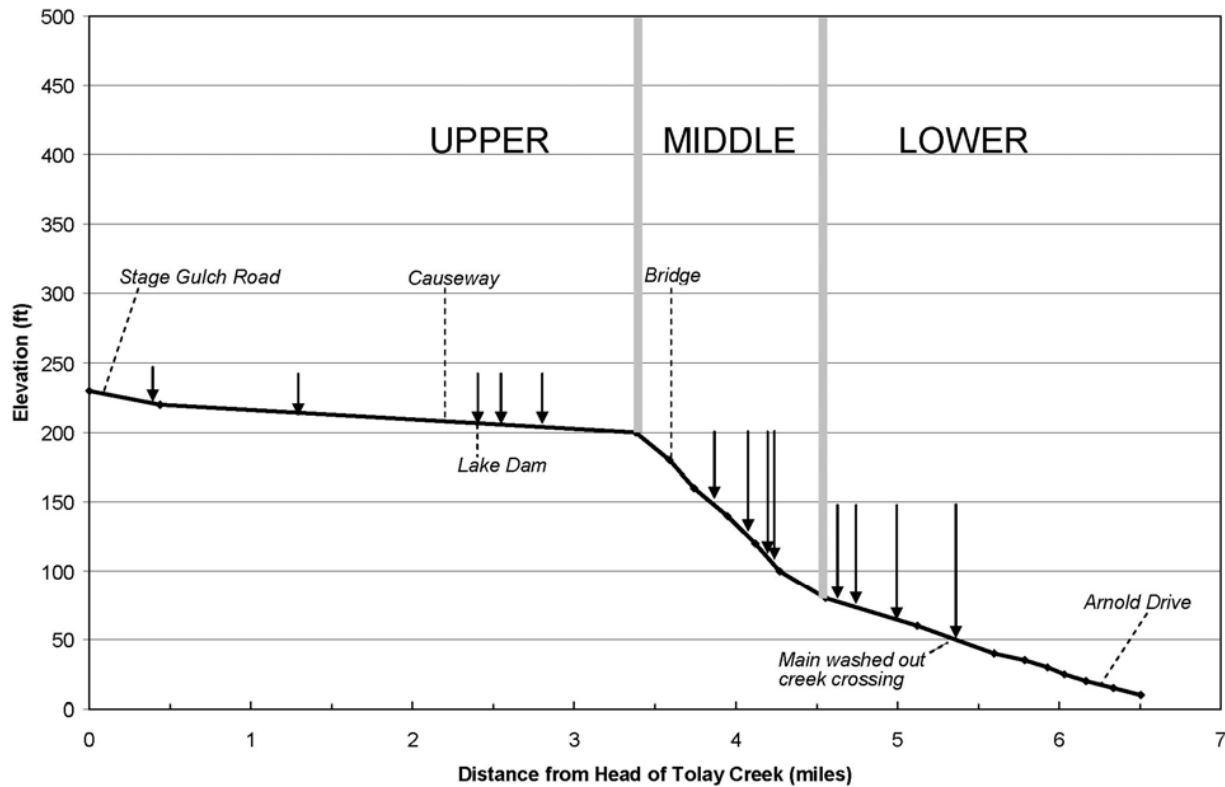
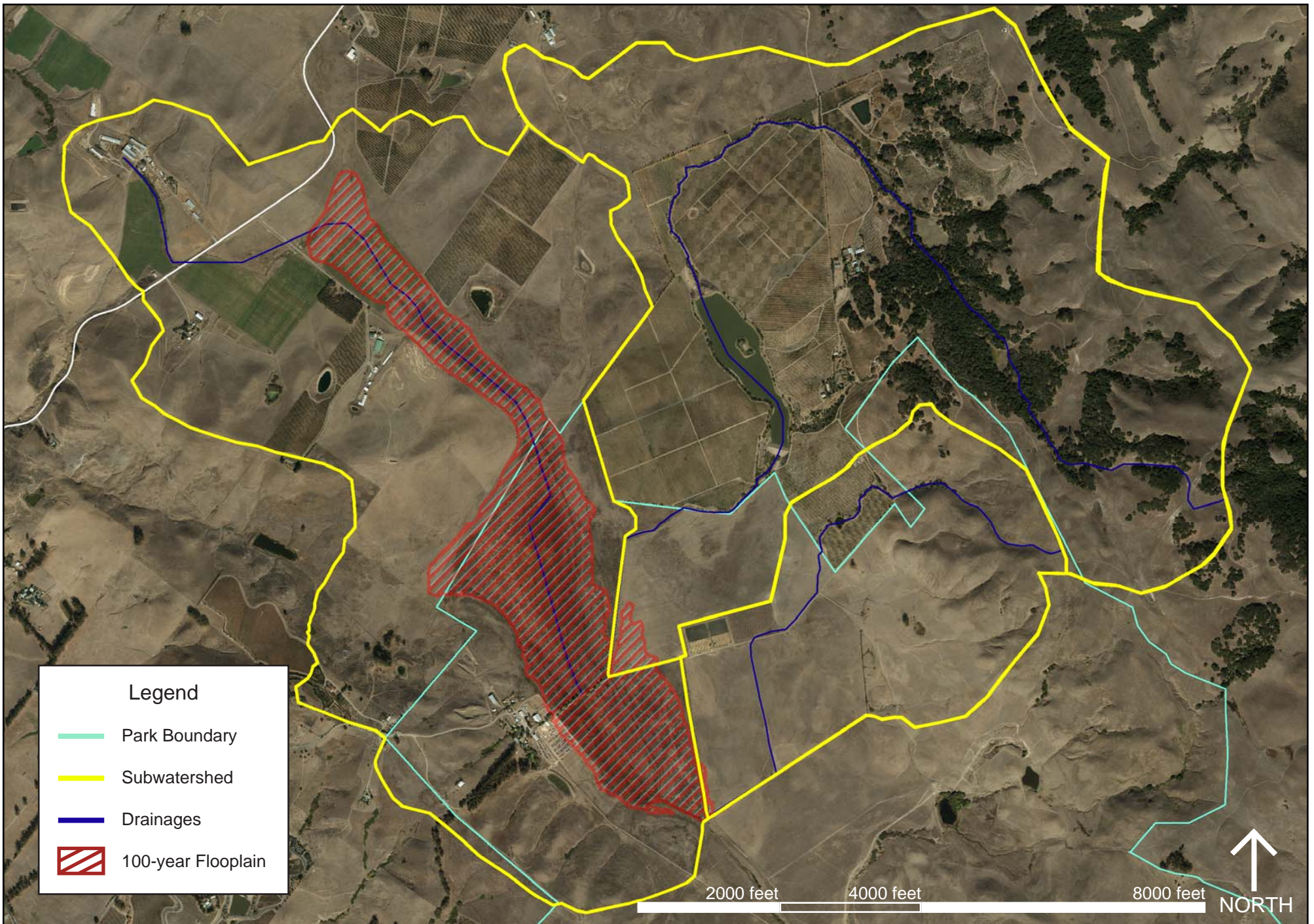


Figure 4.6-2. Tolley Creek Longitudinal Profile (Florsheim 2009) - Arrows indicate tributary inputs, “Lake Dam” is the “horseshoe” (described in Section 4.7.1.3), the arrow at “Lake Dam” is North Creek and the next two arrows in downstream direction are Eagle Creek (at Farm Bridge, not shown in figure) and Cardoza Creek.

The most downstream hydraulically significant structure located within the Park is the “farm bridge”, which crosses Tolley Creek at the downstream boundary of Tolley Lake and is one of the primary contributors to the formation of Tolley Lake during the wet season. Accordingly, the hydrologic modeling analysis focused on the Tolley Creek watershed upstream of the farm bridge, which is the portion of Tolley Creek watershed that contributes flow to Tolley Lake and is defined here as the Tolley Lake subwatershed. The Tolley Lake subwatershed encompasses a drainage area of approximately 4.6 square miles (mi²), or roughly 3,000 acres. Flows originate in the headwaters to the west and northwest, which feed the main Tolley Creek channel, and headwaters to the north and northeast, which feed two primary tributaries: North Creek and Eagle Creek. The confluence of these tributaries with the main channel is within the historic lakebed just upstream of the farm bridge. The drainage boundaries of the main channel, North Creek, and Eagle Creek, which are partially defined by irrigation channels within the Park and private properties upstream from the Park, are shown in Figure 4.7-3., as well as the approximate 100-year floodplain as predicted by the existing conditions hydrologic model developed for this project (Wildscape 2016; Appendix F).



4.6.1.3 Local Hydrology and Stormwater

The Tolay Lake subwatershed and larger Tolay Creek watersheds are smaller and less developed compared to the adjacent Sonoma Creek and Petaluma River watersheds. Measurements of hydrologic data (precipitation, streamflow, etc.) is limited for the Tolay Lake subwatershed because no weather stations or streamflow gauges are present within the watershed. However, regional precipitation data exist, as described in Section 4.6.1.1, and a number of hydrologic studies of the Park have been conducted in the past (KHE 2003, DU 2005, Florsheim 2009, WRA 2013).

Numerous distinct waterbodies exist in the Tolay Lake subwatershed: Tolay Creek and several small tributaries in its headwaters northwest of the Park, North Creek and several small tributaries in its headwaters northeast of the Park, Eagle Creek on the east side of the Park, a number of small ponds on private properties upstream (north) of the Park, and a large private reservoir (approximately 24 acres) on North Creek just upstream from the location where North Creek enters the Park. Beyond the Tolay Lake subwatershed (i.e. past the farm bridge) Cardoza Creek, another primary tributary to Tolay Creek, exists within the Park boundaries, flowing from the Sonoma Mountains to the east to its confluence with Tolay Creek downstream of Tolay Lake. Cardoza Creek has two small ponds along its reach through the Park, Vista Pond and Fish Pond.

Because the Tolay Creek watershed is relatively undeveloped, stormwater within the watershed is generally unmanaged and stormwater flows and hydraulics are generally un-impacted, with the exception of where the landscape has been modified via a network of irrigation channels within the historic Tolay Lake farmed land - and small network of storm drains, ditches, pipes, culverts, etc. within private properties upstream of the Park.

Project Site Hydrology and Stormwater

The hydrology of the Tolay Lake basin was altered from its original state in the late 1800s. Prior to human alteration this area included a natural rise in local topography or “drainage divide” downstream of the current farm bridge location such that runoff from the Tolay Creek basin was impounded upstream forming the lake. This feature was breached (in the late 1800s) and the ditches that exist today were installed (DU 2005) to allow for the lake to be drained and the lakebed to be farmed. The Lake still forms annually but these modifications to the basin coupled with historic farming practices have resulted in a reduced lake size and duration for more than 100 years (DU 2005).

It is estimated that historically, the natural drainage divide could have sustained a lake that was 14-feet in depth (KHE 2003), whereas the current configuration of the basin results in a sustained water depth on the order of two to three feet (DU 2005). Even though the historic lake size has been dramatically reduced, the sustained level of Tolay Lake extends upstream (northward) onto adjacent properties. Tolay Lake is a variable water body due to periodic rainfall events and the limited drainage capabilities of Tolay Creek resulting from channel modifications and infrastructure (DU 2005). Stormwater runoff frequently exceeds the discharge capacity and water temporarily rises above the normal level until the system can equilibrate (KHE 2003). Although current conditions translate to reduced lake depths compared to historic conditions, the lake remains saturated beyond the wet season. In the past, pumps were required to fully drain the lake in preparation for farming operations (DU 2005). Since Sonoma County Regional Parks (Parks)

acquired the property, these prior pumping activities were discontinued due in large part to an extended drought and a lessened need for farming within the Park. However, Parks did agree to pump the lake down to the northerly property boundary in the spring during the interim planning period to allow for farming on the privately owned lands to the north (SCR 2007). Based on existing topographic data, this would entail pumping down the lake to approximate water surface elevation 216 feet to 217 feet in order to eliminate surface water above the creek banks in the vicinity of the northern property boundary.

Tolay Creek enters the Park property from a neighboring ranch to the northwest via an artificial channel, then traverses through the Tolay Lake basin via an artificial channel approximately 1.2 miles until passing under the farm bridge, where it continues in the southeast direction until leaving the Park. The Tolay Creek channel immediately downstream from the farm bridge appears to have been modified (bermed, graded, straightened) from the farm bridge to approximately 1,000 feet downstream (Wildscape 2016) before returning to a more natural stream configuration.

The Tolay Lake basin is a natural depositional area fed by contributing watersheds with steeper slopes. Several factors, some lessening, some increasing sediment deposition have taken place in this area including; historic breaching of the natural drainage divide, installation of the farm bridge and culvert constrictions, periodic removal or dredging of sediment in the vicinity of the farm bridge by previous landowners, and construction and operation of the North Creek reservoir and other structures present in the watershed.

In addition to the artificial channel that flows through the center of Tolay Lake (the Tolay Creek channel), Tolay Lake also contains artificial channels along its east and west boundaries. These channels pass under the causeway (i.e. access road which bisects Tolay Lake to allow vehicle passage from the Park Complex to the east side of the Lake) through culverts and then converge approximately 1.4 miles upstream from the farm bridge. The west channel receives stormwater runoff from the Park Center and from the hills west of the lake. The east channel receives flows from North Creek and runoff from fields east of the lake.

Storm events during most normal water years result in sufficient flows through the ditches to exceed culvert conveyance capacity, causing the causeway to overtop, during which the causeway behaves as a large weir. A gated (closed) culvert exists along the Tolay Creek channel immediately upstream from the confluence of the channels, which is referred to as the “horseshoe,” attributed to its shape when viewed from above. Runoff from the Eagle Creek watershed enters the east side of the Park through a series of irrigation channels that ultimately converge and then join Tolay Creek immediately upstream from the farm bridge. With a bottom invert elevation of approximately 214.4 feet, the farm bridge causes water to pond behind it, which results in the filling of the lower half of Tolay Lake (between the causeway and the farm bridge). However, as described in the Hydrology and Hydraulic Technical Report (Wildscape 2016), the modified channel that extends approximately 1,000 feet downstream of the farm bridge acts as an additional hydraulic control during the less frequent, intense storm events (i.e. 50-year and 100-year storms) causing water to pond upstream that fills Tolay Lake and floods upstream property.

In addition to the above described water bodies in the vicinity of the project area, two small ponds exist within the Park Complex: Duck Pond and Willow Pond. A portion of stormwater

runoff from the Park Center enters these ponds. No other water bodies or stormwater infrastructure exists within the Park Complex.

4.6.1.4 Floodplain

Historically, localized flooding has been an issue in the vicinity of the Park and in areas upstream of Tolay Lake. Although flooding associated with Tolay Creek has been a local issue, the Federal Emergency Management Agency (FEMA) does not yet regulate the Tolay Creek floodplain, and the current FEMA Flood Insurance Rate Map (FIRM) map shows the Tolay Creek watershed in the Park as an area of low flood risk (FEMA 2012). The approximate 100-year floodplain of Tolay Lake, as determined by the existing conditions hydrologic model developed for this project (Appendix F) is displayed in in Figure 4.6-3.

4.6.1.5 Groundwater

Tolay Lake Regional Park is located within a Marginal Groundwater Availability Area, as defined by the Sonoma County planning department (http://www.sonoma-county.org/prmd/gisdata/pdfs/grndwater_avail_b_size.pdf). However, according to the California Department of Water Resources (DWR) California Water Plan 2013 Update the site is located within the boundaries of the Petaluma Valley Groundwater Basin (<http://www.water.ca.gov/groundwater/bulletin118/maps/SF.pdf>). This Basin, which has a surface area of 46,000 acres, is bounded by the North Coast Ranges, the Sonoma Mountains, the Santa Rosa Valley Groundwater Basin, and San Pablo Bay (DWR 2001). Groundwater flow in the Basin is generally toward the Petaluma River, which drains the Basin into San Pablo Bay (Kulongoski et al 2010). The Sonoma County General Plan 2020 shows the Park area slightly differently and divided into two groundwater basins, with the western and southern portion of the Park contained by the Petaluma Valley Groundwater Basin described above and the northern and eastern portions of the Park falling within the Kenwood Valley Groundwater Basin (<http://www.sonoma-county.org/prmd/gp2020/fig-wr2.pdf>.)

Until early 2016 there were no groundwater wells present on the Park property. A new test well for water supply was drilled in late April/early May 2016 approximately one mile east from the Park Complex (location shown in Figure 3-11). Data from the Well Completion Report (No. e0313794) is presented in Table 4.6-1.

Table 4.6-1: 2016 Groundwater Well Data

Well Location: Latitude, Longitude	38°12'36"N, 122°30'09"W
Depth to Static Water Level	18 feet
Depth to First Water	56 feet (below surface)
Geologic Log	Stiff red/brown clay from 0 to 48 feet, red clay with embedded volcanics from 48 to 54 feet, loose volcanics from 54 to 80 feet.

Source: DWR, 2016

With the exception of the data in Table 4.6-1, detailed groundwater elevations in the project vicinity are unknown. The general geology that underlays the site, however, is relatively well-studied. The valley is underlain by Quaternary deposits and the Petaluma Formation composed primarily of silt, clay, with scattered sand or coarse-grained layers. Maps and aerial photographs show several ponds and springs present in a northwest-trending alignment along the base of the hills to the east of the Park (Circuit Rider Productions Inc. 2006). The hills along the west side of the Park and to the southwest are mainly underlain by Franciscan Formation metamorphic rock. The hills along the east side of the Park and to the northeast are underlain by volcanic rocks, mainly the Sonoma Volcanics but some sources distinguish an older volcanic unit (Donnell Ranch or Tolay Volcanics) along the valley perimeter. The distribution of these geologic formations follows the northwest/southeast-trending regional geologic structure.

Groundwater conditions in the Petaluma Formation are variable across the area, with depth to groundwater varying from near the surface to over 100 feet deep (Maley and McLeod 2012). The Sonoma Volcanics also have highly variable groundwater characteristics depending on the site-specific volcanic rock characteristics (DWR 2001). The Franciscan complex generally contains only limited quantities of water in fractures (Maley and McLeod 2012). There are springs located within this unit in the hills to the west of the Park Complex, but these springs are small and ephemeral.

4.6.1.6 Surface Water Quality

In accordance with Section 303(d) of the Clean Water Act, described further below, the State Water Resources Control Board (SWRCB) compiled a list of water quality-impaired waterbodies that require a total maximum daily load (TMDL), are currently being addressed by a TMDL, and/or are being addressed by an action other than a TMDL. Based on the 2010 California 303(d) list, neither Tolay Creek nor Tolay Lake are water quality-impaired water bodies. The Tolay Creek's receiving water body, the San Pablo Bay, however, has impairments for chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, furan compounds, invasive species, mercury, polychlorinated biphenyls (PCBs), and selenium. All of these impairments require a TMDL or are currently being addressed by one.

4.6.1.7 Groundwater Quality

Groundwater quality varies considerably within the Petaluma Valley due to the general discontinuous nature of the water bearing formations, which results in a number of isolated

groundwater bodies (DWR 2001). Total dissolved solids concentrations in the Petaluma Valley Basin range from approximately 100 to 1,000 milligrams per liter (Kulongoski et al. 2010). pH levels in the Petaluma Valley Basin range from 4.1 to 8.8 (Kulongoski et al. 2010). The basin south of Petaluma generally is of poor quality and the northern basin area has nitrate impairments (DWR 2001).

Groundwater samples were pulled from the recently completed well and analyzed in September 2016 for various constituents, the results of which are provided in Table 4.7-2. (AWS 2016). None of the concentrations listed are problematic for general use or discharge and appear to even be within the acceptable range for potable water per current California drinking water standards where Maximum Contaminant Levels (MCLs) for Total Nitrate/Nitrite is 10.0 mg/L and Fluoride is 2 mg/L (EPA 2014). The concentration of calcium carbonate is on the upper end of what is defined as “moderately hard” water at 120 mg/L which can impact plumbing fixtures, but isn’t a threat to water quality (USGS 2016). See Section 4.11 for further discussion in regards to water supply.

Table 4.6-2: Analysis of 2016 Groundwater Well

Nitrate	3.4 mg/L
Nitrite	ND
Fluoride	0.21 mg/L
Total Alkalinity	120 mg CaCO ₃ /L
Hydroxide Alkalinity	ND
Carbonate Alkalinity	ND
Bicarbonate Alkalinity	120 mg CaCO ₃ /L
pH	7.06
Calcium	26 mg/L
Magnesium	12 mg/L
Hardness	110 mg/L
Sodium	18 mg/L
Manganese	ND
Iron	ND
E. Coli	<1 MPN/100 ML
Total Coliform	37 MPN/100 mL

Source: AWS, 2016

According to a 2004 site assessment (EBA Engineering, 2004) minimal environmental impacts exist at the project site from previous and/or historic site uses. They found no indication of residual herbicides or pesticides in the soil samples collected from the historically and current fanned areas or the drainage courses at the project site. In addition, total lead levels in the area of the waterfowl hunting area (duck pond) appear to be generally low in concentration and within the range of the background lead level collected from other areas of the project site.

The report did indicate a presence of both total and fecal coliform bacteria in water samples collected from the existing potable water system attributed to livestock grazing within the watershed of the springs and recommended further investigation, treatment and periodic testing of the potable water system to ensure suitability for human consumption. They investigated the area of a former Underground Storage Tank (UST) and concluded that the UST had likely been removed in the late 1940s or early 1950s and impacts were no longer present. There was no mention in the report of other TMDL pollutants of concern for San Pablo Bay on site, as described in Section 4.7.1.6 above, i.e. chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, furan compounds, invasive species, mercury, polychlorinated biphenyls (PCBs), selenium.

4.6.2 Regulatory Setting

This section discusses the federal, state, and local laws, and regulations that pertain to hydrology and water quality.

Federal

Clean Water Act

The Clean Water Act (CWA) is a 1977 amendment to the Federal Water Pollution Control Act of 1972 (33 USC), which established the basic structure for regulating pollutant discharges to navigable waters of the United States. The CWA provides two general types of pollution control standards:

- Effluent standards, which are technology-derived standards that limit the quantity of pollutants discharged from a point source such as a pipe, ditch, tunnel, etc., into a navigable waterbody (nonpoint source pollution is subject to state control); and
- Ambient water quality standards, which are based on beneficial uses and limit the concentrations of pollutants in navigable waters.

Dredge or Fill Material Placement and Clean Water Quality Certification (Section 404 and 401)

Discharge of dredge or fill material into waters of the United States (including wetlands and creeks) is regulated under Section 404 of the CWA. Such activities would require a Section 404 permit from the U.S. Army Corps of Engineers (USACE), as well as an associated Section 401 Water Quality Certification from the applicable Regional Water Quality Control Board (RWQCB). The Section 401 Water Quality Certification determines that any discharges to the waters of the United States comply with other provisions of the CWA.

National Pollutant Discharge Elimination System (NPDES) (Section 402)

Section 402 of the CWA established the NPDES program, which controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either the U.S. Environmental Protection Agency (EPA) or an authorized state contain industry-specific, technology-based and/or water-quality-based limits, and establish pollutant monitoring and reporting requirements. As described further below, the EPA has authorized the SWRCB and the RWQCBs to administer the NPDES program.

Water Quality Impairments (Section 303(d))

Section 303(d) requires each state to provide a list of impaired waters that do not meet or are expected to not meet state water quality standards as defined by that section. It also requires the state to develop Total Maximum Daily Loads (TMDLs) for the pollution sources for such impaired water bodies. A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety” included). As stated in Section 4.7.1.6 Tolay Creek is not currently listed, however San Pablo Bay, its receiving water body, is.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is the regulatory agency responsible for the National Flood Insurance Program (NFIP). Flood-prone communities implement comprehensive floodplain management measures so that communities may qualify for the NFIP’s federal flood insurance coverage. FEMA maintains and updates flood insurance rate maps (FIRMs). In general, FIRMs designate lands that are subject to flooding (e.g., the 100-year floodplain and the regulatory floodway). The regulatory floodway is the portion of the floodplain (river channel and adjacent land areas) that must be reserved to convey the 100-year flood without cumulatively increasing the water surface elevation more than a designated height from the original un-encroached river channel and floodplain (Code of Federal Regulations 2002).

NFIP regulations do not require conditional approval by FEMA for all projects in the regulatory floodway or 100-year floodplain. A conditional letter of map revision (CLOMR) is only required for projects that meet one of two conditions. First, a CLOMR would be required for projects that would result in an increase in the base flood water-surface elevation of greater than 1 foot for streams that do not have a designated regulatory floodway but do have defined base flood elevations. Under the second condition, a CLOMR would be required for projects constructed within the regulatory floodway that would result in any base flood water surface elevation increases. Communities would request a revision to the applicable FIRM map once a project has been completed and submit all required documentation to FEMA to support this request (FEMA 2012a).

This information is not applicable to the Park project site, because FEMA has not produced a Flood Insurance Study or FIRM that delineates a 100-year regulatory floodplain or floodway for the Tolay Creek watershed.

Floodplain Management (Executive Order 11988)

Executive Order 11988 requires that federal agency construction, permitting, or funding of a project must avoid incompatible floodplain development, be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act establishes the State Water Resource Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) as the principal state agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act establishes the responsibility of the RWQCBs for adopting,

implementing, and enforcing water quality control plans (basin plans), which set forth the state's water quality standards (i.e., beneficial uses of surface waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses.

RWQCB

The project lies within the boundary of the San Francisco Bay RWQCB (SFRWQCB), which makes water quality decisions for the region. Its responsibilities include setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions.

Basin Plans and Water Quality Objectives

The San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) is the applicable basin plan for the project site (SFRWQCB 2010). As shown in Table 4.6-3, the Basin Plan identifies beneficial uses for Tolay Creek and its receiving water body, the San Pablo Bay. In addition, the Basin Plan has identified beneficial uses for groundwater basins within the SFRWQCB's jurisdiction.

Table 4.6-3: Existing Beneficial Uses of Tolay Creek and San Pablo Bay

Beneficial Use	Water Body	
	Tolay Creek	San Pablo Bay
Industrial Service Supply		X
Commercial Water Supply		X
Shellfish Harvesting		X
Cold Freshwater Habitat		
Estuarine Habitat		X
Fish Migration		X
Preservation of Rare and Endangered Species	X	X
Fish Spawning		X
Warm Freshwater Habitat	X	
Wildlife Habitat	X	X
Water Contact Recreation	X	X
Non-Contact Water Recreation	X	X
Navigation		X

X = existing beneficial use.

Source: SFRWQCB 2010

National Pollutant Discharge Elimination System Permit

In California, the SWRCB and the RWQCBs administer regulations governed by the EPA requiring the permitting of stormwater-generated pollution under the NPDES program. The SWRCB and/or the RWQCBs have established NPDES permits for stormwater discharges

related to construction activities, dewatering, industrial processes, and municipal separate storm sewer systems (MS4s). Under these federal regulations, construction activities on 1 acre or more are subject to the permitting requirements of the *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002) (SWRCB 2012b). The General Permit under Order NO. 2009-0009-DWQ requires dischargers to file Permit Registration Documents and to:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) to prevent any construction pollutants from contacting storm water and keep all products of erosion from moving off site into receiving waters;
- Determine project risk level based on sediment potential and receiving water sensitivity
- Implement and maintain Best Management Practices (BMPs);
- Visually monitor BMP installations and conduct storm water inspections and sampling for Risk Level 2 and 3 sites;
- Meet numeric effluent limitations and action levels for pH and turbidity for Risk Level 2 and 3 sites;
- Conduct additional receiving water monitoring for some Risk Level 3 dischargers;
- Develop Rain Event Action Plans (REAPs) for Risk Level 2 and 3 sites prior to forecasted storm events;
- Submit annual reports for all projects enrolled for more than one continuous three-month period; and
- Meet specific training/certification requirements for key personnel performing the compliance.

The SFRWQCB has adopted an NPDES dewatering permit (Order No. R2-2007-0033, NPDES No. CAG912004) that is applicable to three discharge categories, including long-term structural dewatering resulting in greater than 10,000 gallons per day and requiring treatment before discharging. It is not anticipated that this dewatering permit or industrial permits would be applicable to the project.

NPDES Municipal Permit

EPA adopted rules in 1990 and 1999, respectively, which established Phase I and Phase II of the NPDES stormwater program. These programs require NPDES permits to be adopted for cities and other institutions because stormwater discharges from these urbanized areas are considered sources of pollution. To comply with the Phase I NPDES regulations, the RWQCBs adopted Phase I stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities (SWRCB 2012c). Most of the Phase I individual permits are issued to a group of co-permittees encompassing an entire metropolitan area (SWRCB 2012c).

Smaller municipalities and non-traditional small MS4s are required to comply with the Phase II rule and are covered under the SWRCB-adopted *General Permit for the Discharge of Storm*

Water from Small MS4s (WQ Order No. 2013-0001-DWQ, NPDES General Permit CAS000004). This permit was adopted in February 2013 and is effective July 2013. MS4 permits require dischargers to develop and implement a Stormwater Management Plan or Program to reduce pollutant discharges to the maximum extent practicable (SWRCB 2012c). Each program includes BMPs intended to reduce the quantity and improve the quality of stormwater discharged to the stormwater system. Discharges to storm sewer systems must comply with the stormwater management program requirements.

The Park does not fall within any of these categories (small, medium, or large municipality or non-traditional small MS4) and therefore is not currently required to comply with any NPDES Municipal Permit.

Local

Local Stormwater Management

Sonoma County has prepared a Standard Urban Stormwater Mitigation Plan (SUSMP) to address stormwater pollution and peak flows following the completion of development projects (Sonoma County 2012). However, the Park is located beyond the boundaries of the Plan and is therefore not required to comply with requirements set forth by the plan. If the project site was located within the Plan boundaries preparation of a Preliminary Stormwater Mitigation Plan, a Final Stormwater Mitigation Plan and a Written Certification of BMPs Installation would be required because work proposed for this project will result in greater than 1-acre of disturbed land area and will be conducted adjacent to water bodies (Sonoma County et al. 2005).

Local Wastewater Management

Sonoma County has published an Onsite Wastewater Treatment System Regulations and Technical Standards (OWTS Manual), which provides the regulatory requirements, policy, procedural and technical details for implementation of the Porter Cologne Water Quality Control Act (California Water Code Section 13000 et.seq.), the SWRQB OWTS Policy, and applicable sections of Sonoma County Code Chapters 7 and 24 (Sonoma County 2016). The Park is within the jurisdictional boundaries of the OWTS Manual (Sonoma County boundaries) and therefore is required to comply with the regulatory design and monitoring requirements of the Manual.

4.6.3 Impacts and Mitigation Measures

This subsection analyzes impacts related to hydrology and water quality that could result from project implementation. It begins with the significance criteria, which establish the thresholds for determining whether an impact is significant, and concludes with hydrology and water quality impacts associated with the project.

4.6.3.1 Criteria of Significance

The proposed project would have a significant effect on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the

local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Cause inundation by seiche, tsunami, or mudflow.

4.6.3.2 Methodology

The EIR authors reviewed available information and visited the Park multiple times to identify the hydrology, water quality, and flooding-related conditions at the project site and the project's potential to affect these conditions. Resources included the CWA Section 303(d) list, the Sonoma County Hazard Mitigation Plan (Sonoma County 2011), previously conducted hydrologic studies (KHE 2003, DU 2005, Florsheim 2009, WRA 2013), a hydrologic modeling analysis for the project (Wildscape 2016; Appendix F), and the Tolay Lake Regional Park Master Plan (Master Plan).

The project's hydrologic analysis was performed with the USACE Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) to describe the project's potential effects on flooding and scour within the reach of Tolay Creek that passes through the Park. Assumptions and limitations of this analysis are detailed in Appendix F. The project's proposed construction activities and project features (e.g., new farm bridge, culverts, drainage features, modification of invert elevations of hydraulic controls, filling of certain existing drainage channels) were evaluated to determine the project's potential to violate any water quality standards, degrade water quality, affect groundwater supplies or stormwater drainage systems, or result in erosion, flooding, or inundation by seiche, tsunami, or mudflow.

Based on a comparison of the reviewed information, the regulatory requirements, and the project's construction activities, potential hydrology and water quality-related effects were evaluated and, as necessary, mitigation measures proposed.

Potential impacts related to water supply are evaluated in Section 4.11.

4.6.3.3 Less Than Significant Impacts

Project implementation would result in the following less than significant (LTS) impacts on hydrology and water quality.

Impact HYD-1: Construction and operation of the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (LTS)

Construction and operation of the proposed improvements under the Plan could potentially affect the water quality of the surrounding and receiving water bodies, including Tolay Creek and San Pablo Bay. Grading and excavation activities associated with construction and road maintenance would remove vegetation and temporarily disturb soils increasing the potential for the site's soils to erode and be transported via stormwater runoff to receiving water bodies. The operation and maintenance of construction equipment for the project would require onsite use and storage of petroleum based materials (fuels, lubricating oil, grease, and/or hydraulic fluid). Bridge and roadway improvements would likely require the use and temporary storage of concrete and asphalt products. Accidental spills, leaks from improperly maintained construction equipment, or improper use, storage, or disposal of any of these materials onsite could result in the transport of pollutants to groundwater or during storm events to Tolay Creek and on to San Pablo Bay. Construction workers could generate trash that, if improperly disposed of, would be transported to the local water bodies. Because San Pablo Bay is already impaired, the transport of the above pollutants from the project's construction activities could further contribute to the Bay's existing impairments.

The project would be required to comply with the NPDES General Construction Permit regulations because the project's construction activities would disturb more than 1 acre. Compliance with these regulations and permits would require the preparation and implementation of a SWPPP, including spill prevention and control measures, identification and implementation of appropriate BMPs, and a stormwater monitoring and management plan for the project. Implementation of the SWPPP and associated BMPs would ensure project construction activities would not violate any water quality standards or waste discharge requirements. Policy RMP-S7 listed in Table 4.6-5 also requires BMPs and restoration plans be developed and implemented in association with any ground disturbing activities.

The project may require groundwater dewatering during some of the restoration activities including removing and replacing the causeway culverts and installing new bridge footings. The NPDES General Construction Permit allows for the discharge of uncontaminated groundwater from dewatering provided the project complies with specific BMP, monitoring, and reporting requirements. The project could result in the discharge of contaminated groundwater if the project's construction activities or equipment transported pollutants into the dewatered groundwater. However, per the requirements of the NPDES General Construction Permit discussed above, the project would implement BMPs related to equipment maintenance and use, and spill prevention and control measures that would minimize the potential for construction activities to contaminate any dewatered groundwater.

With the exception of invasive species, there are no significant sources of any of the pollutants listed under the 303(d) impairment list for San Pablo Bay (i.e. Tolay Creek receiving waterbody) at the Park as described in Section 4.6.1.6 and therefore no risk of releasing those pollutants

during restoration construction or well development. Additionally, as described in the Master Plan any invasive species present in the Park would be methodically removed, properly disposed of, and replaced with native species. Continued livestock operations could impact water quality through various means including overgrazing and over compaction of wetland and meadow areas exposing areas to erosion, degradation of creek banks or steeply inclined trails from continued access by cattle resulting in erosion and sediment transport to surface waters, or potentially releasing nutrients or pathogens where animal operations are concentrated. Several measures for monitoring and installing exclusionary fencing or changing operations to mitigate these effects are listed in Table 4.6-5 including RMP-G4, RMP-G6, RMP-G7, RMP-G9, and RMP-G10.

Park operations would include pedestrian, bicycle, and park staff and ranch operations vehicle traffic on the roads and trails, and maintenance of the project's stormwater facilities and hydraulic structures.

Approximately 0.8 acres (35,250 sf) of additional impervious surface area resulting in increased stormwater runoff would be created by the project per Table 4.6-4.

Table 4.6-4: New Impervious Area per Master Plan

Facility Description	Impervious Area Square Feet
New Equipment Shed	4,000
Ranch Manager Residence	2,000
Bunk House	4,700
Temporary Artist Residence	750
Sales/Group Picnic Shelter	3,000
Visitor Center	10,000
Ranger Residence	3,000
Restrooms and Showers	2,400
Indoor Kitchen Area	2,400
Covered Outdoor Dining	1,000
Outdoor Class/Stage	2,000
TOTAL	35,250

Additional impervious area would be added in the event that any earthen access roads or parking areas are paved in the future. These areas are potential pollutant generating surfaces, however, new stormwater drainage systems would be constructed to capture, convey, infiltrate, and/or treat the increased runoff produced by the new impervious areas and policies will be implemented to ensure impacts are minimized. Several policies in Table 4.6-5 including OM-G25, OM-S20,

OM-S21, RMP-S6, RMP-S8, RMP-S11, RMP-S12, T-G21, T-G22 address trail and storm drainage monitoring and maintenance to combat these risks.

The restoration of Tolay Lake and the surrounding wetlands, as proposed by this project (Figure 3-9), would entail some risk to water quality but would also provide an added buffer to stormwater pollution as the wetlands would capture stormwater runoff, reducing sediment migration, and filtering nutrients and pollutants. As described in the Master Plan, several policies listed in Table 4.6-5 including RMP-S7, RMP-S9, RMP-O56, RMP-G61, and RMP-S96 would be implemented to ensure impacts to water quality associated with wetlands and riparian areas are minimized during short time construction and extended operations of the Park.

Park maintenance activities would also likely involve the use of various chemicals including solvents, paints, herbicides, and pesticides. Policies RMP-02, RMP-G1, RMP-G56, RMP-S2 in Table 4.6-5 addresses this by training staff in safe handling of hazardous materials and spill prevention and clean up. In addition, the project would be required to comply with federal, state, and local hazardous materials-related regulations that would ensure implementation of plans and measures to prevent, control, and clean-up any accidental hazardous materials releases. Compliance with these measures would minimize the potential for leaks from construction equipment or accidental spills to affect the underlying groundwater quality.

Wastewater generated onsite is a primary source of potential pollutants that could affect water quality. Currently, the Ranch Manager residence in the Park Complex is connected to a septic system and visitors to the Park under the Interim Plan use portable facilities that are serviced regularly by a pump truck. In order to mitigate potential impacts associated with the expected increase in Park use and associated increased wastewater generation, a new wastewater treatment facility would be constructed during Phase 3 of the Master Plan, which would serve all Park uses including the new Visitor's Center and restrooms.

As shown in Project Description, Figure 3-12, the proposed wastewater treatment facility includes a dual chamber septic tank, a duplex pump system, grease trap, trickling filter, treatment wetland, and potential spray irrigation area, all located in the vicinity of the Park Complex. Composting toilets are proposed for sanitation facilities located away from the Park Complex, which would be operated and maintained in accordance with manufacturer guidelines, per Policy T-S26 of the Master Plan to ensure potential impacts to groundwater quality are mitigated. The assessment that led to the development and selection of the proposed system is detailed in Appendix D of the Master Plan.

The design and permitting process that would be followed prior to implementation of the system would be in accordance with the OWTS Manual (Sonoma County 2016) to ensure that the treatment system is optimized to minimize effluent pollutant concentrations. As a requirement of the OWTS Manual, a Report of Waste Discharge (RWD) would be submitted to the SFRWQCB for the project providing a full description of the project, engineering calculations, design and construction plans, an operation and maintenance plan, and a copy of an approved CEQA document for the project. Once the RWD has been deemed complete by the Regional Board, Waste Discharge Requirements would be issued or the County could be allowed to operate under the recommendations of the RWD. A treatment performance Monitoring and Reporting Program would be implemented as required by Regional Board's Waste Discharge Requirements, if applicable, to ensure Waste Discharge Requirements are being met. If the Regional Board permits effluent reuse via spray irrigation, the Park would carefully operate the system,

particularly in relation to forecasted precipitation events, and the system would be located outside of 100-foot setback requirements from adjacent streams and wetlands in fenced pasture land not accessible to the public such that risk of impact to water quality and public health are minimized.

Implementation of the Master Plan would provide for a proactive approach to comply with sensitive resource regulations and protecting water quality. Prior to any project construction, Sonoma County Regional Parks would secure all applicable authorizations and permits from federal, state, and local resource and regulatory agencies. This process would require the implementation of measures to protect water quality during construction of new park facilities and Tolay Lake restoration elements and future road and trail construction and maintenance. Compliance would include adhering to the NPDES programs including the development of a SWPPP, more rigorous site monitoring, storm water sampling and reporting required for any construction sites greater than one acre under the recently adopted California General Permit.

With the implementation of the objectives, guidelines, and standards highlighted in Table 4.6-5 that include avoiding and/or protecting the sensitive wetland and riparian areas, minimizing use of erosion prone areas, standardizing sustainable road and trail designs, implementing temporary and permanent BMPs, implementing and training staff in spill response plans, and complying with existing NPDES and other water quality regulations this impact would be *less than significant*.

Impact HYD-2: The project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). (LTS)

Temporary dewatering might be required during the proposed project's construction activities, particularly those involving hydraulic structure removal and replacement (bridges, culverts). Groundwater levels underlying the project site in the vicinity of the hydraulic structures are likely close to ground level even in the dry season. However, if timed properly, work may be completed without the necessity of dewatering. Any dewatering for these construction activities would be temporary and would have a very low potential to adversely affect the Petaluma Valley Groundwater Basin's volume or levels.

The project would construct approximately 0.8 acres of new impervious surfaces, mostly in the form of new buildings. These new surfaces, however, would not prevent stormwater runoff flows from recharging the underlying groundwater basin (Petaluma Valley Basin), as drainage would be conveyed to locations where the runoff can infiltrate. In addition, the project would not be located within the Petaluma Valley Basin's primary recharge areas, which are concentrated northwest of Petaluma or scattered on the western flank of the Sonoma Mountains to the east (DWR 2001).

A key component of the project would be restoration of Tolay Lake, which is intended to improve groundwater attenuation and late season flows in Tolay Creek, thereby improving wildlife habitat in the vicinity of Tolay Lake and in Tolay Creek. This result would also likely provide improved groundwater supply later into the dry season.

Operation of the new facilities is expected to require a greater supply of potable water than existing with an estimated peak demand under full park occupancy of 50 gallons per minute (GPM). The park currently uses an existing spring for non-potable water uses with an estimated flow of 18 GPM (Kennedy/Jenks 2015). Per the Groundwater Assessment and Well Siting Analysis conducted for this project (Appendix C of the Master Plan), a test well at 70 feet below ground surface (bgs) was installed in early 2016 at the location shown in Figure 3-11 and ran consistently at 25 GPM during an eight-hour test with a reported 51 GPM maximum output flow (Weeks Drilling & Pumping 2016). A permanent well and water system would be installed as part of Phase 1 of the project. Additional information on the projected sustainability of this new groundwater source for Park use can be found in Appendix C of the Master Plan.

The net increase in daily demand is expected to be less than 25 GPM which if conservatively assumed to be a daily average requirement throughout the year, equates to roughly a 40 acre-feet increase in demand on an annual basis. Any effects on groundwater levels associated with this increase in water demand would be offset by groundwater recharge via stormwater infiltration in the winter months, return of treated wastewater to the hydrologic system via onsite discharge, and prolonged surface water detainment/groundwater retention as a result of Tolay Lake restoration.

Based on the findings and policies to be implemented as described above, the project would not interfere substantially with groundwater recharge or substantially deplete groundwater supplies. Thus, this impact would be *less than significant* and no mitigation measures are required.

Impact HYD-3: The project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. (NI)

No regulatory 100-year floodplain exists in the project area and thus, this project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. Additionally, this project would not place housing within the 100-year flood plain, based on application of the hydrologic model developed for this project (Appendix E).

Therefore, there would be *no impact*.

Impact HYD-4: The project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (LTS)

The project would improve the existing stormwater drainage system and/or construct a new stormwater drainage system of swales and infiltration basins (as needed), which would be monitored and maintained. As previously described, existing hydraulic structures in the vicinity of Tolay Lake do not have the capacity to convey high flows from runoff. As a result, flooding of the causeway and upstream properties is common under existing conditions. The increase in impervious area proposed by this project could increase runoff into Tolay Lake. However, all new impervious surface would require implementation of measures to prevent water and sediment migration, erosion, and transport potential contaminants (per Policy RMP-02 listed in Table 4.6-5). Additionally, the project proposes replacing existing hydraulic structures in and around Tolay Lake with new structures which have sufficient capacity to convey runoff generated by 100-year storm events including runoff from all developed areas within the Park

and upstream watershed, as predicted by the hydrologic model developed for this project (Appendix F). Numerous other policies, as listed in table 4.6-5, would be implemented which would ensure additional sources of polluted runoff are minimized.

Therefore, the project would not exceed the capacity of existing or planned stormwater drainage system and would not provide substantial additional sources of polluted runoff. This impact would be *less than significant*.

Impact HYD-5: The project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (LTS)

Improper design or construction of the new farm bridge or causeway drainage conveyance structures could expose pedestrians, bicyclists, or motorists using the bridge or causeway and others downstream to potential flood-related risks, including failure of the bridge. Additionally, the alterations of drainage channels and hydraulic structures intended to restore Tolay Lake could potentially contribute to enhanced flooding in the Park and/or upstream properties. The hydrologic modeling assessment of the existing and proposed conditions of the Park provided in Appendix F concluded the following with regard to impacts on localized flooding that would result from implementation of the proposed project:

- 1) With exception of the 2-year flood event, the farm bridge is the hydraulic control for runoff events under the existing condition. That is, the hydraulics of the farm bridge and the channel downstream from the farm bridge control flow through Tolay Lake.
- 2) Peak stages (i.e. peak water surface levels under flooding events) in Tolay Lake under existing conditions for the hydrologic events analyzed are between 218 and 220 feet. These events already result in impoundment of water in the reach upstream from Tolay Lake under existing conditions.
- 3) For proposed post-project conditions, the worst-case assumption is that backwater from the farm bridge results in some loss of effective storage in the upper reservoir. Based on results from hydrologic modeling of Tolay Lake, peak stages in the lake for the hydrologic events analyzed are no greater than commensurate peak stages for the existing condition. Therefore, proposed changes to the lake and its structures would result in no significant impact from relatively rare flooding events.
- 4) With the added conveyance of the proposed ten pipe-arch culverts to the causeway with invert elevations of 215 feet, it is also possible that more of the storage in the northern portion of the lake would be available for all hydrologic events than in the existing condition. If this is the case, then it is possible that peak stages from relatively rare flood events for the post-project condition would be less than commensurate peak stages for the existing condition, resulting in improved conditions during flood events.
- 5) Finally, additional improvements to Tolay Lake operation during flood events are possible if the Tolay Creek channel downstream from the farm bridge is restored to conditions approximating those farther downstream from the project area. Those downstream conditions appear to be more representative of Tolay Creek, whereas the

current channel/floodplain conditions immediately downstream of the farm bridge appear to have been modified in the past.

Based on the results of the hydrologic modeling, implementation of the Project would not worsen flooding and may even lessen flooding in some large flood events as a result of the available lake storage provided behind the causeway (northern portion of the lake).

Based on the findings above, this impact would be *less than significant*.

Impact HYD-6: The project would not cause tsunami, seiche, mudflow impacts. (LTS)

Tsunamis are a series of enormous waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite (FEMA 2012b). The downstream project site boundary is located near the upstream extent of the tidally influenced area of Tolay Creek/San Pablo Bay and 15 feet above sea level. Tsunami-induced waves could propagate through San Pablo Bay and reach the project area, however, the chance that the project or any of its components would cause or exacerbate tsunami impacts is minimal. A seiche is the sloshing of a closed or semi-enclosed body of water (e.g., bays, reservoirs, lakes) from earthquake shaking (USGS 2009). Although a seiche could occur in Tolay Lake, wave heights would likely be minor due to the small size and depth of the Lake. Thus, seiche would not have an impact on people or structures at the project site.

Mudflows are a type of fast-moving landslides that generally occur on steep slopes during periods of intense rainfall or volcanic eruptions, or in steep areas that were previously burned by forest or brush fires (USGS 1997). Because the project site has a relatively flat topography, risk of construction or operation of the project resulting in any mudflows is minimal. However, as previously described, slopes within the east side of the Park are relatively steep, and thus there is some risk that improperly designed or maintained trails could potentially contribute to or cause mudflows. The project's maintenance plan and design guidelines, in combination with the lack of historic landslide deposits in the project area, makes mudflow generation an unlikely event. As a result, the project's potential to expose people or structures to substantial effects from mudflows originating offsite would be minimal. This is because the potential for mudflow deposits in the area is low and all structures for human occupancy are well away from any steep slopes.

Therefore, this impact would be *less than significant*.

Impact HYD-7: The project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. (LTS)

As previously described, project construction would include the development and implementation of a SWPPP, which would ensure impacts on surface runoff generation are minimized during construction and BMPs be installed for any runoffs generated. The 0.8 acres of impervious surface constructed during this project may slightly increase surface runoff rates and amounts through the long term. However, construction of new drainage infiltration and conveyance systems and implementation of monitoring and maintenance policies as previously listed would ensure that any impacts in surface runoff generation would not result in on- or off-site flooding.

Accordingly, this impact would be *less than significant*.

Impact HYD-8: The project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site. (LTS)

As previously described, the project proposes to change existing drainage patterns in the vicinity of Tolay Lake, including the drainage of North Creek and Eagle Creek where they currently pass through artificial channels before reaching Tolay Creek. However, these proposed modifications to the drainage patterns are intended and would be designed to reduce erosion or siltation on- and off-site. Additionally, the monitoring and adaptive management policies listed in Table 4.6-5 that would be implemented in this project would ensure any unintended negative effects on erosion or siltation associated with drainage modifications, trail implementation, new impervious area, cattle grazing, or any other project component would be identified and remedied as soon as practicable.

Thus, this impact would be *less than significant*.

Impact HYD-9: The project would place structures within a 100-year flood hazard area that would impede or redirect flood flows. (LTS)

As previously described, the project proposes to change existing drainage patterns in the vicinity of Tolay Lake, to remove and replace existing hydraulic structures, and to modify the causeway, all of which would occur within the 100-year flood hazard area based on the hydrologic model developed for this project (Appendix F). The drainage changes and hydraulic structure improvements would result in slight adjustment to on-site (within Park) flood flows, but are intended and would be designed to improve hydraulics/flood conditions in the Park. The model developed for this project predicts that implementation of the project as proposed would achieve the desired outcome, i.e. that water surface elevations during high intensity rain storms would be reduced as a result of project implementation (Table 4 of Appendix F).

As previously described, the inadequate capacity of the existing hydraulic structures within the Park and the modified reach of Tolay Creek downstream of the farm bridge is resulting in impeded and redirected flood flows during high intensity rain events. Increasing the invert elevation of the farm bridge and culvert conveyance under the causeway as proposed would increase static water surface elevations of Tolay Lake, but would not impede flood flows, as all new hydraulic structures, including the new farm bridge and pedestrian bridges, would be designed to convey 100-year flood flows as required to not impede or redirect flood flows.

It should be noted that based on the new best available hydrology data for the project location (as conveyed in Appendix F), the proposed new farm bridge cross-section does not have adequate conveyance for 100-year flows and thus, modification of the design would be required.

Furthermore, as previously described and detailed in Appendix F, the modified reach of Tolay Creek immediately downstream of the farm bridge does not have sufficient conveyance for 100-year flows and thus causes tailwater that exacerbates upstream flooding during large storms. Accordingly, restoring the reach such that it can convey 100-year flows would further reduce water surface elevations within the Park and on upstream properties. This opportunity to further improve flooding conditions is not yet part of the project as proposed, but would be considered as an additional project component during Tolay Lake restoration.

It is currently unknown to what degree upstream facilities are now affecting sediment transport into Tolay Lake and how proposed restoration measures under the Plan could reduce sediment

deposition by increasing the conveyance area and associated transport capacity under the bridge and through the creek channel downstream of the bridge. As introduced in Section 4.6.1.3 past sediment removal activities conducted in the vicinity of the historic farm bridge will be discontinued under the Plan and sediment deposition could continue in this location which over time could increase aggradation (i.e. sediment deposition and build up) within the creek channel down to where the former drainage divide had existed. As was also discussed several counter factors influence current and future sediment transport capacity and deposition in this area including a reduction in sediment inputs via the North Creek reservoir and other upstream infrastructure and an increase in sediment deposition via backwater from the undersized culverts, bridge crossing, and artificial channel within the Park. Therefore, design development of the restoration elements, particularly the new bridge crossing and any future restoration of the artificial channel, will need to include an in depth analysis of current and anticipated sediment supply and transport capacity through the project site in order to ensure adequate conveyance and the desired channel and lake form for future years.

Although the project as proposed would not minimize flooding impacts relative to historic conditions, it would not place any structures within a 100-year flood hazard that would impede or redirect flood flows. Therefore, this impact would be *less than significant*.

4.6.3.4 Significant Impacts

The project would have no significant impacts related to hydrology and water quality, and no mitigation measures would be required.

Table 4.6-5: Proposed Master Plan Policies to Avoid or Reduce Impacts on Hydrology and Water Quality.

Policy Identifier	Policy Text	How the Policy Avoids or Reduces Impact
Maintenance Guidelines and Standards		
Paved and Non Paved Surfaces		
OM-G24	Use water or alternative dust control treatments on dirt and gravel roads, when necessary, to prevent the blowing of fugitive dust.	Reduces soil erosion and pollutant transport to water bodies.
OM-G25	Manage drainage structures on dirt roads and trails to limit the impacts of erosion.	Ensures functionality of drainage systems which in turn reduces pollutant generation and transport; preserves drainage patterns and in turn avoids impacts to hydrology.
OM-S17	Paved surfaces: Stripe parking spaces and add road lines when appropriate.	Reduces off-pavement driving which in turn reduces soil erosion and pollution of areas adjacent to paved surfaces.
OM-S19	Non-paved surfaces: Grade roads periodically to maintain functional park roads.	Provides opportunity to incorporate road BMPs including rolling dips and/or water bars where roads steepen to reduce erosion and sediment transport to water bodies.
OM-S20	Non-paved surfaces: Consider decommissioning trails determined to be leading to significant resource damage, including but not limited to impacting threatened and endangered species.	Promotes adaptive management ensuring any observed impacts to hydrology or water quality caused by trails are addressed such that impacts are mitigated.
OM-S21	Non-paved surfaces: Consider seasonal closures of trails, due to wet conditions, when appropriate.	Prevents trail erosion and mobilization of sediment from vehicle, bike, and pedestrian traffic during saturated conditions, thereby protecting water quality.
Developed and Disturbed Area Objectives, Guidelines, and Standards		
RMP-02	Prevent erosion, sediment migration, and migration of pollutants from developed and disturbed areas into natural areas of the Park. The storage and use of potential contaminants (e.g., gasoline, oil, and solvents) is a necessary function for Park operations and maintenance in and around the Park Headquarters. The compacted and impervious substrates in and around the Park Headquarters, roads, trails, and other infrastructure provide a conduit for water and sediment runoff and pose an erosion hazard to the Park. Therefore, measures to prevent water and sediment migration, erosion, and potential contaminants will be implemented in and around the Park Headquarters as well as during construction of Park infrastructure and regular maintenance operations throughout the Park.	Limits erosion and lowers the risk of chemical spills or stormwater comingling with onsite chemicals which in turn reduces the potential for pollution generation and/or transport to water bodies.
RMP-G1	Periodic monitoring will be conducted in and around the Park Headquarters to document and repair point-source erosion and pollutant hazards.	Allows for identification and prevention of future potential erosion and/or pollution impacts to hydrology or water quality.

Table 4.6-5: Proposed Master Plan Policies to Avoid or Reduce Impacts on Hydrology and Water Quality.

Policy Identifier	Policy Text	How the Policy Avoids or Reduces Impact
RMP-S2	Point-source erosion or pollution will be halted immediately, and any remedial actions will occur as soon as feasible.	Ensures that impacts and risk of impact to hydrology or water quality are addressed in a timely fashion such that impacts are minimized.
Streams, Ponds, and Riparian Habitats Objectives, Guidelines, and Standards		
RMP-G4	Livestock troughs, feeding areas, and loading areas should be discouraged near headcuts.	Reduces the risk of aggravated erosion and potential for sediment transport to Park waterways due to livestock concentration in areas of feeding, drinking or loading
RMP-G5	Head-cuts and down-cuts should be monitored periodically to gauge rate and volume of increase. Monitoring should consist of documented photo-points and indicator markers (e.g. steel stakes) to measure the rate of increase.	Reduces risk of exacerbating impacts to hydrology or water quality and informs/improves response actions to any observed impacts.
RMP-G6	Development of targeted restoration plan to halt the continued advance of head-cuts. Check dams of stone and native brush cuttings may be an effective means to trap sediment migration and rebuild the soil surface. Livestock exclusion fencing may be necessary to reduce continued impacts from grazing animals.	Ensures observed impacts to hydrology or water quality associated with head-cuts are addressed such that impacts over time are minimized.
RMP-S5	Minimum setbacks from the top of bank and outer extent of the riparian canopy dripline will be maintained.	Reduces risk of bank erosion and associated impacts to hydrology and water quality.
RMP-S6	Trails, roads, and other Park infrastructure will avoid streams, stock ponds, and riparian habitats to the greatest extent feasible.	Reduces risk of erosion to stream and pond banks from visitor traffic and park maintenance and operation activities thereby limiting the potential for sediment transport to the stream and ponds.
RMP-S7	Where infeasible, ground disturbing activities will be accompanied by best management practices to avoid unnecessary soil erosion, soil compaction, and invasive species encroachment. A restoration plan for any proposed trail within riparian habitat, near or across streams will be developed and implemented.	Ensures pollutant source control/minimized risk of erosion/impact to hydrology and water quality associated with temporary ground disturbing activities and/or future operation of riparian trails and crossings.
RMP-S8	Erosion prone areas, bridges, and stream and culvert crossings will be evaluated to determine if repair and/or restoration are necessary. Areas where concentrated flow is occurring will likewise be repaired by re-grading slopes, revegetating, and/or installing flow dispersal devices.	Facilitates the identification and repair of erosion “hot spots” to maintain water quality protection and provide for adequate infiltration and conveyance.
RMP-S9	In areas of new or recent erosion, a restoration and prevention plan should be developed in consultation with a qualified ecologist and civil engineer or landscape architect. Treatments may include willow walls, check dams of native natural materials (e.g., cut brush, limbs, stone), and/or regrading and shaping of the erosional feature followed by native species plantings.	Ensures mitigation of and appropriate response to impacts on hydrology or water quality associated with new or recent erosion.
Tolay Lake and Other Wetlands Objectives, Guidelines, and Standards		
RMP-O8	Monitor and reduce head-cutting in drainages upstream from wetlands; monitor for and protect from	Reduces head-cuts at upstream locations and

Table 4.6-5: Proposed Master Plan Policies to Avoid or Reduce Impacts on Hydrology and Water Quality.

Policy Identifier	Policy Text	How the Policy Avoids or Reduces Impact
	sediment migration, nutrient runoff, and other contaminants into wetlands. Head-cuts can deliver large sediment loads and increase the velocity of flowing waters contributing to erosion or filling in downstream wetlands. Increased soil volume and flow velocity can create incisions in wetlands thereby channelizing the wetland and eventually converting it to upland habitat. Roads, cattle loafing areas, trails, and other sites with shallow or easily lifted soils are particularly susceptible to runoff during the wet season, and soil migration into adjacent wetland areas can threaten wetlands ability to perform water and habitat quality functions.	within wetlands which in turn prevents habitat type conversion and retains the ecologic and hydrologic function and integrity of the Park's wetland habitats; Prevents or reduces excessive soil, water, nutrient, and contaminant runoff through physical or temporal restrictions, grazing rotations, and/or road and trail design.
RMP-O9	Monitor, remove, and control invasive species that threaten habitat and water quality in wetlands. The species composition of the Park's wetlands varies with their location, soil chemistry and texture, slope gradient, hydro-period, and distance to repeated disturbance, but most are dominated by or have substantial cover of native hydrophytes. These species are specially adapted to saturated and/or inundated conditions of the wetlands. However, several invasive plant species occur within wetlands, and in some instances, dominate the species cover.	Reduces presence of invasive species which in turn promotes growth of native species, contributing to restoring/preserving the ecologic and hydrologic function and integrity of the Park's wetland habitats (buffers wetlands from erosion and improves natural pollutant filtration processes), thereby improving water quality.
RMP-O10	Revegetate wetlands with native hydrophytes. While the Park's wetlands contain a prevalence of native perennial hydrophytes, revegetating with native plants can confer several benefits to habitat quality. In contrast to the shallow and short-lived root systems of non-native annual grasses, native perennial graminoids (rushes, sedges, bulrushes, and grasses) typically have deep and complex root systems (fibrous roots, rhizomes, bulblets) that maintain soil integrity, buffer wetlands from erosion, and assist in filtering nutrients and sediment. Wetland areas dominated by non-native annual grasses and areas of invasive species removal should be targeted for planting with native perennial hydrophytes.	Promotes growth of native species and reduces presence of invasive species which in turn contributes to restoring/preserving the ecologic and hydrologic function and integrity of the Park's wetland habitats (buffers wetlands from erosion and improves natural pollutant filtration processes), thereby improving water quality.
RMP-G7	Livestock troughs, feeding areas, and loading areas will be located away from wetlands a minimum of 100 feet.	Ensures livestock do not graze, traverse, or trample wetlands which in turn reduces risk and impacts to hydrology and water quality associated with livestock.
RMP-G8	Head-cuts and down-cuts will be monitored periodically to gauge rate and volume of increase. Monitoring should consist of documented photo-points and indicator markers (e.g. steel stakes) to measure the rate of increase.	Informs/improves response actions to observed head-cuts and down-cuts such that impacts to water quality can be mitigated.
RMP-G9	A targeted restoration plan will be developed to halt the continued advance of head-cuts that affect wetlands. The plan will prioritize areas for restoration and will consider measures such as exclusionary fencing, revegetation and check dams of stone or native brush cuttings will also be used as possible effective means to trap sediment migration and rebuild the soil surface.	Ensures observed impacts to hydrology or water quality associated with head-cuts are addressed such that impacts to water quality will be minimized over time.
RMP-G10	Monitoring to assess the effect of livestock grazing on wetlands will be conducted periodically. If livestock grazing is contributing to a decline in native species, compromising water quality, causing	Promotes adaptive management and ensures informs/improves response action to water quality

Table 4.6-5: Proposed Master Plan Policies to Avoid or Reduce Impacts on Hydrology and Water Quality.

Policy Identifier	Policy Text	How the Policy Avoids or Reduces Impact
	erosion, or other deleterious effect on the wetland(s), techniques to deter livestock from entering wetlands will be implemented. Deterrence may include relocation of troughs, mineral supplements, and supplemental feeding areas away from wetlands, and possibly exclusion fencing around wetlands. Monitoring will occur where livestock has been excluded to assess changes in nonnative and native plants in the wetland.	impacts associated with livestock grazing.
RMP-G11	Prioritize wetland areas for enhancement. Enhancement sites should be in or around areas where impacts from infrastructure building has occurred or in areas of targeted invasive plant removal. Informational signage or pamphlets should highlight these restorative actions and educate the public on the function and values of wetlands.	Increases enhancement of impacted wetland areas such that the ecologic and hydrologic function and integrity of the Park’s wetland habitats (buffers wetlands from erosion and improves natural pollutant filtration processes) thereby improving water quality.
RMP-S11	Trails, roads, and other Park infrastructure will avoid wetland habitats to the greatest extent feasible. Where infeasible, ground disturbing activities will be accompanied by best management practices to avoid unnecessary soil erosion, soil compaction, and invasive species encroachment. Trails that bisect wetlands will be designed for minimal impact by using features such as boardwalks and viewing platforms.	Minimizes temporary impacts to water quality during construction activities by requiring BMPs and protects water quality in sensitive wetlands by preventing recreational access and associated disturbance within saturated soils.
RMP-S12	A restoration plan will be developed for any proposed road, trail, or other groundbreaking project within wetland habitats. This may include salvaging native perennial hydrophytes, collecting live seed, purchasing genetically (i.e., local) appropriate seed, and/or top soil to be relocated at or near the project area.	Ensures restoration plans and native materials are utilized when constructing within wetland habitats facilitating the wetland’s post construction recovery and reducing the time it is exposed and at risk of erosion and sediment transport.
RMP-S13	Should wetland habitat be considered jurisdictional by federal or state agencies, the appropriate permits will be acquired. Impacts to jurisdictional wetlands will likely require a habitat mitigation and monitoring plan along with mitigation for wetland losses. Mitigation ratios will depend upon the type, functional value, and extent of wetland impacted, and will be arranged during the permitting process.	Ensures permitting processes are followed when/if jurisdictional wetlands are to be impacted which in turn ensures that any associated impacts to water quality are minimized.
Grading Objectives, Guidelines, and Standards		
RMP-G51	Stream crossings and extensive wetland use by livestock should be evaluated and if deemed an impact or impairment to these features, corrective measures should be adopted.	Promotes oversight and adaptive management to livestock grazing practices such that any impacts to hydrology and/or water quality from livestock are minimized.
RMP-S59	Temporary exclusion fencing will be erected around restoration and enhancement areas, where necessary to allow for the establishment of native vegetation. In some cases the fencing may act as enclosures for flash or high intensity grazing as part of the enhancement activity (e.g., reduction of non-native grass thatch, reduction of invasive species).	Improves effectiveness of restoration efforts which reduce/mitigate hydrology and water quality impacts in a variety of ways, as described throughout this table.

Table 4.6-5: Proposed Master Plan Policies to Avoid or Reduce Impacts on Hydrology and Water Quality.

Policy Identifier	Policy Text	How the Policy Avoids or Reduces Impact
Pathogen and Contaminant Control Guidelines and Standards		
RMP-G56	Park Staff will be aware of potentially hazardous chemicals and be familiar with their material safety datasheets. Training in spill prevention and containment should be a consideration for Park Staff handling potential contaminants, particularly near wetlands and other sensitive natural resources.	Reduces the potential for harmful spills to make their way to surface or groundwater resources by training park staff on proper handling and spill prevention techniques thereby reducing impacts to water quality.
RMP-S82	Pesticides, herbicides, and other potentially hazardous chemicals will be used by qualified persons, and will be utilized for spot treatments only. Large infestations of invasive plant species will be treated by non-chemical means. Spill prevention measures should be exercised at all times that these products are used.	Minimizes pollution risk associated with pesticides, herbicides, and other potentially hazardous chemicals which in turn minimizes risk to water quality associated with Park activities.
RMP-S83	Fueling equipment will occur within Park Headquarters on impermeable surfaces where spill prevention measures can be deployed immediately. Refueling of equipment will occur at least 100 feet away from sensitive natural resources and will be on tarps, truck beds, or other impermeable surfaces where spill prevention measures can be deployed immediately in the event of a spill.	Minimizes pollution risk associated with fuel which in turn minimizes risk to water quality associated with Park activities.
Effects of Climate Change Objectives, Guidelines, and Standards		
RMP-O56	Protect water resources. Water resources for wildlife, plants, livestock, and human uses will likely be stressed with the projected increase in high temperatures, frequency of drought, and fewer storms to replenish surface and near surface waters. Amphibians, fish, and other aquatic organisms dependent upon cool surface waters for successful completion of their life-cycle may be negatively affected by increased water temperature. The protection and enhancement of riparian vegetation should assist in cooling waters through greater infiltration and direct shading.	Promotes responsible Park development and operation with regard to water resources under predicted climate change stresses and in turn should improve water quality.
RMP-G60	Wetlands and their native vegetation should be preserved and enhanced to maintain their water quality, and water and soil retention functions.	Buffers wetlands from erosion and improves natural pollutant filtration processes which in turn reduces risk/impacts to water quality.
RMP-S96	Riparian buffers and stream channel integrity will be maintained to ensure water quality, reduce erosion, and water cooling.	Ensures riparian buffers and stream channels are not purposefully impacted.
Litter Removal Standards		
T-S60	All trash receptacles shall have lids that close and lock to dissuade wildlife from foraging, and thus limit potential interaction between park visitors and wildlife.	Reduces risk of pollutant transport, and thereby impacts to water quality.
T-S61	From April through October, restroom facilities shall be cleaned regularly, with daily trash removal and amenities (e.g., toilet paper, soap, paper towels) checked for replacement.	Reduces risk of nutrient and bacteria pollutant generation and transport, and thereby impacts to water quality.
T-S62	Manufacturer guidelines for proposed self-composting toilets shall be followed, with consideration of maintenance suggestions from contractors as appropriate.	Reduces risk of impact to groundwater quality associated with composting toilets.
T-S57	Remove sediment and debris from drainage structures.	Reduces the potential for flooding and sediment

Table 4.6-5: Proposed Master Plan Policies to Avoid or Reduce Impacts on Hydrology and Water Quality.

Policy Identifier	Policy Text	How the Policy Avoids or Reduces Impact
		transport and ensures functionality of drainage systems and drainage patterns avoiding impacts to hydrology.
T-S58	Grading and other activities associated with road or trail maintenance shall only occur during the dry months (generally April 1 to October 31), when associated erosion can be reduced to the maximum extent possible.	Minimizes erosion and other potential impacts to water quality associated with temporary soil disturbing activities.
Trail Drainage Structures Guidelines and Standards		
T-G21	Blocked culverts may affect water quality, change the watercourse, increase erosion or sediment runoff, or affect wildlife. Therefore, culverts should be inspected on a regular basis to ensure that they do not clog with sediment or debris. Any materials blocking culverts should be removed and disposed of outside the watercourse in an area not subject to erosion. If a significant blockage or sedimentation exists, Regional Parks should plan and implement corrective actions as necessary. Excavation of sediments within “Waters of the State” may require a maintenance permit from the U.S. Army Corps of Engineers, the California Department of Fish and Wildlife, and/or the Regional Water Quality Control Board.	Reduces the potential for flooding and sediment transport and ensures functionality of drainage systems and drainage patterns avoiding impacts to hydrology; Informs/improves response actions to observed issues with culvert blockage such that impacts to water quality can be mitigated.
T-G22	Any unstable fill slopes and cut banks that have the potential to erode and negatively affect water quality of nearby wetlands and waters should be removed entirely and graded to a stable contour. These areas should be revegetated with appropriate native species. Sediment filtration barriers should be deployed around the edges of unstable slopes as necessary to prevent erosion and runoff into wetlands and waters.	Promotes action to reduce/minimize/eliminate risk of erosion and water quality impacts associated with steep/erosion prone areas.
Patrols/Opening and Closing		
OM-S3	Implement seasonal limitations on trails through wetland habitats and other areas where potential environmental impacts are likely to occur due to weather or ground conditions. Close or use-restrict trails through fencing and/or signage during the wet season and/ or periods of inundation if fresh erosion and/or vegetation trampling are visible.	Promotes adaptive management ensuring any observed impacts to water quality caused by trails or potential impacts associated with weather or ground conditions are minimized.
Sanitation		
OM-S11	Dispose of solid waste consistent with local and statewide regulations.	Reduces risk of pollutant generation and transport.

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4.7 LAND USE AND PLANNING POLICY

This section describes existing land uses and planning policies that apply to the Park. The Park is divided into two areas: the Tolay Lake property and the Tolay Creek Ranch property. The Tolay Lake property includes Tolay Lake and the Park Complex. A regulatory framework is provided in this section describing applicable agencies and regulations related to the Project. Land use impacts associated with the Project are identified and mitigation measures are recommended, where appropriate. This section also contains a discussion of the Project's general consistency with relevant land use policies. However, conflicts between a project and applicable policies do not constitute a significant physical environmental impact in and of themselves; as such, the Project's consistency with applicable policies is discussed separately from the physical land use impacts associated with the Project.

4.7.1 Environmental Setting

The Park site consists of eight contiguous, irregularly-shaped parcels totaling approximately 3,402 acres. As shown on Figure 3-1 in Section 3, Project Description, of this EIR, the Park site is located south of SR 116 between Lakeville Road on the west and SR 121 on the east, and trends diagonally from the northwest to the southeast. The southernmost part is adjacent to SR 121 just north of the Sonoma Raceway (formerly Infineon Raceway) immediately to the south of the Park. Access to the Park in the north is from Cannon Lane, off Lakeville Road. Access to the Park in the south is planned from SR 121, north of the SR 37 intersection. Petaluma is approximately five miles to the northeast, and Novato is about six miles to the southwest.

The northern portion of the Park includes the Park Complex (see Figure 3.3) with buildings from the former Cardoza Ranch (the John Cardoza Sr. house is now the ranger residence) and other structures (tractor barn, granary, storage sheds, slaughterhouse, corrals, etc.), plus gardens, the Willow Pond and Duck Pond, a quarry, and the eucalyptus-lined Cardoza Road/Trail. Adjacent to these structures is Tolay Lake. Tolay Lake is a large, shallow basin that fills during the wet season (typically between December and February) but dries by summer, except for wet years when ponding can persist through the spring. Flooding has been observed during very wet years. Around the edge of the lake there is wetland vegetation, and a causeway road bisects the lakebed.

To the east of the lake, the land in and immediately adjacent to the Park Complex is relatively level and contains a variety of grasses and weeds (some native but most non-native). There is also a 10-acre vineyard. Oak woodland is on the northernmost part of the site. In addition to the Willow and Duck ponds, there are two other constructed ponds on the eastern side of Park; Fish and Vista ponds.

The southern portion of the Park is hillier and somewhat rugged, with similar vegetation. Tolay Creek runs from the northern portion generally through the center of the Park until it loosely shadows the southeast property boundary. There the creek continues south of the Park before eventually emptying into San Pablo Bay.

Seasonal creeks, springs and seeps on slopes on either side of Tolay Creek feed the creek. The creek has riparian vegetation (mainly willow and coast live oak), and where devoid of woody riparian vegetation in the upper creek areas, wetland habitat persists (tules, sedges, cattails, etc.).

Refer to the Biological Resources section, for a complete description of the habitat and vegetation on the site.)

Perimeter and interior fencing from previous ranch operations runs through this southern portion of the site. There are also several unimproved seasonal ranch roads and a couple of old structures (a small shed, an old hunting shack). The southern portion of the Park is visible from Highway 121, a County-designated scenic corridor. (See section 4.2, Aesthetics, for a complete description.)

The Park is surrounded by private lands, primarily under agricultural use or cultivation. Figure 4.8-1 shows the adjacent land use designations. Land uses surrounding the northern portion of the Park include wineries, dairies, grazing lands, lands under agricultural cultivation, and the CDFW Petaluma Marsh Wildlife Area. Land uses surrounding the southern portion include wineries, grazing land, land under agricultural cultivation, the Sonoma Raceway (formerly Infineon Raceway), and the USFWS San Pablo Bay National Wildlife Refuge. Two parcels on the southeast part of the site are designated Recreation/Visitor-Serving Commercial. The remainder of the parcels surrounding the Park are designated Land Extensive Agriculture. One parcel to the east near SR 121, though not adjacent to the project site, is designated Resources & Rural Development. A few parcels to the west of the Park, also not adjacent, are designated Diverse Agriculture.

4.7.2 Regulatory Setting

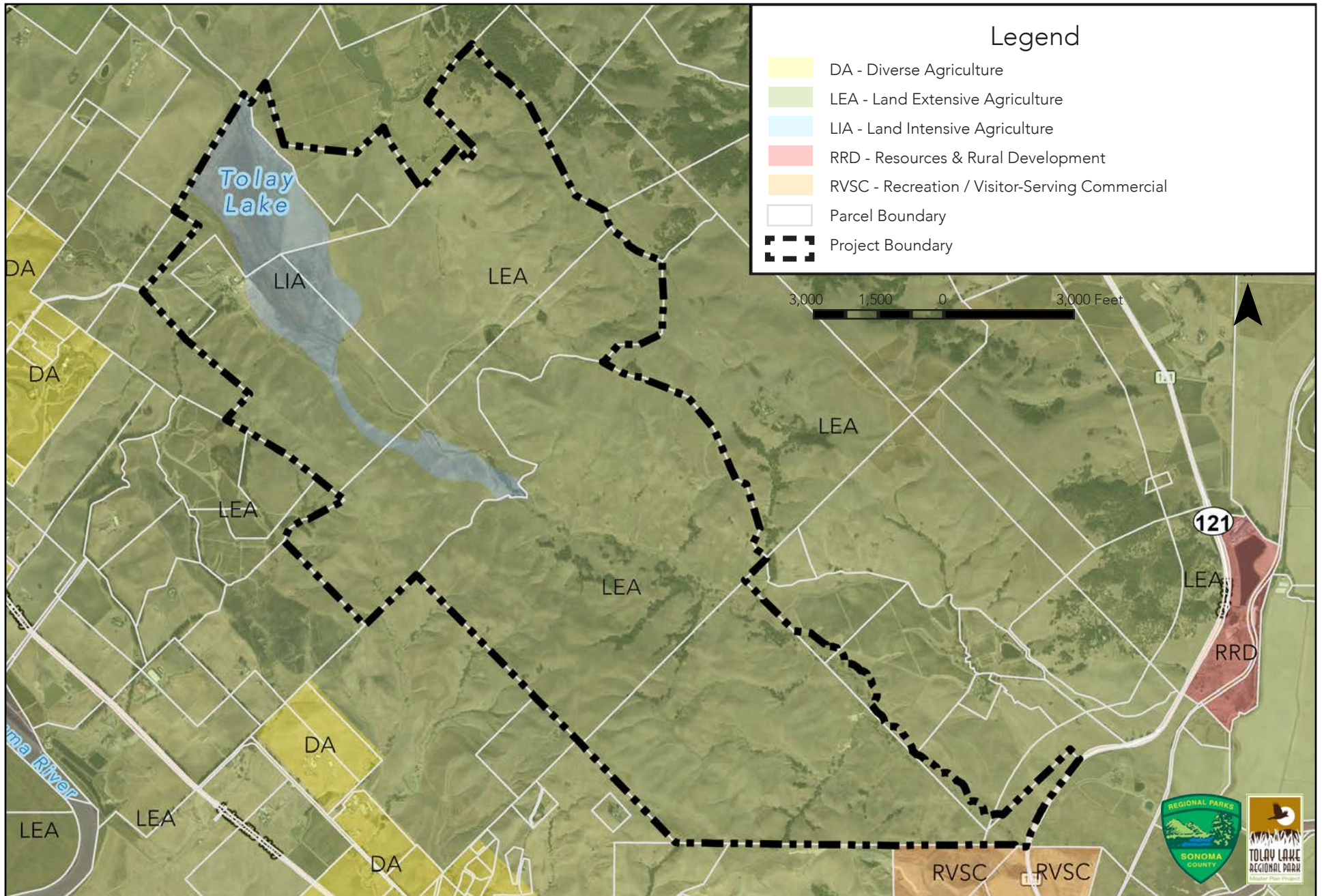
The Park is in unincorporated Sonoma County and therefore governed directly by the County. Future development on the park site is guided by policies in the Sonoma County 2020 General Plan. The General Plan Land Use map designates the park site as Land Extensive Agriculture and Land Intensive Agriculture. The Sonoma County Zoning Database describes the zoning districts for each parcel of the park site.

The Park is zoned Land Extensive Agriculture District (LEA) with most parcels in the Park Complex (the Cardoza ranch property, as shown on Figure 3-2) also incorporating Land Intensive Agriculture District (LIA). All parcels include Riparian Corridor (RC) Combining Zones and Valley Oak Habitat (VOH) Combining Districts. In addition, the western part of the Park (and the small, southernmost part adjoining SR 121) includes a Scenic Resources (SR) Combining District. Three areas within the Park include a Geologic Hazard (G) Combining District (the West Ridge area just southeast of the Lake, and the small, southernmost part adjoining SR 121). Two areas include a Second Unit Exclusion (Z) Combining District. These various combining districts have their own specific requirements guiding land use.

The Park is not in an adopted Area Plan or a Specific Plan. However, the Park location is depicted on a map in the Open Space Element of the 2020 General Plan (Figure OSRC-5i).

4.7.3 Impacts and Mitigation Measures

This subsection analyzes impacts related to land use and planning that could result from implementation of the Project. This subsection begins with the criteria of significance, which establish the thresholds for determining whether an impact is significant, and concludes with land use impacts associated with the proposed Project.



Source: County of Sonoma PRMD

Figure 4-7.1
Land Use

4.7.3.1 Criteria of Significance

The proposed project would have significant land use impacts if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.7.3.2 Less Than Significant Impacts

Project implementation would result in the following less than significant land use impacts.

Impact LU-1: The project would not physically divide an established community. (NI)

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. The project is located in an area of private farms and ranches and would not disrupt existing transportation routes. The Master Plan includes habitat restoration, trail creation, and a variety of improvements related to providing a regional park facility in the southern part of the County that would serve residents throughout the region and would not physically divide an established community. Therefore, the project would have ***no impact (NI)*** related to the division of a community.

Impact LU-2: The project would not conflict with applicable habitat conservation plan or natural community conservation plan. (NI)

The project site is not in a habitat conservation plan or natural community conservation plan nor is there a habitat conservation plan or natural community conservation plan applicable to the project area or its immediate vicinity. Therefore, the project would not conflict with any habitat conservation plan or natural community conservation plan, and ***no impacts (NI)*** would occur.

Impact LU-3: The project would not conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. (LTS)

Sonoma County General Plan 2020 Open Space and Resource Conservation Goal OSRC-17 aims to “establish a countywide park and trail system that meets future recreational needs of the County's residents while protecting agricultural uses.” The Park is a working ranch and intends to continue to operate as a working ranch, with grazing still occurring on much of the Park property; preservation of the animal pen for pigs, goats, and chickens; no-till hay production; and the traditional growing of pumpkins. In addition, the ethno-botanical garden is proposed to be expanded.

Pursuant to Policy OSRC-17a, the County is requesting a General Plan Amendment to apply the “Public-Quasi Public/Park” land use designation to the Park site. This change in land use

designation would allow for implementation of the Master Plan while maintaining the agricultural heritage of the Park, preserving open space and natural resource values, and achieving compatibility among adjacent land uses.

Master Plan guideline OM-G36 supports continuation of the historic agricultural use of the Park: “Maintain agricultural lands to allow for continuing sustainable yield of crops and other farm products. Agricultural practices include (1) care, management and handling of farm animals; (2) cattle grazing; (3) maintaining ‘Marvin’s Garden’; (4) repairing farm equipment; and (5) managing the orchard trees and harvesting fruit.” Guideline OM-G36 is also consistent with the 2005 Sonoma County Agricultural Preservation and Open Space District deed, which conveys a conservation easement for Tolay Lake Park in order to “(a) conserve and protect, in perpetuity, the Conservation Values of the Property, (b) to enhance and restore the Conservation Values by specifically permitting the creation of an ecologically viable ecosystem capable of providing wetland habitat for endangered and threatened species, migratory shorebirds, and waterfowl, and (c) to prevent any uses of the Property that would significantly impair or interfere with these Conservation Values.”

The Park would be consistent with the County “Right to Farm Ordinance,” which declares the policy of the County “to conserve, protect, enhance, and encourage agricultural operations on agricultural land within the unincorporated area of the county” in an effort to “promote a good-neighbor policy.” The agricultural and open space nature of the Park in general, in addition to the size of the Park itself, would reduce the potential for conflict with adjacent agricultural lands.

Though the Master Plan is expected to result in increased future Park visitation, Master Plan guidelines and standards have been formulated to promote compatibility between adjacent agricultural and non-agricultural uses, including (but are not limited to): fire prevention and control of invasive species (RMP-S65, RMP-S66, RMP-S67, OM-G30, RMP-O36, RMP-O37, RMP-S52, RMP-O38, RMP-S69, RMP-S82, OM-S23, and OM-S24), ensuring orderly use of the Park (T-G3, OM-G1, OM-G2, OM-S1, OM-S2, OM-S4, OM-S7, OM-G6, and OM-G11), and preserving natural and agricultural resources (RMP-O40, RMP-O42, and OMG36).

Increased conflicts between agricultural vehicles and non-agricultural vehicles could occur, but would not be expected to represent a significant impact due to the limited amount of existing agricultural traffic in the vicinity. Potential for traffic conflicts is discussed in section 4.10, Transportation and Circulation, of this EIR.

In addition, Sonoma Code rules and regulations (Sonoma County Municipal Code, Chapter 20), which apply to all County parks and recreation facilities, would ensure the safety and enjoyment of park visitors while also protecting the rights of the public, including neighboring landowners.

Adoption of the General Plan Amendment and the Master Plan would be consistent with General Plan policies. Applicable Sonoma County General Plan 2020 goals, policies, and objectives pertaining to the project are listed in Table 4.8-1.

All of the impacts associated with the Park would be mitigated by implementing the measures described in this EIR. Therefore, the Park would have a *less than significant* impact regarding land use plans and policies.

4.7.3.1 Significant Impacts

The project would have no significant impacts related to land use and planning, and no mitigation measures would be required.

Table 4.7-1: Applicable Sonoma County General Plan 2020 Goals, Policies, and Objectives

Goal/Policy/Objective	Description	Consistency Analysis
GOAL LU-9	Protect lands currently in agricultural production and lands with soils and other characteristics that make them potentially suitable for agricultural use. Retain large parcel sizes and avoid incompatible nonagricultural uses.	Consistent. The project would not involve the subdivision of land or parcels. The project would not convert agricultural lands to residential or non-agricultural commercial uses and the project would not create an irreversible commitment of agricultural lands.
Objective LU-9.1	Avoid conversion of lands currently used for agricultural production to non-agricultural use.	Consistent. The Park is a working ranch and would continue to be a working ranch. The Park would be used for recreational uses such as hiking, horseback riding, mountain biking, and camping. The project would not convert agricultural lands to residential or non-agricultural commercial uses and the project would not create an irreversible commitment of agricultural lands.
Objective LU-9.2	Retain large parcels in agricultural production areas and avoid new parcels less than 20 acres in the "Land Intensive Agriculture" category.	Consistent. The project would not involve the subdivision of land or parcels.
Objective LU-9.3	Agricultural lands not currently used for farming but which have soils or other characteristics that make them suitable for farming shall not be developed in a way that would preclude future agricultural use.	Consistent. Most of the proposed elements of the Park would be concentrated in the Park Complex, which contains some soils suitable for farming, but these facilities could be removed in the future if desired for soil restoration. Therefore, the project would not create an irreversible commitment of agricultural lands.
Objective LU-9.4	Discourage uses in agricultural areas that are not compatible with long term agricultural production.	Consistent. The Park is a working ranch and would continue to be a working ranch. The Park would be used for recreational uses such as hiking, horseback riding, mountain biking, and camping. The Park would be consistent with policies to protect agricultural operations by conforming to the Right to Farm Ordinance and thereby avoiding conflicts with adjacent agricultural uses.
Objective LU-9.5	Support farming by permitting limited small scale farm services and visitor serving uses in agricultural areas.	Consistent. The Park is a working ranch and would continue to be a working ranch. The Park does some limited small scale agriculture by growing pumpkins and no-till hay production. The Park would continue to grow and would also increase the size of the ethno-garden in the Park Complex.

Table 4.7-1: Applicable Sonoma County General Plan 2020 Goals, Policies, and Objectives

Goal/Policy/ Objective	Description	Consistency Analysis
		<p>Additionally, small scale farm services, including the raising of goats, pigs, and chickens occur at the Park. The Park would be used for recreational uses such as hiking, horseback riding, mountain biking, and camping.</p>
Policy LU-9d:	<p>Deny General Plan amendments that convert lands outside of designated Urban Service Areas with Class I, II, or III soils (USDA) to an urban or rural residential, commercial, industrial, or public/quasi-public category unless all of the following criteria, in addition to the designation criteria for the applicable land use category, are met: (1) The land use proposed for conversion is not in an agricultural production area and will not adversely affect agricultural operations, (2) The supply of vacant or underutilized potential land for the requested use is insufficient to meet projected demand, (3) No areas with other soil classes are available for non-resource uses in the planning area, and (4) An overriding public benefit will result from the proposed use. Amendments to recognize a pre-existing use are exempt from this policy. Public uses such as parks and sewage treatment plants may be approved if an overriding public benefit exists.</p>	<p>Consistent. Although the project proposes a General Plan Amendment from LEA and LIA to Public/Quasi-Public, the project would be consistent because:</p> <ol style="list-style-type: none"> 1) Although the site is in an agricultural production area, the project would not have an impact on agricultural operations in the area and would not adversely affect agricultural operations. 2) The analysis of supply and demand for parks in the General Plan EIR estimated a need for more than 500 acres of additional regional parks in the Petaluma and Sonoma Valley planning areas; however, the need is probably greater because estimated construction or expansion of park facilities has not occurred as anticipated. 3) Soil classes on the site are similar to those on other portions of the planning areas. 4) This is a conversion for creation of a regional park in an area with a designated need. As such, it would be considered a public benefit and consistent with the General Plan Land Use Element.
Objective LU-10.1	<p>Accomplish development on lands with important biotic resources and scenic features in a manner which preserves or enhances these features.</p>	<p>Consistent. The Park would encourage conservation of open space and the agricultural lands on the site, and would by design protect and enhance riparian and streamside habitat and values.</p>
Policy LU-11d	<p>Encourage methods of landscape design, landscape and park maintenance, and agriculture that reduce or eliminate the use of pesticides, herbicides, and synthetic fertilizers; and encourage the use of compost and conservation of water.</p>	<p>Consistent. The Master Plan includes guidelines and standards pertaining to use of alternative methods for eliminating pests and controlling weeds and invasive species (i.e., mechanical means, controlled fire); use of pesticides and herbicides would be restricted to spot treatments where alternative methods are deemed inadequate (RMP-S51, RMP-S52, RMP-S53, and RMP-S82).</p>

Table 4.7-1: Applicable Sonoma County General Plan 2020 Goals, Policies, and Objectives

Goal/Policy/ Objective	Description	Consistency Analysis
Policy LU-11f	Encourage conservation of undeveloped land, open space, and agricultural lands, protection of water and soil quality, restoration of ecosystems, and minimization or elimination of the disruption of existing natural ecosystems and flood plains.	Consistent. The Master Plan includes guidelines and standards that would protect water and soil quality, restore ecosystems, and minimize or eliminate the disruption of existing natural ecosystems and flood plains.
Goal OSRC-8	Protect and enhance Riparian Corridors and functions along streams, balancing the need for agricultural production, urban development, timber and mining operations, and other land uses with the preservation of riparian vegetation, protection of water resources, flood control, bank stabilization, and other riparian functions and values.	Consistent. See Objective LU-10.1 and 11f, above.
Objective OSRC-8.3	Recognize and protect riparian functions and values of undesignated streams during review of discretionary projects.	Consistent. The Master Plan provides for stream and riparian habitat restoration and enhancement activities (i.e., resource protection guidelines and standards, adaptive management strategies, invasive species management, fire management). See Objective LU-10.1 and 11f, above.
Policy OSRC-8d	Allow or consider allowing the following uses within any streamside conservation area: (1) Timber harvest operations...; (2) Streamside maintenance and restoration; (3) Fire fuel management...; (4) Road crossings, street crossings, utility line crossings; (5) Mining operations...; (6) Stream dams and stream-related water storage...; (7) Grazing and similar agricultural production activities...; (8) Agricultural cultivation and related planting...; (9) Equipment turnaround and access roads...; (10) Vegetation removal...; (11) Creekside bikeways, trails, and parks within Urban Residential, Commercial, Industrial, or Public-Quasi Public land use categories; and (12) Development authorized by exception under Policy OSRC-8e.	Consistent. The Master Plan provides for stream and riparian habitat restoration and enhancement activities (i.e., resource protection guidelines and standards, adaptive management strategies, invasive species management, fire management).
Policy OSRC-8e	Prohibit, except as otherwise allowed by Policy OSRC-8d, grading, vegetation removal, agricultural cultivation, structures, roads, utility lines, and parking lots within any streamside conservation area.	Consistent. See OSRC-8d above.
Objective OSRC-10.1	Preserve lands containing prime agricultural and productive woodland soils and avoid their conversion to incompatible residential,	Consistent. The Park would avoid conversion of prime agricultural and productive woodland soils to incompatible

Table 4.7-1: Applicable Sonoma County General Plan 2020 Goals, Policies, and Objectives

Goal/Policy/ Objective	Description	Consistency Analysis
	commercial or industrial uses.	residential, commercial, or industrial uses. The conservation easements on the land would prevent those types of conversion from occurring, in perpetuity, and would also impose limits on the extent of development allowed under the Master Plan.
Goal PF-2	Assure that park and recreation, public education, fire suppression and emergency medical, and solid waste services, and public utility sites are available to the meet future needs of Sonoma County residents.	Consistent. The Park would promote General Plan goals of meeting park and recreation needs of future County residents and providing an adequate supply of regional park services.
Objective PF-2.1	Provide an adequate supply and equitable geographic distribution of regional and local parks and recreation services based on population projections.	Consistent. Regional parks are described as providing opportunities for a broad range of recreational activities generally within a 30-60-minute drive from urban areas at a rate of 20 acres per 1,000 persons. The analysis of supply and demand for parks in the General Plan EIR estimated a need for more than 500 acres of additional regional parks in the Petaluma and Sonoma Valley planning areas; however, the need is probably greater because estimated construction or expansion of park facilities has not occurred as anticipated.
Policy PF-2z	<p>Acquisition of land for all larger public facilities not addressed by Policy PF-2y, including parks, schools, wastewater treatment and water transmission facilities, is consistent with all nonagricultural land use categories, provided that:</p> <p>(1) A formal public hearing on the proposed facility is required to provide an opportunity for public review and comment before a final decision on the facility is made, and</p> <p>(2) Following approval of the use, a General Plan Amendment to designate the site Public/Quasi-Public on the Land Use Map will be processed by the responsible public agency.</p> <p>Acquisition of land for these larger public facilities is generally inconsistent with agricultural land use categories.</p>	Consistent. The “proposed facility” would be adoption of the Master Plan (and its implementation actions), so the condition (1) formal public hearing would be satisfied during the environmental review and project approval process, which would include condition (2).

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4.8 NOISE

This section describes the acoustic (noise) and vibration environment at and near Tolay Lake Regional Park and the potential noise and vibration impacts that could occur with the implementation of the proposed Tolay Lake Regional Park Master Plan.

This noise analysis has been prepared using analytical methodologies and evaluation criteria outlined in the California Environmental Quality Act (CEQA) Guidelines (Appendix G), and the Sonoma County General Plan.

Much of the information contained in this analysis is based on noise measurements and other data documented in the Sonoma County Regional Parks Department's "*Tolay Lake Regional Park: Interim Public Access & Resource Management Plan Initial Study / Mitigated Negative Declaration*" (Sonoma County Regional Parks Department 2008) and the Traffic Impact Analysis (TIA) prepared for the proposed Master Plan (W-Trans 2016).

4.8.1 Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 4.8-1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 4.8-2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

Table 4.8-1: Definitions of Acoustical Terms

Term	Definition
Decibel (dB)	A decibel is one-tenth of a bel. It is a measure on a logarithmic scale that indicates the squared ratio of sound pressure to a reference sound pressure (unit for sound pressure level) or the ratio of sound power to a reference sound power (unit for sound power level.)
Frequency, Hertz (Hz)	The number of oscillations per second of a periodic wave sound and of a vibrating solid, expressed in units of Hertz, formerly cycles per second.
A-Weighted Sound Level (dBA)	Expressed in dBA or dB(A). Frequency-weighted sound pressure level approximating the frequency response of the human ear.
L01, L10, L50, L90	The energy-average of the A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level (Leq)	The equivalent steady-state sound level that in a given period of time would contain the same acoustical energy as the time-varying sound level during the same period.
Community Noise Equivalent Level (CNEL)	A noise level that accounts for all the A-weighted noise energy from a source during 24 hours, and weights the evening (7 p.m. to 10 p.m.) and night (10 p.m. to 7 a.m.) noise by adding 5 and 10 dBA, respectively, during these periods.
Lmax, Lmin	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise	All-encompassing noise at a given place and time. This is usually a composite of sounds from all sources near and far, including any specific sources of interest.

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013a.

Table 4.8-2: Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	110 dBA	Rock concert
Jet fly-over at 1000 feet		
	100 dBA	
Gas lawnmower at 3 feet		
	90 dBA	
Diesel truck at 50 feet and 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room (background)
Quiet suburban nighttime		
	30 dBA	
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: TeNS, California Department of Transportation, September 2013a.

4.8.1.1 Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the Peak Particle Velocity (PPV); another is the Root Mean Square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration. In this section, a PPV descriptor with units of mm/sec. or in/sec. is used to evaluate construction-generated vibration for building damage and human complaints. Table 4.8-3 displays the reactions of people and the effects on buildings that continuous vibration levels produce. The annoyance levels shown in Table 4.8-3 should be interpreted with care since vibration may be

found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Table 4.8-3: Reaction of People and Damage to Buildings at Various Continuous Vibration Amplitudes

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage to any type
0.08	Vibrations readily perceptible	Recommended upper amplitude of the vibration to which ruins and ancient monuments should be subjected
0.10	Amplitude at which continuous vibrations begin to annoy people	Virtually no risk of “architectural” damage to normal buildings
0.20	Vibrations annoying to people in buildings (this agrees with the amplitudes established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold as which there is a risk of “architectural” damage to normal dwelling – houses with plastered walls and ceilings Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize “architectural” damage
0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater amplitude than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: Caltrans Transportation and Construction Vibration Guidance Manual, September 2013b.

4.8.2 Regulatory Setting

4.8.2.1 Federal

There are no federal noise or vibration regulations that govern the implementation of the proposed Master Plan.

4.8.2.2 State

There are no state noise or vibration regulations that govern the implementation of the proposed Master Plan.

4.8.2.3 Local

Sonoma County General Plan Noise Element

The Sonoma County General Plan Noise Element establishes goals, policies, and standards to be used in the review of noise producing land uses that may affect noise-sensitive land uses, as well as the review of noise-sensitive land uses proposed near noise generating land uses. The General Plan establishes an overarching goal to protect people from the adverse effects of exposure to excessive noise and to achieve an environment in which people and land uses may function without impairment from noise (General Plan Goal NE-1). The General Plan sets forth several objectives in regards to this goal, including the need to provide noise exposure information during planning and project review (Objective NE-1.1), develop and implement measures to avoid exposure of people to excessive noise levels (Objective NE-1.2), protect the present noise environment and prevent intrusion of new noise sources which would substantially alter the noise environment (Objective NE-1.3), and mitigate noise from recreational and visitor-serving land uses (Objective NE-1.4). To achieve these goals and objectives, the General Plan contains several policies related to transportation and non-transportation noise sources.

General Plan Policy NE-1b sets forth exterior and interior limits of 60 dB Ldn and 45 dB Ldn, respectively, for noise due to traffic on public roadways. This 60 dB exterior limit is applied to outdoor activity areas.

General Plan Policy NE-1c sets forth standards for new sources of non-transportation related noise. The standards are structured to limit noise such that the louder the noise, the shorter the duration of time it is allowed to occur. The General Plan's non-transportation noise standards are listed in General Plan Table NE-2 and reproduced in Table 4.8-4 below. To be consistent with the standards, all four categories must be met, as measured at the exterior property line of any adjacent noise sensitive land use.

Table 4.8-4: General Plan Non-Transportation Related Noise Standards

Hourly Noise Metric (dBA) ^(A)	Daytime 7am to 10pm	Nighttime 10pm to 7am
L(50) – 30 minutes in any hour	50	45
L(25) – 15 minutes in any hour	55	50
L(08) – 4 minutes, 48 seconds in any hour	60	55
L(02) – 1 minute, 12 seconds in any hour	65	60
Source: Sonoma County 2012		
Noise standards are applied at the exterior property line of any adjacent noise sensitive land use unless the property is substantially developed according to its existing designation and there is available land on the property for noise attenuation.		

General Plan Policy NE-1c provides certain exceptions to the non-transportation standards and methodology shown Table 4.8-4, including:

- Reduce the applicable standards in Table 4.8-4 by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises, such as pile drivers and dog barking at kennels.
- Reduce the applicable standards in Table 4.8-4 by five decibels if the proposed use exceeds the ambient level by 10 or more decibels.
- If the ambient noise level exceeds the standards in Table 4.8-4, adjust the standards to equal the ambient level, up to a maximum of 5 dBA above the standard, provided that no measurable increase (i.e. +/- 1.5 dBA) shall be allowed.
- For short term noise sources which are permitted to operate no more than six days per year, such as concerts or race events, the allowable noise exposures shown in Table 4.8-4 may be increased by 5 dB. These events shall be subject to a noise management plan including provisions for maximum noise level limits, noise monitoring, complaint response and allowable hours of operation. The plan shall address potential cumulative noise impacts from all events in the area.
- Noise levels may be measures at the location of outdoor activity areas instead of exterior property lines, provided the property on which the noise sensitive use is located has already been substantially developed pursuant to its existing zoning designation, and there is available open land on the property for noise attenuation.¹

The Park is situated in a rural area with low ambient noise levels that are below the General Plan's non-transportation noise standards, and one of the most common sources of sound at the Park is human speech and music (particularly during the Fall Festival). Thus, non-transportation Park noise is subject to the first two penalties described above. Since these penalties apply, the General Plan standards must be adjusted (reduced) by 10 dB. The adjusted non-transportation noise standards that apply to the proposed Master Plan are shown in Table 4.8-5.

Table 4.8-5: Adjusted General Plan Non-Transportation Noise Standards

Hourly Noise Metric (dBA)	Daytime 7am to 10pm	Nighttime 10pm to 7am
L(50) – 30 minutes in any hour	40	35
L(25) – 15 minutes in any hour	45	40
L(08) – 4 minutes, 48 seconds in any hour	50	45
L(02) – 1 minute, 12 seconds in any hour	55	50

Source: Sonoma County 2012, modified by MIG 2016.

With regards to noise from Sonoma Raceway (formerly Sears Point and Infineon Raceway), the General Plan describes that this raceway has been in use for many years, and has been the subject of noise concerns for the nearest neighboring residences; however, noise-related activities at the race track are closely regulated by the conditions of approval for the racetrack's current land use

¹ This exception may not be used on vacant properties which are zoned to allow noise sensitive uses.

permit, which included noise monitoring to prevent raceway noise levels from increasing in the future. In addition, the General Plan states the “the performance standards of this Noise Element included in Table NE-2 are not intended to apply to the raceway facility described as existing in the setting Section of the May 1999 Draft Amended Environmental Impact Report for the Sears Point Raceway Revised Master Plan Project. Noise impacts from future new uses or changes in use at the Raceway, to the extent that such new or changed uses require a new or amended use permit, are intended to be subject to evaluation based on the performance standards in Table NE-2 (page NO-9 to NO-10).”

4.8.3 Environmental Setting

Tolay Lake Regional Park is located in southern Sonoma County in a quiet, rural agricultural setting. In general, noise sources in this part of the County include transportation and non-transportation noise sources. Transportation noise sources near the park include vehicle traffic on Lakeville Road and Cannon Lane, which provide access to the Park, as well as other nearby roads (e.g., Cardoza Road, State Route (SR) 37, SR 121). In addition, noise from Sonoma Raceway (approximately four miles southeast of the Park Core), as well as low flying aircraft, are audible at and in the general vicinity of the Park (Sonoma County Regional Parks Department 2008). Non-transportation noise sources include intermittent agricultural operations and weather, especially including wind.

Currently, Park access is limited through a day-use permit program, guided hikes, and the annual Tolay Fall Festival, which is held for two weeks each October. Currently, from April to September, permit holders may access the park Friday, Saturday and Sunday from 8:00 a.m. to sunset. From October to March, permit holders may access the park Saturday and Sunday from 8:00 a.m. to sunset. Students on school trips are the primary visitors on the weekdays, and events that are open to the public are the primary attraction on weekends.

The Fall Festival includes educational and family-oriented aspects, as well as entertainment such as games, events, food, and music. During Festival weekdays, approximately 10 school buses with students, teachers, and chaperones per day, and up to 200 non-school related visitors, visit the Park. During Festival weekend days, approximately 3,500 visitors are estimated to visit the Park. Trails are closed to permit holders during the Tolay Fall Festival in October.

The Park itself is situated within a valley surrounded by hills and ridgelines. This topography serves to shield the Park Core from the few rural, agricultural residences present near the Park (on the opposite side of the surrounding ridgelines). In general, these residences are setback from Lakeville Road, Cannon Lane, and other local roads and situated at a higher elevation than both the Park Core and Cannon Lane, but not always with a direct line of sight of Cannon Lane. Residential receptors are discussed in more detail in Section 4.8.3.2.

The Park Core is approximately 3.6 miles west of the Sonoma Valley Airport, and 6 miles southeast of the Petaluma Municipal Airport.

4.8.3.1 Noise Environment

This section describes the existing ambient noise environment at and near Tolay Lake Regional Park. The information contained in this section is based on short- and long-term ambient noise measurements that were taken in August and September 2007 as part of the environmental

review conducted for the County's *Tolay Lake Regional Park Interim Public Access and Resource Management Plan Initial Study*.

As explained in the 2008 IS prepared for the Interim Plan, traffic on Lakeville Road and Cannon Lane, intermittent agricultural operation, and wind are the primary contributors to the noise environment at and near Tolay Lake Regional Park. Although the Park has been operating under this Interim Plan for several years, there is no indication or evidence that the existing ambient noise environment has substantially changed. The Interim Plan has not substantially increased traffic levels on Lakeville Road or Cannon Lane, and intermittent agricultural operations persist near the Park. Nonetheless, where possible, this EIR uses updated traffic data collected as part of the TIA prepared for the proposed Master Plan to update and predict changes in ambient noise levels that may have occurred since 2007.

Existing Ambient Noise Levels

In 2007, short-term noise monitoring at the Park's entrance gate at the end of Cannon Lane found the following (Sonoma County Regional Parks Department 2008, Appendix F, page 4):

“The steady background noise level was 30 dBA L₉₀, the median level was 32 dBA L₅₀, the L₂₅ was about 34 dBA, the L₀₈ was about 36 dBA, and the L₀₂ was about 40 dBA. There was no local traffic included in the measurement. These measured levels are believed to represent the noise environment throughout the park area and at nearby residential receptor locations that are typically a mile or more from Lakeville Highway and in the absence of any local traffic. There is a low volume of local traffic that currently uses Cannon Lane. Existing traffic volumes were reported in the traffic study. Traffic noise levels are calculated using the L_{eq}V2 Traffic Noise Model developed by Caltrans. The noise level during the PM peak hour is calculated to be an L_{eq} of 38 dBA at a distance of 100 feet from the centerline of Cannon Lane. Over the soft ground that adjoins the roadway traffic noise levels would increase and decrease by about 5 dBA with each halving or doubling of the distance. For example, at a distance of 50 feet from the roadway centerline, the weekday PM peak hour is calculated to be about 43 dBA L_{eq}, and at a distance of 200 feet from the roadway centerline (the distance to the nearest residential outdoor activity area), the noise level is calculated to be about 33 dBA L_{eq}. Traffic data is also provided for the Saturday midday peak hour volume. Noise levels are calculated to be about 3 dBA lower, or 35 dBA L_{eq} 100 feet from the roadway centerline. Noise levels would, of course, increase and decrease with differing distances in the same manner. Along low volume roadways the 24-hour day/night average noise level (L_{dn}) is equal to or lower than the hourly average noise levels during the PM peak and daily and midday peak Saturday average noise levels.”

The 2007 background noise levels measured without traffic at and near Tolay Lake Regional Park are still considered representative of existing conditions; however, existing data indicates traffic conditions on Cannon Lane have changed slightly. Specifically, traffic data collected for the proposed Master Plan indicates weekday PM peak hour vehicle trips have decreased from 26 trips to 21 trips, while weekend midday peak hour vehicle trips have increased 13 to 16 trips. These updated peak traffic volumes are estimated to have the following effect:

- Weekday noise exposure is estimated to decrease from 38 L_{dn} to 37 L_{dn} at a distance of 100 feet from the center of Cannon Lane, and from 33 L_{dn} to 32 L_{dn} at a distance of 200

feet from the center of Cannon Lane². Weekend noise exposure is estimated to increase from 35 Ldn to 36 Ldn at a distance of 100 feet and from 30 Ldn to 31 Ldn at a distance of 200 feet.

Similarly, in 2007, long-term noise monitoring along Lakeville Road found the following (Sonoma County Regional Parks Department 2008, Appendix F, page 3):

“... the most significant source of noise in the region is vehicular traffic on Lakeville Road. Noise levels were monitored along Lakeville Road on August 28-30, 2007 at a location about 100 feet from the roadway center (...) The calculated 24-hour day/night average noise level for August 29, 2007 was 76 dBA L_{dn}. (...) Traffic noise levels are reduced with distance over soft ground at the approximate rate of 5 dBA for each doubling of the distance from the roadway.”

In 2007, noise contours associated with Lakeville Road were found to be 115 feet (75 Ldn), 230 feet (70 dBA), 460 feet (65 Ldn), 920 feet (60 Ldn). Existing traffic data also indicates that traffic conditions on Lakeville Road have changed. Specifically, traffic data collected for the proposed Master Plan indicates weekday PM peak hour vehicle trips have decreased from approximately 1,950 trips to 1,720 trips. This change would result in an approximately 0.5 dB decrease in associated noise levels during the peak hour, which is not a substantial difference from 2007 levels. Thus, Lakeville Road is still considered to generate 76 Ldn and 60 Ldn at a distance of 100 feet and 920 feet from the road center, respectively.

Tolay Fall Festival

Tolay Lake Regional Park has traditionally hosted an annual fall festival. The prior land owners, the Cardoza's, held a month-long annual pumpkin festival each October, and the County has continued this annual event in the form of the Tolay Fall Festival. As explained in the County's 2008 Interim Plan IS (Sonoma County Regional Parks Department 2008, Appendix F, page 4, 6):

“The Tolay Fall Festival includes two components: Educational Outreach and General Public. The Educational Outreach component takes place on Mondays, Tuesdays, and Fridays in October during normal school hours. A combination of school buses and private vehicles provide transportation. The General Public component takes place on Fridays, Saturdays, and Sundays in October. The majority of the Tolay Fall Festival activities, including parking, take place in the “Park Center.” There are amplified music and announcements during festival hours, which is stationed in the Park Center (...) Guided tours of the property, both walking and hayrides, are provided outside of the Park Center on the routes used in the regular guided tours. Operations at the ranch include the quarry, vehicle use throughout the property, agricultural equipment, pumping of Tolay Lake, and the festival. Specific information about how the Cardozas operated the ranch is limited; however, Regional Parks is aware that the Cardozas did not receive noise complaints, and they held amplified events with amplified music. Quantitative baseline noise data is not available for these activities but they do provide a qualitative description of the existing and historical use of the property (...).”

² As noted in the County's 2008 IS, for low volume roadways such as Cannon Lane, Ldn is equal to or lower than the hourly average noise levels during the peak traffic hours.

Thus, historically, amplified music and voices have been a part of activities at the Cardoza Ranch, particularly during the previous pumpkin festival and the current Tolay Fall Festival. The Cardoza Pumpkin Festival historically attracted an approximately 30,000 visitors during the month of October. In comparison, the 2008 Interim Plan IS indicates that visitation of the Tolay Fall Festival during 2006 and 2007 was approximately 12,000 visitors (or 1,036 daily trips) over the course of the event (Sonoma County Regional Parks Department 2008, page 2-76). Although information is not available on the specific activities as part of the Tolay Fall Festival, the amplified sound emanating from the Park Core as part of the Tolay Fall Festival was estimated to be approximately 47 dBA at the nearest property line and 35 dBA at a distance of 2,500 feet (Sonoma County Regional Parks Department 2008, Appendix F, page 8).

4.8.3.2 Noise Sensitive Receptors

Noise sensitive receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. Residential areas, hospitals, schools, and parks are examples of noise sensitive receptors that could be sensitive to changes in existing environmental noise levels.

Tolay Lake Regional Park is situated in a rural agricultural area. The property line of the nearest residential property (located off of Cannon Lane, on Cardoza Road) is approximately 1,000 feet west from the Park Complex, and the residence itself is located approximately 2,400 feet west of the Park Complex. Most other rural agricultural residences near the Park are more than 2,500 feet away from the Park Complex. But, specifically, the noise sensitive residential receptors at near Tolay Lake Regional Park include:

- Residences along Cannon Lane, which is an existing road that provides current and future access to the Park. Five of the six residences along Cannon Lane are setback from the edge of the road 900 feet or more; however, one residence is setback approximately 200 feet from the road at its closest point. In addition, Cannon Lane is generally located at lower elevation than the nearby residences.
- A residence on Kullberg Road, approximately 0.8 miles (4,200 feet) north of the Park Core;
- Residences along Lakeville Road, which provides access to Cannon Lane.

In addition to these residential receptors, Tolay Lake Regional Park itself is considered a noise sensitive land use and sensitive noise receptor because intrusive noise levels could interfere with visitor's enjoyment of the Park.

4.8.4 Impacts and Mitigation Measures

This subsection analyzes impacts related to noise and vibration that could result from implementation of the project. It begins with the criteria of significance, which establishes the thresholds for determining whether an impact is significant, and concludes with noise and vibration impacts associated with the project.

4.8.4.1 Criteria of Significance

The proposed project would have a significant impact on noise and vibration if it would:

- Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose people to or generate excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airstrip, expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

The County of Sonoma's General Plan noise standards are summarized in Section 4.8.2.3; however, the County does not have a specific definition for what constitutes a "substantial" increase in noise under CEQA. For the purposes of this EIR, a substantial, permanent increase in noise levels is considered to be an increase in noise that causes the ambient noise environment to increase by more than 5 dBA. This threshold of significance is based on the level of noise increase that is generally accepted to be distinctly noticeable under most environmental noise conditions. Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern one dB changes in sound levels when exposed to steady, single frequency ("pure tone") signals in the mid frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of one to two dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of three dB in typical noisy environments. Further, a five dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness.

4.8.4.2 Less Than Significant Impacts

Project implementation would result in the following less-than-significant noise and vibration impacts.

Impact NOI-1: The proposed Tolay Lake Regional Park Master Plan would not expose people to, or generate, noise levels that exceed the transportation noise standards established by the Sonoma County General Plan. (LTS)

The proposed Master Plan is anticipated to increase Park visitation and thus has the potential generate noise from increased vehicle traffic on the roadways used to access the Park, as well visitor activities inside the Park, such as hiking, camping, and other forms of passive recreation.

The County's General Plan maintains separate standards for transportation and non-transportation noise. As described below, the potential increases in Park-related traffic noise under the proposed Master Plan would not exceed the transportation noise standards established by the Sonoma County General Plan. Please refer to Impact NOI-2 for a discussion of the potential increases in non-transportation noise under the proposed Master Plan. In addition, although the proposed Master Plan would not generate traffic noise levels that exceed applicable

standards, the potential exists for Park-related traffic to raise noise levels above existing ambient conditions. This effect is evaluated under Impact NOI-5.

Potential to Expose Park Visitors to Noise Levels that Exceed Standards

Tolay Lake Regional Park is considered a noise sensitive land use with low ambient noise levels (approximately 30 to 40 dBA Leq) that are below the standards set by the Sonoma County General Plan. Lakeville Road is considered the most significant source of noise in the region, with traffic producing a noise exposure level of 60 Ldn at a distance of 920 feet from the center of the roadway. Tolay Lake Regional Park is situated approximately one mile (5,280 feet) from Lakeville Road at its closest point, with intervening hills and ridgelines present between the Park and Lakeville Road. Given the distance and intervening topography between Lakeville Road and Tolay Lake Regional Park, traffic on Lakeville Road would not expose Park visitors to noise levels in excess of 60 dBA (the standard set by General Plan Policy NE-1b).

The proposed Master Plan includes improvements close to the Sonoma Raceway, including a new park entrance that would be located to the northeast of the raceway. This new entrance and the potential park improvements near the raceway would have the potential to expose future park visitors to noise from the raceway; however the General Plan's noise standards do not apply to existing noise from the raceway and thus the proposed Master Plan would not expose visitors to raceway-related noise that exceeds an applicable standard. It is worth noting that the proposed Master Plan would not alter raceway events or exacerbate raceway-related noise in any way. In addition, an existing ridgeline would partially attenuate raceway-related noise at points within the Park. This impact would be *less than significant*.

Potential to Generate Noise Levels that Exceed Transportation Noise Standards

It is noted that, in general, a doubling of traffic results in a 3 dB increase in ambient noise levels (Caltrans 2013). The proposed Master Plan and its corresponding trip generation, therefore, has a low potential to increase transportation-related noise levels on higher volume roadways such as Lakeville Road and SR 37. Potential increases in traffic-related noise resulting from the Master Plan would be greatest on Cannon Lane, which is a low-volume roadway.

- **Cannon Lane:** Cannon Lane is presumed to have an existing, weekday PM peak hour traffic noise exposure level of 32 Leq at distance of 200 feet from the center of the roadway (the closest outdoor activity area associated with a residence). On weekends, the midday peak hour traffic noise exposure is estimated to be 31 Leq at distance of 200 feet. These peak hour traffic noise levels also correspond to the long-term noise exposure levels associated with Cannon Lane (i.e., Ldn exposure).

Under near-term traffic conditions (referred to as "Phase A" by the TIA), implementation of the proposed Master Plan would increase weekday PM peak hour traffic from 21 trips per hour to 72 trips per hour (a net increase of 51 trips), and weekend midday peak hour trips from 16 trips per hour to 118 trips per hour (a net increase of 102 trips). The resulting traffic-related noise can be calculated according to the following equation (Caltrans 2013)³:

³ This equation assumes the mix of traffic generated by the proposed Master Plan is similar to the existing traffic mix on Lakeville Road.

$$\text{Near-Term Weekday Traffic: } 32 + 10 \log(72/21) = 37.4 \text{ Leq}$$

$$\text{Near-Term Weekend Traffic: } 31 + 10 \log(118/16) = 39.7 \text{ Leq}$$

Under long-term traffic conditions (referred to as “Phase B” by the TIA), implementation of the proposed Master Plan would increase weekday PM peak hour traffic from 21 trips per hour to 89 trips per hour (a net increase of 68 trips), and weekend midday peak hour trips from 16 trips per hour to 152 trips per hour (a net increase of 136 trips). The resulting traffic noise levels would be:

$$\text{Long-Term Weekday Traffic: } 32 + 10 \log(89/21) = 38.3 \text{ Leq}$$

$$\text{Long-Term Weekend Traffic: } 31 + 10 \log(152/16) = 40.8 \text{ Leq}$$

Under Tolay Fall Festival Conditions, the TIA estimates weekend midday peak hour trips would be equal to 296 vehicle trips per hour (a net increase of 280 trips, when compared to typical background conditions). Although this traffic does not necessarily constitute a change to the physical environment, the resulting traffic noise levels would be:

$$\text{Tolay Fall Festival Weekend Traffic: } 31 + 10 \log(296/16) = 43.7 \text{ Leq}$$

The equations above presume the types of vehicles that would travel along Cannon Lane with implementation of the proposed Master Plan would remain the same as existing conditions. While this may be true for weekday conditions (which can involve the use of school buses), the mix of weekend and Fall Festival vehicles may change as result of larger pick-up and box trucks (e.g., Ford F-250, Ford F-350, Ram 3500) that could be used to bring campers, horses, vendor displays, etc. to the park. From a noise perspective, if vehicle speeds would not differ significantly from automobile speeds, it is possible to equate these larger trucks to an acoustically equivalent number of automobiles, with each medium duty pick-up truck travelling at 35 miles per hour or less generating the same amount of noise as approximately 7 light duty passenger vehicles travelling at the same speed (Caltrans 2013). This facilitates a general, screening level comparison of noise levels for different traffic mixes and volumes. Presuming four (4) percent of the potential visitor traffic accessing the park consists of these medium duty pick-up trucks⁴, the equivalent total number of passenger vehicles generated by the proposed Master Plan under near- and long-term weekend conditions would be 134 and 169, respectively. This would yield a total equivalent passenger vehicle trip level of 150 trips (near-term) and 185 trips (long-term). The equivalent number of passenger vehicles generated under Tolay Fall Festival conditions would be 348 trips. The resulting traffic noise levels would be:

$$\text{Near-Term Weekend Traffic (Adjusted): } 31 + 10 \log(150/16) = 40.7 \text{ Leq}$$

$$\text{Long-Term Weekend Traffic (Adjusted): } 31 + 10 \log(185/16) = 41.6 \text{ Leq}$$

$$\text{Tolay Fall Festival Weekend Traffic (Adjusted): } 31 + 10 \log(348/16) = 44.6 \text{ Leq}$$

As seen in the equations above, increases in traffic associated with near-term implementation of the Master Plan would not result in traffic noise levels that exceed 60

⁴ This percentage is based on the air quality modeling conducted for the proposed Master Plan, and is based on vehicle fleet information for the San Francisco Bay Area Air Basin (see Appendix G).

dBA at the nearest sensitive residential receptor location on Cannon Lane Road under any scenario. This impact is, therefore, considered *less than significant*.

However, as described under Impact NOI-5 below, although traffic noise associated with the proposed Master Plan would not exceed applicable standards, it would nonetheless constitute a substantial and permanent increase in ambient noise levels.

- **Lakeville Road:** Lakeville Road is presumed to have an AADT of 16,000 vehicles, resulting in an existing noise exposure of 76 Ldn at a distance of 100 feet from the center of the roadway and approximately 60 Ldn at a distance of 920 feet from the center of the roadway.

Unlike low-volume roadways, in which daily traffic noise exposure levels are primarily based on peak hour conditions, noise exposure from high volume roadways is a function of peak hour and sustained traffic levels. Existing data indicates weekday PM peak hour and weekend midday peak hour traffic volumes on Lakeville Road are equal to 1,720 and 1,900 trips, respectively.

Under near-term conditions, the implementation of the proposed Master Plan would increase weekday PM peak hour traffic from 1,720 trips per hour to 1,771 trips per hour (a net increase of 51 trips), and weekend midday peak hour trips from 1,900 trips per hour to 2,002 trips per hour (a net increase of 102 trips). The resulting traffic noise increase would be approximately 0.1 dB and 0.2 dB under near-term weekday and weekend conditions, respectively. Under long-term conditions, the implementation of the proposed Master Plan would increase weekday PM peak hour traffic from 1,720 trips per hour to 1,788 trips per hour (a net increase of 68 trips), and weekend midday peak hour trips from 1,900 trips per hour to 2,036 trips per hour (a net increase of 136 trips). The resulting traffic noise increase would be approximately 0.2 dB and 0.3 dB under long-term weekday and weekend conditions. The potential traffic noise changes on Lakeville Road resulting from the implementation of the proposed Master Plan would not be discernible under any conditions and, therefore, this impact would be *less than significant*.

- **Other Roadways:** Other roadway segments identified in the TIA, such as Sears Point Road (State Route 37), and Arnold Drive (State Route 121), all have similar or higher peak hour and AADT values when compared to Cannon Lane and Lakeville Road. Additional trip generation on these other segments related to Master Plan implementation would not exceed those on Cannon Lane or Lakeville Road (i.e. Master Plan implementation would add fewer trips to these already busier road segments). As outlined above, increases in roadway traffic on Cannon Road and Lakeville Road would not constitute a significant impact; thus, any potential traffic noise increases on the other roadways around the Regional Park resulting from the implementation of the proposed Master Plan would also not be discernible under any conditions and would have a less than significant impact. For this reason, these other roadway segments are not discussed further.

It is noted that the above calculations are considered conservative (i.e., an overestimate) of potential traffic noise increases because: 1) The analysis does not take credit for any existing, Park-related trips on Cannon Lane or Lakeville Road (i.e., all noise increases in noise were were

assumed to be the result of “new trips;” and 2) The analysis does not take credit for any increase in future traffic levels that would occur with or without the implementation of the Master Plan (i.e., noise increases are based on existing traffic volumes on Cannon Lane and Lakeville Road, not traffic volumes in 2022 or 2040, when maximum Park traffic would likely occur). This impact would be *less than significant*.

Impact NOI-2: The proposed Tolay Lake Regional Park Master Plan would not generate non-transportation noise levels that exceed the standards established by the Sonoma County General Plan or result in a substantial, temporary or periodic increase in ambient noise levels. (LTS)

Tolay Lake Regional Park is an existing park acquired by the County in 2005. The Park is currently open from 8 a.m. to sunset and has limited public access. The Park currently offers guided educational and interpretative programs during the week (primarily to students), and permit holders may access the Park for hiking, wildlife viewing, and other recreational activities typically on Friday, Saturday, and Sunday only. Leashed dogs and equestrians are permitted to use the Park’s existing 8.6 miles of trails, all of which originate at the Park Complex.

The proposed Master Plan would slightly modify existing access limitations and recreational opportunities at Tolay Lake Regional Park. Under the proposed Master Plan, Tolay Lake Regional Park would be open seven days a week, from dawn until dusk. Many of the same recreational activities currently available would persist, including nature study and outdoor educational programs, hiking, docent led walks, horseback riding, mountain biking, group and family picnicking, bird watching and other types of passive recreation. But, these activities would occur more frequently than under existing conditions. In addition, the proposed Master Plan would provide improvements that would support overnight bunkhouse and hike-in camping on a permit basis only (both individual and group). With the proposed increase in operating hours, trail miles, and camping opportunities, Park visitation is anticipated to increase consistent with that identified in the County’s 2008 *Tolay Lake Interim Public Access and Resource Management Plan Initial Study*.

Passive recreation activities such as the type described above would not exceed the County’s non-transportation noise standards. Furthermore, typical operational noises would be minor in terms of sound intensity and limited in duration, and would include mowing, tree pruning, periodic repair of buildings, fences, trails, roads, and parking areas, pumping and/or other maintenance of Tolay Lake, and on-going agricultural activities associated with grazing and ranch management. Given the distance between the area with most intensive use (the Park Complex) and the closest residential receptor (2,400 feet away), noise from individual point sources within the Park Complex, as well as other areas of the Park (e.g., new trails) would drop well below General Plan standards. As explained in the County’s 2008 *Tolay Lake Interim Public Access and Resource Management Plan Initial Study* (Appendix F, page 8):

“There are no noise sensitive residential receivers located within ¼-mile of the Park Center. The nearest residence is located more than 2,500 feet (or about ½-mile) from the Park Center. The nearest property line is about 1000 feet from the Park Center. Sounds from individual specific point sources, such as picnic areas or parking lots, attenuate at the rate of about 7.5 dBA per doubling of distance from the source across soft ground. For example, a sound that is equivalent to 50 dBA at a distance of 50 feet, such as the sounds at a picnic site, would be reduced to a level barely above 0 dBA at a distance of

2,500 feet, an insignificant sound level. Another example is a person speaking in a raised voice level which generates a sound level of about 75 dBA at a distance of 3 feet. This sound would also be attenuated to a level of about 0 dBA at a distance of 2,500 feet. So the question becomes which sources of sound may be significant individually and potentially cumulative at these distant receiver locations.”

Accordingly, activities with the greatest potential to generate a significant noise impact represent a substantial source of sound at distant receiver locations. These activities, such as the Tolay Fall Festival and other special events that could take place at Tolay Lake Regional Park are discussed below.

- **Tolay Fall Festival:** The Tolay Fall Festival is an existing special event held each October that pre-dates the County’s acquisition of the Park in 2005. The annual Cardoza Ranch Pumpkin Festival, which predates the County’s Fall Festival, has historically drawn up to 30,000 visitors. The proposed Master Plan would continue the smaller, County held Fall Festival that has an estimated annual attendance of 12,000 visitors (Sonoma County Regional Parks Department 2008, page 2-76). The Master Plan would not increase attendance or otherwise modify any of the educational, celebratory, and entertainment elements of the Fall Festival, which include games and events, food, music, and miscellaneous vendor displays (see EIR Section 3.3.12).
- **Small, Medium, and Large Special Events:** Additional, scheduled special-events may be held at Tolay Lake Regional Park, including a large event (not to exceed 1,200 attendees per day for 4 weekend days), a medium event (not to exceed 500 attendees per day for a period 10 weekday and weekend days), and small events (not to exceed 150 attendees per day for 20 weekday and weekend days). Such events would be held outside of October (when the Fall Festival occurs), and could include run race events and equestrian events with live entertainment and vendors that operate from approximately 8 a.m. to 10 p.m.

As explained above, the largest special event that would occur at Tolay Lake Regional Park under the proposed Master Plan would be the continuation of the Tolay Fall Festival, which could result in up to 30,000 total visitors, including up to 3,500 visitors per weekend day. It is important to note the continuation of the existing Tolay Fall Festival would not result in traffic levels outside of historical conditions. There is no existing noise data available for festival operational noise, either for the Cardoza Pumpkin Festival or the Tolay Fall Festival; however, the County’s 2008 *Tolay Lake Interim Public Access and Resource Management Plan Initial Study* (page 2-68) found:

“Noise measurements have not been obtained for festival operational noise, either for the Cardoza Pumpkin Festival or the Tolay Fall Festival. Therefore, the model of a typical outdoor party setting, including amplified music played at a sound level of up to 80 dBA at a distance of approximately 50 feet from the speakers, can be used for comparative purposes. When applied to the Tolay Fall Festival, amplified sounds at this level would be attenuated to a maximum level of about 47 dBA at 1,000 feet, which is the nearest property line. The L02 at 1,000 feet would be approximately 45 to 50 dBA and the median sound level (L50) would be approximately 35 to 40 dBA. The intermediate statistical levels would fall between the L02 and L50 range and therefore would be within

General Plan levels. The sound would be attenuated to about 35 dBA Lmax, which is near the existing ambient noise level, at a distance of 2,500 feet. The nearest residence is about 2,400 feet from the Park Center. Therefore, while special event noise may be audible at the property line of the nearest receptor, there would be no noise impact at [the] receptor itself.”

Historically, neither the Cardoza family or the County has received noise complaints associated with the October festival activities, which is supplemental evidence that the existing activities do not exceed General Plan standards or pose a substantial, temporary or periodic increase in noise levels. As such, the special events envisioned by the General Plan are not anticipated to exceed noise standards or result in a substantial, temporary increase in noise levels. This impact would be *less than significant*.

Impact NOI-3: The proposed Tolay Lake Master Plan would not expose people to or generate substantial, temporary or period noise increases associated with short-term construction activities. (LTS)

The proposed Master Plan consists of conceptual plans for physical improvements that would be phased and implemented over the next approximately 20 to 25 years. Nearly all improvement projects would require the use of some level heavy construction equipment, with larger, more complex projects such as construction of the proposed Visitor Center (planned for Phase 3, or approximately 2027), requiring larger and more equipment than development of a trail or grading for a campsite.

The planned improvements would generally involve clearing vegetation for visitor access, site grading, minor structural and other building construction activities, site finishing (e.g., painting and landscaping), and environmental restoration activities. In addition, the County would improve Cannon Lane and the Park entry road (off of Cannon Lane), which would result in potential compaction, grading, and paving activities along these roadways. Construction activities, including roadway improvements would require the use of typical construction equipment such as backhoes, graders, trenchers, tampers, material handling equipment and lifts, and various on- and off-highway trucks. Table 4.8-6 lists the typical construction equipment that would likely be used to implement the proposed Master Plan improvements and corresponding noise levels associated with this equipment.

Table 4.8-6: Construction Equipment Noise Levels

Equipment	Equipment Usage Factor ^(A)	Reference Noise Level (Lmax at 50 Feet) ^(B)	Calculated Noise Level (Hourly Leq) ^(C)					
			50 Feet	200 Feet	500 Feet	1,000 Feet	2,000 Feet	2,500 Feet
Air compressor	40%	80	76	64	56	50	44	42
Air tamper	60%	80	78	66	58	52	46	44
Backhoe	40%	80	76	64	56	50	44	42
Boom Truck	40%	84	80	68	60	54	48	46
Bulldozers	40%	85	81	69	61	55	49	47
Concrete Mixer	40%	85	81	69	61	55	49	47
Crane (<12 tons)	16%	85	77	65	57	51	45	43

Table 4.8-6: Construction Equipment Noise Levels

Equipment	Equipment Usage Factor ^(A)	Reference Noise Level (L _{max} at 50 Feet) ^(B)	Calculated Noise Level (Hourly Leq) ^(C)					
			50 Feet	200 Feet	500 Feet	1,000 Feet	2,000 Feet	2,500 Feet
Flatbed truck	40%	84	80	68	60	54	48	46
Pick-up truck	40%	55	51	39	31	25	19	17
Tractor Trailers	40%	85	81	69	61	55	49	47

Sources: Caltrans 2009 and FHWA 2010.

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) Estimate does not account for any atmospheric or ground attenuation factors and is thus considered a conservative (i.e., overestimate) evaluation of potential construction noise levels. Calculated noise levels based on Caltrans, 2009: L_{eq} (hourly) = L_{max} at 50 feet - $20\log(D/50) + 10\log(UF)$, where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time equipment is in use.

As indicated in Table 4.8-6, worst case Leq and Lmax construction equipment noise levels would be approximately 81 and 85 dBA, respectively, at 50 feet; however, the magnitude of the potential temporary and periodic increase in ambient noise levels that could during implementation of Park improvements would depend on the nature of the construction activity (i.e., vegetation clearing, excavating, building finishing) and the distance between the construction activity and sensitive outdoor areas.

Most rural, agricultural residences near Tolay Lake Regional Park are located approximately away from the Park's property boundaries, with the exception being residences off of Cannon Lane. Some of these residential properties share a property line with the park, but are located approximately 2,400 feet or more away from the Park Core. As shown in Table 4.8-6, a single piece of construction equipment operating 2,500 feet away could generate noise levels of approximately 51 dB Lmax and 47 dB Leq. If three pieces of equipment were operating at the same time, noise levels would be approximately 55 dB Lmax and 51 dB Leq. These estimates do not take into account any additional attenuation due to ground cover and/or topography. It is noted that noise monitoring conducted for the 2008 *Tolay Lake Interim Public Access and Resource Management Plan Initial Study* found traffic noise attenuated at a rate of 5 dB with each doubling of distance, as opposed to 3 dB, which is the theoretical rate of attenuation for traffic noise due to distance alone (i.e., without considering additional environmental factors such as ground cover; Caltrans 2013). Thus, similarly, the ground cover and topography between work areas at the Park and rural residences 2,500 feet away or more would provide an estimated extra 8 to 10 dB attenuation. This would reduce noise levels when three or more pieces of equipment (which is presumed to be a rare occurrence) to between 41 and 43 dBA Leq and 45 and 47 dBA Lmax. These noise levels would not constitute a substantial, temporary increase in noise levels above ambient conditions.

While most sensitive residential receptors would be located approximately 2,500 feet or further away from most of the improvements identified in the proposed Master Plan, residences setback from Cannon Lane would be located within approximately 900 feet of the planned improvements

to Cannon Lane, and one residence would be located as close as 200 feet to the planned roadway improvements. It is important to note these distances represent the closest distance between the proposed road improvements and residences setback from Cannon Lane; as construction activities move along the roadway, they would increase and decrease in distance from these residential locations. As shown in Table 4.8-6, a single piece of construction equipment operating at a distance of 200 feet would produce noise levels of 73 dB Lmax and 69 dB Leq; noise levels would be approximately 3 dB higher when two pieces of equipment operate concurrently, and 4 dB higher if three pieces of equipment were to operate simultaneously. At a distance of 200 feet, additional attenuation due to ground cover would be minimal. These construction noise levels would be intermittent (occurring for a few hours throughout the day) and short in duration (worst-case noise levels would likely occur for one week out the approximately three to six-month road construction project).

The planned improvements to Cannon Lane were identified and evaluated in the County's 2008 *Tolay Lake Interim Public Access and Resource Management Plan Initial Study*, which concluded construction noise impacts would be less than significant with the inclusion of measures intended to reduce equipment noise and provide advanced notification to adjacent residences, thereby reducing the potential for construction noise to be construed as annoying or intrusive. Accordingly, the County has incorporated the following best management practices into proposed improvements to Cannon Lane and the Park's entry road:

- The Contractor shall be required to operate all internal combustion engines with mufflers that meet the requirements of the Vehicle Code during construction activities. Regional Parks shall operate all internal combustion engines with mufflers that meet the requirements of the Vehicle Code during maintenance activities.
- Regional Parks and/or their contractor shall restrict construction activities to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, except for actions needed to be taken to prevent or resolve an emergency.
- Regional Parks shall notify adjacent neighbors regarding the proposed construction schedule in writing at least one week in advance of initiating construction activities. The notification shall include contact information for the Regional Parks. Construction notification shall also be posted at the project site.

With inclusion of the BMPs listed above, the implementation of the proposed Master Plan would not result in a substantial, temporary increase in ambient noise levels from short-term construction activities. This impact would be *less than significant*.

Impact NOI-4: The proposed Tolay Lake Master Plan would not expose people to or generate excessive groundborne vibration or noise levels. (LTS)

For structural damage, the California Department of Transportation uses a vibration limit of 0.2 inches/second, peak particle velocity (inches/second, PPV) for older residential buildings (see Table 4.8-3). If this groundborne vibration level threshold is exceeded, the result may be "architectural" damage to normal dwellings. Construction and development of the proposed Master Plan improvement projects would involve the intermittent use of construction equipment such as graders and bulldozers throughout Park that would generate ground-borne vibration and noise. Vibratory rollers / compactors, large bulldozers, haul trucks, and jack hammers are

estimated to produce ground-borne vibration levels, in terms of PPV, of approximately 0.11, 0.09, 0.08, and 0.04 inches per second, respectively, at a distance of 25 feet (FTA 2006). These values are below Caltrans' 0.2 inches per second PPV standard. The proposed improvement projects would occur no closer than approximately 200 feet to any off-site residential receptors (this would occur during the proposed the improvements to Cannon Lane). Groundborne vibration levels would be well below Caltrans criteria for structural damage. Furthermore, the U.S. Federal Transit Administration in their 2006 *Transit Noise and Vibration Assessment* document, has indicated that the threshold of human perception for groundborne vibration is 65 dBV. At a distance of 200 feet, groundborne noise generated by construction activities is estimated to be approximately 60 dBV, which would not be noticeable⁵. Therefore, the proposed Master Plan would not expose people to or generate excessive ground-borne vibration or noise levels. This impact would be *less than significant*.

Impact NOI-4: The project would not expose people residing or working in the project area to excessive noise levels from an airport or private airstrip. (LTS)

Tolay Lake Regional Park is situated near two public airports. The western boundary of the Park is approximately 1.7 miles west of Sonoma Valley Airport and the northern boundary of the Park is approximately 5.2 miles southeast of Petaluma Municipal Airport. The Park Core is farther away (approximately 3.6 miles west of the Sonoma Valley Airport and 6 miles southeast of the Petaluma Municipal Airport). Although aircraft can be heard while in the Park, the Park itself is not located within any noise contour associated with these airports, nor within any planning area identified in these airport's land use plans (Sonoma County 2016). The proposed Master Plan, therefore, would not expose visitors or Park staff to excessive airport- and/or airplane-related noise levels. Accordingly, this impact would be *less than significant*.

4.8.4.3 Significant Impacts

The implementation of the proposed Master Plan would result in one significant and unavoidable noise impact associated with a substantial, permanent increase in traffic noise.

Impact NOI-5: The proposed Master Plan would result in a substantial and permanent increase in ambient noise levels from increased traffic levels on Cannon Lane.

Although the proposed Master Plan would not result in traffic noise that exceeds County standards (see Impact NOI-1), the resulting increase in traffic that could occur under the proposed Master Plan would nonetheless increase ambient noise levels. The resulting increase in ambient noise levels is shown in Table 4.8-7.

⁵ Estimated Lv calculated as: $L_v(D) = L_v(25 \text{ feet}) - 30 \log(D/25)$ where $L_v(D)$ = velocity level in decibels, D = Distance (in feet from the source), and v = RMS velocity amplitude @ 25 feet.

Table 4.8-7: Potential Master Plan Increases in Traffic Noise

Condition	Existing Ldn	Master Plan Ldn	Net Change
Near-Term Weekday	32	37.4 ^(A)	5.4 dB
Near Term Weekend	31	40.7 ^(A)	9.7 dB
Long-Term Weekday	32	38.3 ^(A)	6.3dB
Long-Term Weekend	31	41.6 ^(A)	10.6 dB
Tolay Fall Festival	31	44.6 ^(A)	13.6 dB
(A) Indicates an increase of more than 5 dB.			

As shown in Table 4.8-7, the proposed Master Plan's increases in traffic on Cannon Lane would increase noise levels by approximately 5 to 6 dB on weekdays and approximately 10 to 11 dB on weekends. Accordingly, the proposed Master Plan would result in a substantial, permanent increase in ambient noise levels because it would increase weekday and weekend ambient noise levels by more than 5 dB.

There are no feasible mitigation measures available to reduce this significant increase in traffic noise. Vehicle travel noise is generated by a vehicle's engine and the vehicle's tire-roadway interface characteristics. Passenger vehicle noise originates near the ground and is primarily generated by the tire-roadway interaction; generally, noise increases and decreases as vehicle speeds increase and decrease. On Cannon Lane, the posted speed limit is already set to 25 mph; it is not considered feasible or reasonable to set a lower posted speed limit.

The roadway surface (e.g., asphalt, asphalt-concrete, gravel) also affects tire-roadway interaction, with paved roadway surfaces being quieter than gravel road surfaces due to less vibration between the tire and roadway. A paved road is one made of asphalt or concrete, including cobblestone surfaces bound together with mortar, or set in sand/concrete, etc. The proposed improvements to Cannon Lane would result in a paved, improved road surface of uniform width. Thus, the proposed improvements would improve traffic noise below that which would occur without the Master Plan, a factor that is not accounted for in the estimates provided in Table 4.8-7.

Since there are no feasible mitigation measures to reduce the proposed Master Plan's significant increase in traffic-related noise, this impact would remain ***significant and unavoidable***.

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4.9 PUBLIC SERVICES AND RECREATION

This section describes existing public services and recreation near the project site, evaluates potential impacts resulting from project implementation, and identifies mitigation measures to reduce impacts, as appropriate.

4.9.1 Environmental Setting

4.9.1.1 Fire Protection/EMS

The Lakeville Volunteer Fire Department (LVFD) and Schell-Vista Fire Protection District (SVFPD) are responsible for providing fire protection and emergency medical services for the Park. LVFD and SVFPD are two of 15 volunteer fire companies that comprise the Sonoma County Fire and Emergency Services Department. Services include emergency management, public safety, fire prevention, and hazardous materials response.

The Lakeville Volunteer Fire Department is located at 5090 Lakeville Highway, Petaluma, about 1.5 miles west of the Park, and the Tolay Lake Ranch portion of the Park is within their region of fire and emergency services response. The Schell-Vista Fire Protection District has two stations: Station #1 is located at 22950 Broadway, Sonoma, about 3.5 miles east of the park. Station #2 is located at 1225 E. Napa Street, Sonoma, about 6 miles northeast of the Park. The SVFPD fire and emergency services response district includes the Tolay Creek Ranch portion of the Park.¹

4.9.1.2 Police Services

The Sonoma County Sheriff's Office is responsible for law enforcement and emergency services in unincorporated areas of Sonoma County. The Park is located within Zone 5 and Zone 6 of the sheriff zone boundaries. Zone 5 (the South Zone) is staffed from the main office headquarters, located at 2796 Ventura Avenue, Santa Rosa, approximately 21 miles northwest of the Park. Zone 6 (the Valley Zone) is staffed from the Sonoma Valley substation located at 810 B Grove Street, Sonoma, about 3.5 miles southwest of the Park.

Law enforcement in the Park is primarily handled by Regional Park rangers, who are peace officers. The Park currently has two rangers who live on site. Regional Parks has a total ranger staff of 22. The resident Park Rangers contact the Sonoma County Sheriff's office when there is a need for additional law enforcement services. For example, Park Rangers can cite violators and make arrests, but Sheriff's Deputies provide transportation to jail. Park Rangers also contact the Sheriff's office for search-and-rescue or air ambulance support.²

4.9.1.3 Schools

The closest schools to the Park are the River Montessori Charter School, Harvest Christian School, and Casa Grande High School, which are located within five miles of the Park. River Montessori Charter School is a free public education facility. Harvest Christian School is a

¹Email from Brandon Brédo, Supervising Park Ranger, Sonoma County Regional Parks; 10/10/16.

²Email from Brandon Brédo, Supervising Park Ranger, Sonoma County Regional Parks; 10/6/16 and 10/18/16.

Kindergarten through 8 (K-8) private, non-profit school. Casa Grande High School is a 9-12 grade public school within the Petaluma City Elementary and Joint Union High School Districts.

4.9.1.4 Park and Recreation Facilities

Table 4.9.1 lists nature preserves, parks, and recreational facilities within five miles of the Park.

Table 4.9-1: Parks and Recreation Facilities within 5 miles of the Park

Park Name	Location	Amenities
Crinella Park <i>City of Petaluma</i>	4.8 miles northwest	Open space, baseball/softball fields, track, soccer field, tennis courts
Del Oro Park <i>City of Petaluma</i>	4.6 miles northwest	Dog run area, drinking fountain, multi-use fields, playground, tennis courts
Olompali State Historic Park <i>California State Parks</i>	4 miles southwest	Hiking trails, horseback riding, natural/cultural history exhibits, picnic areas
Petaluma Adobe State Historic Park <i>California State Parks</i>	4.8 miles northwest	Natural and cultural history exhibits, special events
Petaluma Marsh Wildlife Area <i>California Department of Fish and Wildlife</i>	2 miles west	Boat access, wildlife viewing, fishing, and hunting
Rocky Memorial Dog Park <i>City of Petaluma</i>	4.8 miles northwest	Off leash dogs allowed
San Pablo Bay National Wildlife Refuge <i>U.S. Fish and Wildlife Service</i>	3 miles south	Hunting, fishing, wildlife viewing, tours, environmental education, and photography
Shollenberger Park <i>City of Petaluma</i>	4.5 miles northwest	5 miles of walking/bicycle paths, fishing pier, restrooms, and water fountains
Sonoma Raceway <i>Private, Open to Public</i>	Adjacent to park - south	Racing events, classes, and go-karts
Ellis Creek Water Recycling Facility, Petaluma, <i>City of Petaluma</i>	4.5 miles northwest	Polishing wetlands with four miles of walking trails, bird watching, wildlife viewing, and interpretive programs.

Source: City of Petaluma, California State Parks, CDFW, USFWS, Adobe Creek Golf and Country Club, and Sonoma Raceway websites; MIG 2015.

4.9.2 Regulatory Setting

This section discusses the federal, state, and local laws, and regulations that pertain to public service and recreation.

4.9.2.1 Federal

Federal Emergency Management Agency

In March 2003 the Federal Emergency Management Agency (FEMA) became part of the U.S. Department of Homeland Security. FEMA's continuing mission within the new department is to lead the effort to prepare the nation for all hazards and effectively manage Federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration.

Occupational Safety and Health Administration Regulations

The Occupational Safety and Health Administration (OSHA), under the U.S. Department of Labor, sets and enforces workplace standards and provides training, outreach, education, and assistance.

4.9.2.2 State

California Office of Emergency Services (Cal OES, formerly CAL EMA)

Cal OES serves as the lead State agency for emergency management in California. Cal OES coordinates the State response to major emergencies in support of local government. It is also responsible for collecting, verifying, and evaluating information about the emergency, facilitating communication with local government, and providing affected jurisdictions with additional resources when necessary. Cal OES may task State agencies to perform work outside their day-to-day and statutory responsibilities. Local jurisdictions first use their own resources and, as they are exhausted, obtain more resources from neighboring cities and special districts, the county in which they are located, and other counties throughout the state through the Statewide Mutual Aid System.

California Fire Code (Title 24, Part 9, California Code of Regulations)

The California Fire Code incorporates the International Fire Code with necessary California amendments. This code prescribes regulations consistent with nationally recognized good practices for the safeguarding, to a reasonable degree, of life and property from the hazards of fire explosion. It also addresses dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; conditions hazardous to life or property in the use or occupancy of buildings or premises; and provisions to assist emergency response personnel.

California Building Standards Code

The 2013 California Building Code (CBC) became effective January 1, 2014, including Part 9 of Title 24, the California Fire Code.

California Code of Regulations, Title 19

Title 19, chapters' one through six of the California Code of Regulations (CCR), establishes regulations related to emergency response and preparedness under Cal OES.

California Health and Safety Code (Sections 13000 et seq.)

This code establishes State fire regulations, including regulations for building standards (also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

4.9.2.3 County

Sonoma County Fire and Emergency Services Department

The Sonoma County Fire and Emergency Services Department is comprised of 15 volunteer fire companies, including the Lakeville Volunteer Fire Department and the Schell-Vista Fire Protection District, and provides emergency and non-emergency services for Sonoma County residents and visitors.

Sonoma County Sheriff's Office

The Sonoma County Sheriff's Office is responsible for primary law enforcement services of the unincorporated area (over 1,600 square miles and population of nearly 500,000).

Sonoma County Regional Parks

The Sonoma County Regional Parks Department is responsible for overseeing operations of all parks under the County's jurisdiction. Park Rangers perform peace officer duties within park areas, patrol assigned park areas on foot or in vehicles, and administer emergency medical care.

4.9.3 Impacts and Mitigation Measures

This subsection analyzes impacts related to public services and recreation that could result from implementation of the project.

4.9.3.1 Criteria of Significance

The project would have a significant impact on public services and/or recreation if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other facilities;
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment

4.9.3.2 Less Than Significant Impacts

The project would result in the following less-than-significant impacts related to public services and recreation.

Impact PUB/REC-1: Project construction and implementation would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain

acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, and other facilities. (LTS/NI)

Fire Protection. The Tolay Lake Ranch portion of the Park is served by the Lakeville Volunteer Fire Department, about 1.5 miles west of the Park. The Tolay Creek Ranch portion of the Park is served by the Schell-Vista Fire Protection District, about 3.5 miles east of the Park.

Emergency vehicles would have access to the Park via Cannon Lane, Cardoza Lane, Stage Gulch Road, and Mangel Ranch Road, with interior site access provided by the West Ridge Trail, the Historic Lakeville Road Trail, and the Causeway Trail. Fire suppression water sources include the Fish Pond and the Vista Pond. Project Description Figures 3-13 and -14, show emergency access. Figure 3-13 shows proposed Park emergency vehicle access (EVA) routes. Figure 3-14 shows proposed emergency access for the Park Complex.

The Park Master Plan establishes standards for emergency vehicle access routes (T-S49, T-S50, and T-S51). The Master Plan also includes guidelines and standards to develop a fire management and prevention plan (RMP-G51), provide multiple access points to prevent and control wildfire (RMP-S63), and monitor and reduce fuel loads throughout the Park (RMP-S70).

The Master Plan proposes renovation of some existing structures at the Park Complex and construction of a visitor's center, bunk house, new ranger residence, picnic and camping facilities, infrastructure, and other improvements. This renovation and construction would be implemented in phases over the next 25 years. Building construction would be primarily centered in the Park Complex, and the amount of new construction would be minor compared to the size of the Park.

Camping use could potentially increase fire hazard. However, it would be allowed by reservation only, and no fires would be allowed at campsites. The only campfires allowed in the Park would be those associated with interpretive programs, hosted and managed by Parks staff. Finally, the Park would have additional ranger staff available to monitor visitor use and potential fires. Therefore, operation of the project would not have the potential to create new sources of fire hazards that would affect fire service ratios, response times, or other performance objectives to the extent that new or physically altered fire protection facilities would need to be constructed. Therefore, impacts related to fire protection would be ***less than significant***.

Police Protection. Law enforcement in the Park is primarily handled by Regional Park rangers, who are peace officers. The Park currently has two rangers who live on site. Regional Parks has a total ranger staff of 22. Park rangers are mobile and travel throughout the Park roads. The resident Park Rangers contact the Sonoma County Sheriff's office when there is a need for additional law enforcement services.

Operation of the proposed project and construction of new facilities could result in increased visitation, which could create a demand for more Park Ranger staff. It is anticipated that this increase would occur incrementally as visitation to the Park increases over time, with the construction of new facilities, including with the opening of the Southern Entrance to the Park.

Parks does not have a service ratio for their parks; therefore, Parks assess ranger and other staffing for each park in the County. Parks would assess the need for ranger staffing at the Park based on projected visitation and would continue to assess visitation data to ensure that enough rangers are present on the site. Any ongoing funding needed to hire additional rangers would be

provided from General Fund, Transient Occupancy Tax Funds, concessionaire fees, parking fees, camping fees and other sources. If Parks determined a need for additional staffing, a funding request would be developed and submitted to the Sonoma County Board of Supervisors along with a service based justification for consideration of funding.

Rangers would be mobile in the Park; therefore, the project would not require the construction of new facilities to accommodate any increase in rangers that would occur. Additionally, the Southern Entrance (once opened) would be staffed with a camp host, who would provide oversight and presence in that portion of the Park.

Additional ranger staffing is available during events such as the Fall Festival. Therefore, the Park would be adequately served for police services and the degree of increase would not affect service ratios, response times, or other performance objectives to the extent that new or physically altered law enforcement protection facilities would need to be constructed. Therefore, impacts related to police protection would be *less than significant*.

Schools. Because there is no residential component in the proposed Master Plan, the proposed project would not generate any direct new demand for school services. Therefore, construction and implementation of the project would have *no impact* on existing schools or the need for additional schools.

Parks. Nearby park and recreation facilities (within 5 miles) are provided by federal, state, municipal, and private entities, and include Adobe Creek Golf and Country Park, Crinella Park, Del Oro Park, Olompali State Historic Area, Petaluma Adobe State Historic Park, Petaluma Marsh Wildlife Area, Rocky Memorial Dog Park, San Pablo Bay National Wildlife Refuge, Shollenberger Park, Ellis Creek Recycling Facility, and Sonoma Raceway.

Implementation of the Master Plan would not increase residential population in the area, and would not result in the need for new or physically altered recreation facilities. In fact, implementation of the Master Plan would result in a net recreational benefit to the County by increasing the level and range of recreational resources available. Therefore, construction and implementation of the project would have *no impact* on existing recreation and services.

Other Public Facilities. The Park would not directly increase residential population in the area, and any incremental increase in demand for other public facilities would not be sufficient to directly result in the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts. Therefore, impacts related to other public facilities would be *less than significant*.

Impact PUB/REC-2: Project construction and implementation would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. (LTS)

The Park is not anticipated to result in an increase in use of nearby parks and recreation facilities to the extent that substantial physical deterioration of existing facilities would occur. The Park would provide new recreational facilities and would help relieve demand on existing County park and recreation facilities. Therefore, impacts on existing parks and recreational facilities would be *less than significant*.

4.5.1.1 Significant Impacts

The project would result in the following significant impact related to public services and recreation.

Impact PUB/REC-3: The project includes recreational facilities that would require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment (SU)

Construction and operation of new facilities proposed in the Master Plan would have physical effects on the environment related to air quality, biological resources, cultural resources, greenhouse gases, hydrology and water quality, noise and traffic. These impacts are discussed in other sections of this EIR (i.e., air quality, biological resources, cultural resources, greenhouse gases, hydrology and water quality, noise and traffic). Master Plan guidelines and standards, and existing Sonoma County development requirements, would reduce the physical effects of construction and operation on the environment to some of these environmental resources and no additional significant environmental impact would be anticipated with construction or operation beyond the effects discussed already in those EIR sections. However, impacts to and traffic and noise would remain significant, with no mitigation measures available to reduce their impacts. Therefore, impacts from the project for these environmental topics would be ***significant and unavoidable***.

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4.10 TRANSPORTATION

This section describes the existing transportation environment in the project vicinity, including vehicle, pedestrian and bicycle facilities. This transportation impact assessment has been conducted in a manner consistent with the requirements and methodologies of County of Sonoma, the State of California, and applicable provisions of CEQA. The traffic report describes the operational characteristics of the existing study area circulation system, determines the circulation system needs based on future traffic demand, and summarizes the potential circulation impacts associated with project development.

4.10.1 Environmental Setting

The existing vehicular circulation, bicycle and pedestrian facilities as well as transit service in the project vicinity are described below.

4.10.1.1 Vehicular Circulation

Cannon Lane is a rural, dead-end road providing access to the project site. It is approximately 1.2 miles in length and varies in width from approximately 17 to 30 feet with some centerline striping and no edgelines. The speed limit on this road is not posted and is dictated by the topography.

The southern Park Entry Road, located across from Ram's Gate Winery, is the proposed access off of SR 121 for Phase B of the project, expected to be completed by full buildout of the project in 2040.

SR 37 connects Novato in Marin County with Vallejo in Solano County. West of SR 121 the highway has two lanes in each direction with wide shoulders in the vicinity of Lakeville Highway and SR 121. There is a posted speed limit of 50 mph.

SR 121 has one lane in each direction with narrow shoulders and a posted speed limit of 55 mph. This road provides access between the City of Sonoma and SR 37.

Lakeville Highway runs from SR 37 to the City of Petaluma. Between Stage Gulch Road and the US 101, the roadway operates as SR 116. South of Stage Gulch Road, Lakeville Highway is maintained by the County.

Study Intersections

The intersections listed in Table 4.10-1 were selected for analysis as the locations that provide access to the project site and are most likely to experience impacts due to the project. The intersections and study area context map are provided in Figure 4.10-1.

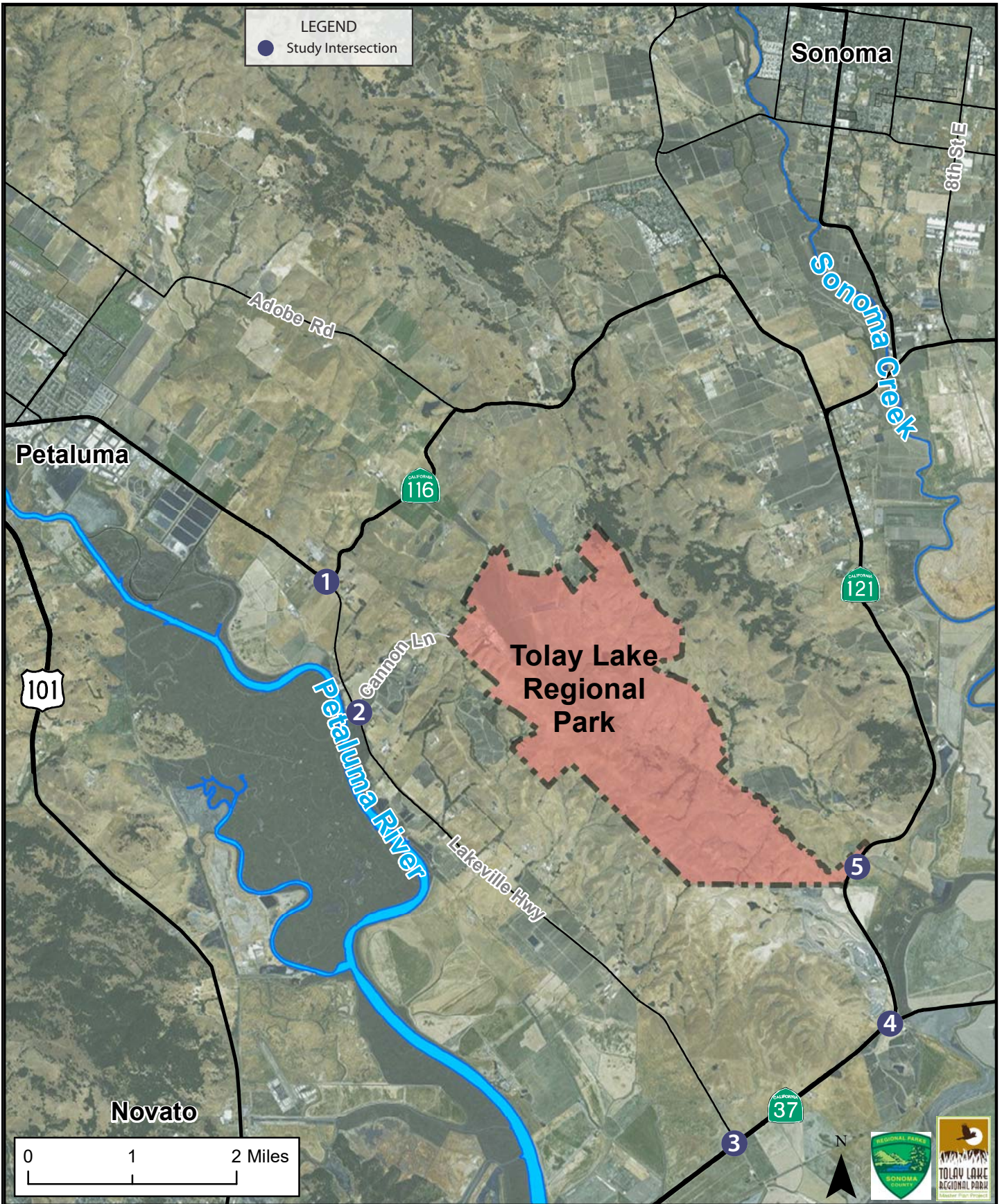


Table 4.10-1: Study Intersections

Int ID	Intersection
1	Lakeville Highway (SR 116)/Stage Gulch Road
2	Lakeville Highway/Cannon Lane
3	SR 37/Lakeville Highway-Reclamation Road
4	SR 37/Arnold Drive (SR 121)
5	Arnold Drive (SR 121)/Ram's Gate-Southern Park Entrance

Lakeville Highway (SR 116)/Stage Gulch Road is an unsignalized intersection with stop control on the SR 116-Stage Gulch Road westbound approach.

Lakeville Highway/Cannon Lane is an unsignalized intersection with stop control on the Cannon Lane westbound approach. Cannon Lane would provide access to the project under both short and long term conditions.

SR 37/Lakeville Highway-Reclamation Road is a four-way signalized intersection.

SR 37/Arnold Drive (SR 121) is a four-way signalized intersection.

Arnold Drive (SR 121)/Ram's Gate-Southern Park Entrance is an unsignalized intersection with stop control on the existing westbound Ram's Gate (Mangel Ranch Road) approach. The future phase of the project would include the Southern Park Entrance as the west leg of the intersection.

4.10.1.2 Methodology

Intersections

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersections with side-street stop controls, or those which are unsignalized and have one or two approaches stop controlled, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections that are currently controlled by a traffic signal, or may be in the future, were evaluated using the signalized methodology from the HCM. This methodology is based on

factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing.

Tables 4.10-2 summarizes the relationship between delay and LOS for two-way stop-controlled and signalized intersections.

Table 4.10-2: Level of Service and Average Vehicular Delay Definitions for Signalized Intersections

LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Source: *Highway Capacity Manual Special Report 209*, Transportation Research Board (HCM) 2010.

4.10.1.3 Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday p.m. and weekend midday peak periods. This condition does not include project-generated traffic volumes. Volume data was collected Tuesday, August 23, 2016 and Saturday, August 6, 2016 to capture the high summertime traffic. The existing turning movement traffic volumes are included with the LOS calculations in the Appendix.

Intersection Levels of Service

Under existing conditions, the intersections of Lakeville Highway/Stage Gulch Road, Lakeville Highway/Cannon Lane, and SR 121/Ram's Gate are operating acceptably at LOS A overall. SR 37/Lakeville Highway and SR 37/SR 121 are operating unacceptably at LOS E and F respectively during both peak hours. A summary of the intersection level of service calculations is shown below in Table 4.10-3. An analysis of peak hour volumes at the three unsignalized study intersections show that the intersection of Lakeville Highway/Stage Gulch Road currently

meets the peak hour volume warrant for a traffic signal based on volumes during both weekday p.m. peak hour and the weekend midday peak hour.

Table 4.10-3: Existing Intersections Operating Conditions

Int	Intersection Approach	Traffic Control	Weekday PM Peak		Weekend Midday Peak	
			Delay ¹	LOS	Delay ¹	LOS
1	Lakeville Highway (SR 116)/Stage Gulch Road	TWSC	5.1	A	3.3	A
	Westbound Stage Gulch Road Approach		78.8	F	64.3	F
2	Lakeville Highway/Cannon Lane	TWSC	0.3	A	0.1	A
	Westbound Cannon Lane Approach		29.9	D	30.8	D
3	SR 37/Lakeville Highway-Reclamation Road	Signal	63.5	E	74.4	E
4	SR 37/Arnold Drive (SR 121)	Signal	**	F	**	F
5	Arnold Drive (SR 121)/Ram's Gate	TWSC	0.0	A	0.3	A
	Westbound Ram's Gate Approach		18.9	C	21.4	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; TWSC = Two-way Stop control (unsignalized), Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

4.10.1.4 Future Conditions

This project analysis included two future scenarios; year 2022 and year 2040. Future year 2022 is expected to be the last year before the second entrance to the project site opens. Future year 2040 is the expected build-out year of the project. Roadway segment volumes for the horizon year of 2040 were obtained from the County's gravity demand model and translated to turning movement volumes at each of the study intersections using a combination of the "Furness" method and factoring, depending on how the model was configured at each intersection. The Furness method is an iterative process that employs existing turn movement data, existing link volumes and future link volumes to project likely turning future movement volumes at intersections.

Once Future 2040 volumes were determined, "straight line" factoring was used between 2016 and 2040 volumes to arrive at Future 2022 volumes.

Future 2022 Intersection Levels of Service

Under Future (2022) conditions, the intersections of Lakeville Highway/Stage Gulch Road, Lakeville Highway/Cannon Lane, and SR 121/Ram's Gate are expected to operate acceptably at LOS A overall. SR 37/Lakeville Highway and SR 37/SR 121 are expected to continue operating unacceptably at LOS E and F under both peak hours.

A summary of the intersection level of service calculations is shown below in Table 4.10-4. The future Year 2022 vehicle turning movement traffic volumes are included with the LOS calculations in the Appendix.

Table 4.10-4: Future (2022) Intersections Operating Conditions

Int	Intersection <i>Approach</i>	Traffic Control	Weekday PM Peak		Weekend Midday Peak	
			Delay ¹	LOS	Delay ¹	LOS
1	Lakeville Highway (SR 116)/Stage Gulch Road	TWSC	5.7	A	4.0	A
	<i>Westbound Stage Gulch Road Approach</i>		<i>99.5</i>	<i>F</i>	<i>82.3</i>	<i>F</i>
2	Lakeville Highway/Cannon Lane	TWSC	0.3	A	0.2	A
	<i>Westbound Cannon Lane Approach</i>		<i>27.8</i>	<i>D</i>	<i>33.2</i>	<i>D</i>
3	SR 37/Lakeville Highway-Reclamation Road	Signal	72.7	E	89.2	F
4	SR 37/Arnold Drive (SR 121)	Signal	**	F	**	F
5	Arnold Drive (SR 121)/Ram's Gate	TWSC	0.0	A	0.3	A
	<i>Westbound Ram's Gate Approach</i>		<i>19.8</i>	<i>C</i>	<i>22.2</i>	<i>C</i>

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; TWSC = Two-way Stop control (unsignalized), Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

A review of peak hour volumes at each of the unsignalized study intersections indicates that the peak hour volume warrant for a traffic signal would be met for the intersection of Lakeville Highway (SR116)/Stage Gulch Road based on both weekday p.m. and the weekend midday peak hour volumes.

Future 2040 Intersection Levels of Service

Under Future (2040) conditions, the intersections of Lakeville Highway/Cannon Lane, and SR 121/Ram's Gate South are expected to operate acceptably at LOS A overall. Lakeville Highway/Stage Gulch Road would operate unacceptably at LOS F during the weekday p.m. peak hour and acceptably at LOS D during the weekend midday peak hour. SR 37/Lakeville Highway and SR 37/SR 121 are expected to operate unacceptably at LOS F during both peak hours. A summary of the intersection level of service calculations is shown in Table 4.10-5. The future Year 2040 vehicle turning movement traffic volumes are indicated in the LOS calculations in the Appendix.

Table 4.10-5: Future (2040) Intersections Operating Conditions

Int	Intersection <i>Approach</i>	Traffic Control	Weekday PM Peak		Weekend Midday Peak	
			Delay ¹	LOS	Delay ¹	LOS
1	Lakeville Highway (SR 116)/Stage Gulch Road	TWSC	**	F	32.5	D
	<i>Westbound Stage Gulch Road Approach</i>		**	<i>F</i>	**	<i>F</i>
2	Lakeville Highway/Cannon Lane	TWSC	0.3	A	0.3	A
	<i>Westbound Cannon Lane Approach</i>		42.4	<i>E</i>	70.4	<i>F</i>
3	SR 37/Lakeville Highway-Reclamation Road	Signal	**	F	**	F
4	SR 37/Arnold Drive (SR 121)	Signal	**	F	**	F
5	Arnold Drive (SR 121)/Ram's Gate Entrance	TWSC	0.1	A	0.4	A
	<i>Westbound Ram's Gate Approach</i>		25.5	<i>D</i>	32.8	<i>D</i>

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; TWSC = Two-way Stop control (unsignalized), Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

The peak hour volume warrants would continue to be met for the intersection of Lakeville Highway/Stage Gulch Road based on both weekday p.m. and the weekend midday peak hour volumes.

4.10.2 Regulatory Setting

State and local laws, regulations, and orders that pertain to transportation and traffic resources associated with the project are presented below.

State

California Environmental Quality Act (Section 21000 et seq.) and CEQA Guidelines (Section 15000 et seq.)

CEQA requires state and local agencies to identify the significant environmental impacts of their actions, including potential significant impacts on transportation and traffic systems.

California Government Code Section 65080

The State of California requires each transportation planning agency to prepare and adopt a regional transportation plan (RTP) directed at achieving a coordinated and balanced regional transportation system.

California Streets and Highways Code (Section 1 et seq.)

The code provides the standards for administering the statewide streets and highways system. Designated State Route and Interstate Highway facilities are under the jurisdiction of the California Department of Transportation (Caltrans), except where facility management has been delegated to the county transportation authority.

Local

Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) serves as the transportation planning, coordinating and financing agency for the nine-county San Francisco Bay Area. MTC, in conjunction with the Association of Bay Area Governments (ABAG), the San Francisco Bay Area's regional planning agency, published Plan Bay Area in July 2013 (MTC and ABAG 2013). Plan Bay Area identifies a list of planned transportation projects within Sonoma County.

Sonoma County

The Sonoma County Transportation Authority (SCTA) is responsible for administering Measure M funds generated by the local sales tax to transportation projects in Sonoma County. The SCTA partners with other agencies to improve transportation in County, including US 101, SR 12, local streets, transit, and bicycle and pedestrian facilities.

Based on the most recent criteria published by the County of Sonoma in May of 2016, the project would have a significant traffic impact if it results in any of the following conditions.

1. On-site roads and frontage improvements: Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or driveway design, or potentially result in safety hazards, as determined by the County in consultation with a registered traffic engineer.
2. Parking: Proposed on-site parking supply does not meet County standards and does not adequately accommodate parking demand.
3. Emergency Access: The project site would have inadequate emergency access.
4. Alternative Transportation: The project provides inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project creates potential conflicts with the County's Complete Streets Policy, or other adopted policies, plans, or programs supporting alternative transportation.
5. Road Safety: Road design features that do not meet standards (e.g., sharp curves or skewed intersections) or any perceived incompatible uses (e.g., farm equipment, major bicycle route, rail or pedestrian crossings).
6. Vehicle Queues: Project causes or exacerbates 95th percentile turning movement queues exceeding available turn pocket capacity.
7. Signal Warrants: The addition of the project's vehicle or pedestrian traffic causes an intersection to meet or exceed current Caltrans and/or CA-MUTCD signal warrant criteria.
8. Turn Lanes: The addition of project traffic causes an intersection to meet or exceed criteria for provision of a right or left turn lane on an intersection approach.
9. Sight Lines: The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate

sight lines based upon Caltrans criteria for state highway intersections and AASHTO criteria for County roadway intersections.

10. County Intersection Operations: The County Level of Service standard for County intersection operations is to maintain a Level of Service D or better pursuant to General Plan Policy CT-4.2. The project would have a significant traffic impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate below the standard (LOS E or F). If the intersection currently operates or is projected to operate below the County standard (at LOS E or F), the project's impact is significant and cumulatively considerable if it causes the average delay to increase by five seconds or more. The delay will be determined by comparing intersection operation with and without the project's traffic for both the existing baseline and projected future conditions. These criteria apply to all controlled intersections except for driveways and minor side streets that have less than 30 vehicle trips per hour per approach or per exclusive left turn movement.
11. County Roadway Operations: The County Level of Service Standard for County roadway operations is to maintain a Level of Service C pursuant to General Plan Policy CT-4.1; or, for specific roadway segments, the level of service standard adopted, in General Plan Figure CT-3. The project would have a significant traffic impact if the project's traffic would cause a road currently operating at an acceptable level of service (LOS C or better) to operate at an unacceptable level (LOS D or worse).

Caltrans

Caltrans indicates that they endeavor to maintain operation at the transition from LOS C to LOS D. Based on previous discussions with Caltrans staff, it is understood that the standard is to be applied to the overall average intersection delay, *not* that associated with any single movement or approach. Under this approach, if one movement experiences very high delay and also has moderate to high traffic volumes, the overall delay and level of service should reflect the critical nature of the condition. However, if one movement is expected to experience high delay, but has very low traffic volumes, the overall intersection operation will likely still meet Caltrans standards.

4.10.2.1 Criteria of Significance

The project would have a significant effect on transportation if it would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Project Description

The proposed Tolay Lake Regional Park project would create public access to approximately 3,402 acres of trails and open space located in unincorporated Sonoma County, with initial access provided via Cannon Lane off of Lakeville Highway; an access road connecting to SR 121 across from Ram's Gate Winery entrance would be provided as part of a future phase.

Although the project area covers more than 3,402 acres, the majority of this land will remain open space with activity limited to trails, Park Complex, and limited backcountry camping facilities. Approximately 31.4 miles of trails are planned. The project is expected to occur in phases and the project was evaluated under two future conditions:

Traffic Phase A reflects 2022 background traffic volumes and 75 percent of the park being open to the public (2,552 acres), with one single access point at Cannon Lane/Lakeville Highway.¹

Traffic Phase B is indicative of a buildout year of 2040 and includes all 3,402 acres with 31.4 miles of trail and two access points: one via Cannon Lane at Lakeville Highway and one on SR 121, connecting across from the existing Ram's Gate Winery southern access.

Vehicle Trip Generation

The anticipated trip generation for a proposed project is generally estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012. This publication includes information for a County Park (ITE LU #412) and a State Park (ITE LU #413) which would be the closest land use categories to the proposed Tolay Lake Regional Park project; however, these rates would generally overestimate the expected volume of traffic since they are based on surveys of parks with more active facilities such as sporting events with soccer fields, baseball fields, and a lake with launch ramps for boating.

Due to limitations of this data, surveys were previously collected at a trailhead parking lot for Shell Beach off of SR 1, south of SR 116. This lot serves as access to trailheads on both sides of SR 1 covering an estimated 800 acres. The data collected indicated that the Shell Beach parking lot generates traffic at a rate of 0.02 trips/acre during a weekday p.m. peak hour and 0.04

¹ For "Traffic Phase A", 75 percent of the park acreage, or 2,552 acres, was used to determine vehicle trip generation rates. Under these conditions, there would only be one trailhead off of Cannon Lane, so the entire park acreage would not be as accessible as it would be under buildout conditions with two access points.

trips/acre during a Saturday midday peak hour. This data has been used to determine vehicle trip generation rates for similar park trail facilities throughout Sonoma County.

In determining the appropriate trip generation rates for the project, the following information was considered:

Weekday PM Peak Hour

- The Shell Beach trailhead parking lot generates traffic at a rate of 0.02 trips per acre
- The rate for a County Park (ITE Land Use #412) is 0.09 trips per acre
- There are no weekday p.m. peak hour rates by acre for State Parks (ITE Land Use #413)
- The project more closely matches the State Park land use, as it specifically includes hiking trails along with campsites, picnic facilities, and general open space
- The Shell Beach surveys did not include daily trips.
- Based on ITE rates for similar park uses, the weekday peak hour percentage (peak hour ÷ daily) would be approximately 20 percent.

It is recommended that the Shell Beach rate of 0.02 peak hour trips per acre be used for the project due to the lack of rates for a State Park. With the assumed peak hour percentage of 20 percent, the daily rate would be 0.10 trips per acre ($0.02 \div 0.20 = 0.10$).

Weekend Midday Peak Hour

- The Shell Beach trailhead parking lot generates traffic at a rate of 0.04 trips per acre
- The rate for a County Park (ITE Land Use #412) is 2.21 trips per acre
- The rate for a State Park (ITE Land Use #413) is 0.02 trips per acre
- The project more closely matches the State Park land use since many County parks generally include more active facilities, with ballfields, tennis courts, swimming, and boating facilities.
- The Shell Beach surveys did not include daily trips.
- Based on ITE rates for similar park uses, the weekend peak hour percentage (peak hour ÷ daily) would be approximately 15 percent.

Since the County Park rate is unreasonably high for the types of activities expected at the project site, it is recommended that the Shell Beach rate of 0.04 weekend peak hour trips per acre be used for the project. With the assumed peak hour percentage of 15 percent, the daily rate would be 0.27 trips per acre ($0.04 \div 0.15 = 0.27$).

Trip Generation Summary

Based on these assumptions, and under typical operations excluding events, as discussed below, during Traffic Phase A the project would be expected to generate an average of 255 daily vehicle trips on a weekday (including 51 weekday p.m. peak hour trips), and 689 daily vehicle trips on a weekend (including 102 Saturday midday peak hour trips). The full buildout of the project is expected to generate an average of 340 daily vehicle trips on a weekday during typical operations (including 68 weekday p.m. peak hour trips), and 919 daily vehicle trips on a weekend (including 136 Saturday midday peak hour trips). It is noted that each vehicle trip is a

one-way directional trip. Therefore, one round trip is accounted for as two trips. These trips are summarized in Table 4.10-6.

Table 4.10-6: Trip Generation

Units	Weekday Daily		Weekday PM Peak				Weekend Daily		Weekend Midday Peak Hour			
	Rate	Trips	Rate	Trips	In	Out	Rate	Trips	Rate	Trips	In	Out
Traffic Phase A 2,552 acres	0.10	255	0.02	51	31	20	0.27	689	0.04	102	51	51
Traffic Phase B 3,402 acres	0.10	340	0.02	68	42	26	0.27	919	0.04	136	68	68

Event Trip Generation

The Tolay Fall Festival would be the largest special event at the Tolay Lake Regional Park. It currently runs for the month of October, in anticipation of Halloween on October 31st. Students on school trips are the primary visitors on the weekdays and the event opens to the public on weekends. The Fall Festival includes educational and family-oriented aspects as well as entertainment that includes games and events, food, and music.

Tolay Fall Festival Weekday Conditions

During the week, there are an expected 10 school buses with students, teachers, and chaperones per day and up to 200 non-school related visitors. The festival operating hours during the weekdays will be restricted to end at 3:30 p.m. so that attendees exit prior to the start of the weekday p.m. peak hour. This would result in no Festival Season project trips during the weekday p.m. peak hour, thus only the Weekend Peak Hour was analyzed.

Tolay Fall Festival Weekend Peak Hour

Each weekend day is expected to have approximately 3,500 visitors. They are assumed to arrive and depart with an average occupancy of 2.5 visitors per vehicle, resulting in 2,800 daily vehicle trips (3,500 visitors

$\div 2.5 \text{ visitors/vehicle} \times 2 \text{ trips/vehicle (in and out)} = 2,800 \text{ vehicle trips}$). Assuming 10 percent of these trips will occur during the weekend midday peak hour, 280 vehicle trips would be expected during the Festival Season weekend midday peak hour. In summary, the Tolay Fall Festival is expected to generate 2,800 weekend vehicle daily trips including 280 trips during the weekend midday peak hour (140 inbound trips and 140 outbound trips).

4.10.5 Trip Distribution

The pattern used to allocate new project trips to the street network was based on regional traffic characteristics, existing traffic volumes, and the likely routes chosen by motorists when traveling to and from surrounding residential areas and major activity areas in the County.

For Year 2022 Phase A, there would only be one entrance for the project site, located on Lakeville Highway at Cannon Lane. For Year 2040 Phase B, there would be a second entrance, located on SR 121 located opposite Ram's Gate Winery.

Table 4.12-7 indicates the project distribution for the two project phases with the different access conditions reflected. Generally, the majority of the vehicle trips are expected to originate from the greater Sonoma County region and arrive from the north via Lakeville Road or SR 121, while a smaller percentage trips would travel via SR 37.

The resulting Project traffic volumes are listed in Table 4.10-7 and shown in Figures 4.10-2 and 4.10-3.

Table 4.10-7: Trip Distribution

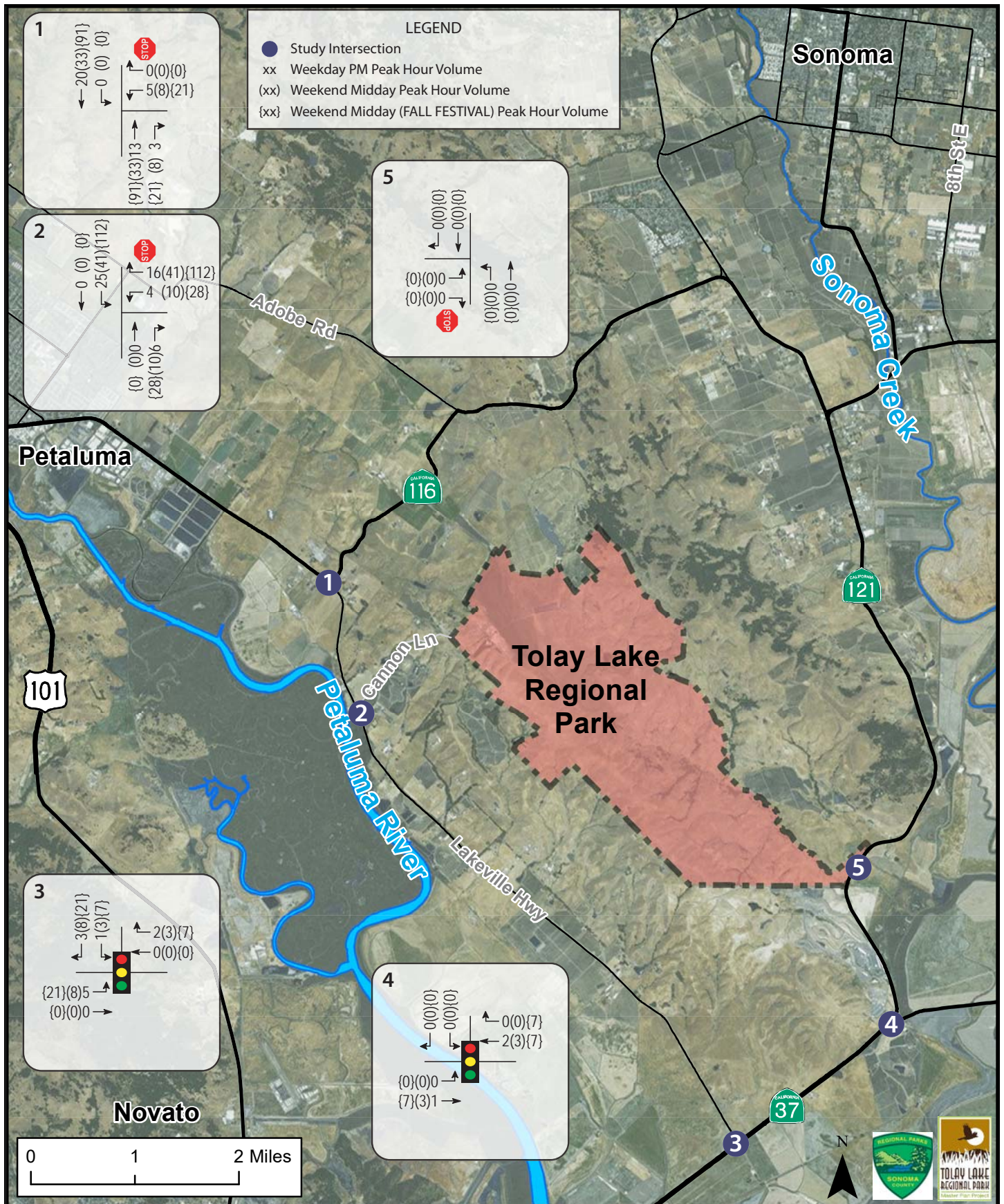
Route	2022 Phase A			2040 Phase B		
	Percent	Weekday PM	Weekend Midday	Percent	Weekday PM	Weekend Midday
Lakeville Road (north to/from Petaluma)	70%	36	71	65%	48	95
SR 37 (west to/from Marin County)	15%	8	15	15%	10	20
SR 37 (east to/from Solano County)	5%	2	6	5%	3	7
SR 121 (to/from Sonoma)	10%	5	10	15%	7	14
TOTAL	100%	51	102	100%	68	136

Future 2022 plus Project Phase A Conditions

Under Future 2022 plus Project Phase A volumes, the intersections of Lakeville Highway/Stage Gulch Road, Lakeville Highway/Cannon Lane, and SR 121/Ram's Gate are expected to operate acceptably overall at the same levels of service as without the project. SR 37/Lakeville Highway and SR 37/SR 121 are expected to continue to operate unacceptably at LOS E or F under volumes for both peak hours. Under Future 2022 plus Fall Festival conditions, the intersection of Lakeville Highway/Stage Gulch Road is expected to drop to LOS B overall, which is considered acceptable.

Peak hour volumes at the three unsignalized study intersections show that the intersection of Lakeville Highway/Stage Gulch Road would continue to meet the peak hour volume warrant for a traffic signal based on volumes for both the weekday p.m. peak hour and the weekend midday peak hour.

A summary of the intersection level of service calculations is shown below in Table 4.10-8. The LOS calculations are included in the Appendix.



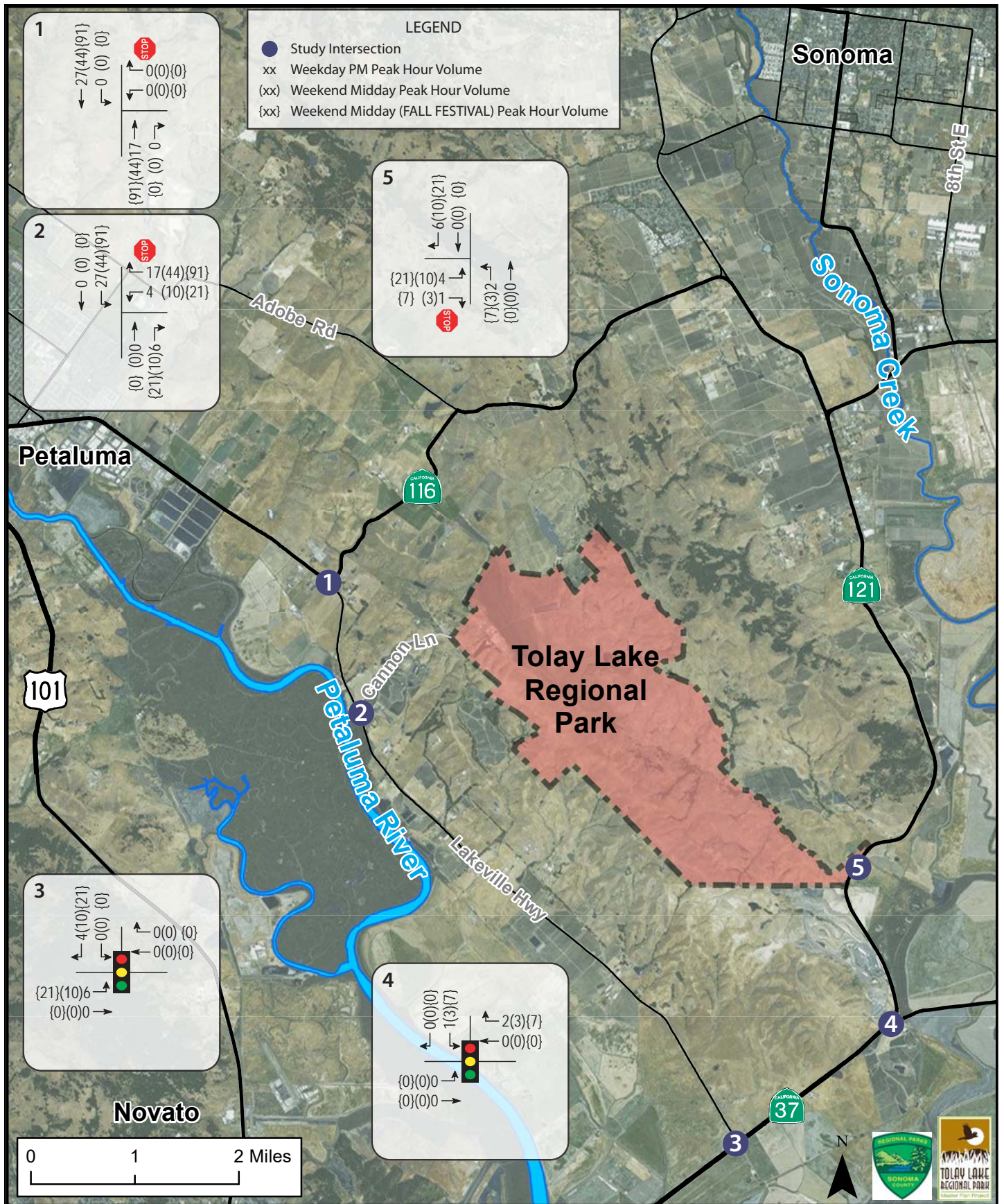


Table 4.10-8: Future 2022 and Future 2022 plus Phase A Intersections Operating Conditions

Int	Intersection Approach	Traffic Control	Future 2022				Future 2022 plus Phase A				Weekend Midday Peak plus Fall Festival	
			Weekday PM Peak		Weekend Midday Peak		Weekday PM Peak		Weekend Midday Peak		Delay	LOS
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
1	Lakeville Hwy (SR 116)/Stage Gulch Rd <i>WB Stage Gulch Rd Approach</i>	TWSC	5.7	A	4.0	A	7.7	A	6.6	A	14.1	B
			<i>99.5</i>	<i>F</i>	<i>82.3</i>	<i>F</i>	**	<i>F</i>	**	<i>F</i>	**	<i>F</i>
2	Lakeville Hwy/ Cannon Ln <i>WB Cannon Ln Approach</i>	TWSC	0.3	A	0.2	A	0.8	A	1.6	A	8.6	A
			<i>27.8</i>	<i>D</i>	<i>33.2</i>	<i>D</i>	<i>33.9</i>	<i>D</i>	<i>49.7</i>	<i>E</i>	**	<i>F</i>
3	SR 37/Lakeville Hwy-Reclamation Rd	Signal	72.7	E	89.2	F	73.0	E	90.5	F	92.6	F
4	SR 37/Arnold Dr (SR 121)	Signal		F	**	F	**	F	**	F	**	F
5	Arnold Dr (SR 121)/ Ram's Gate <i>WB Ram's Gate Approach</i>	TWSC	0.0	A	0.3	A	0.0	A	0.3	A	0.3	A
			<i>19.8</i>	<i>C</i>	<i>22.2</i>	<i>C</i>	<i>19.8</i>	<i>C</i>	<i>22.2</i>	<i>C</i>	<i>22.2</i>	<i>C</i>

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; WB = Westbound; TWSC = Two-way Stop control (unsignalized), Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

Future 2040 plus Project Phase B Conditions

Under Future 2040 plus Project Phase B conditions, the intersections of Lakeville Highway/Cannon Lane and SR 121/Ram's Gate-South Park Entrance are expected to operate acceptably overall at the same levels of service as without the project. At SR 121/Ram's Gate-South Park Entrance, Phase B of the project would result in LOS F operation on the eastbound Park exit onto SR 121, however, since the approach volume totals less than 30 vehicles, it is less-than-significant by Sonoma County standards. Lakeville Highway/Stage Gulch Road would operate unacceptably at LOS F during the weekday p.m. peak hour and at LOS E during the weekend midday peak hour. SR 37/Lakeville Highway and SR 37/SR 121 are expected to continue to operate unacceptably at LOS F during both peak hours. The project would only increase delay at these locations by less than five seconds which is less-than-significant by Sonoma County standards. Under Future 2040 plus Phase B conditions, the intersection of Lakeville Highway/Stage Gulch Road is expected to operate unacceptably at LOS E and F overall, and with Fall Festival volumes, the intersection is expected to drop to LOS F.

Of the three unsignalized study intersections, Lakeville Highway/Stage Gulch Road would have volumes sufficient to meet the peak hour volume warrant for a traffic signal based on both weekday p.m. peak hour and the weekend midday peak hour volumes. The warrant would also

be met for the intersection of Lakeville Highway/Cannon Lane only for the weekend midday peak hour during the Fall Festival.

A summary of the intersection level of service calculations is shown below in Table 4.10-9.

Table 4.10-9: Future 2040 and Future 2040 plus Phase B Intersections Operating Conditions

Int	Intersection Approach	Traffic Control	Future 2040				Future 2040 plus Phase B				Weekend Midday Peak plus Fall Festival	
			Weekday PM Peak		Weekend Midday Peak		Weekday PM Peak		Weekend Midday Peak		Delay	LOS
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
1	Lakeville Hwy (SR 116)/Stage Gulch Rd WB Stage Gulch Road Approach	TWSC	**	F	32.5	D	**	F	39.5	E	50.4	F
			**	<i>F</i>	**	<i>F</i>	**	<i>F</i>	**	<i>F</i>	**	<i>F</i>
2	Lakeville Hwy/Cannon Ln WB Cannon Lane Approach	TWSC	0.3	A	0.3	A	1.1	A	4.3	A	18.8	B
			42.4	<i>E</i>	70.4	<i>F</i>	70.5	<i>F</i>	**	<i>F</i>	**	<i>F</i>
3	SR 37/Lakeville Hwy-Reclamation Rd	Signal	**	F	**	F	**	F	**	F	**	F
4	SR 37/Arnold Dr (SR 121)	Signal	**	F	**	F	**	F	**	F	**	F
5	Arnold Dr (SR 121)/Ram's Gate-South Park Entrance WB Ram's Gate Approach EB Park Exit	TWSC	0.1	A	0.4	A	0.2	A	1.3	A	3.6	A
			25.5	<i>D</i>	32.8	<i>D</i>	25.7	<i>D</i>	33.0	<i>D</i>	33.4	<i>D</i>
							56.4	<i>F</i>	**	<i>F</i>	**	<i>F</i>

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; WB = Westbound; TWSC = Two-way Stop control (unsignalized), Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

Bicycle and Pedestrian Facilities

Bicycle Facilities

The *Highway Design Manual*, California Department of Transportation (Caltrans), 2012, classifies bikeways into three categories:

- Class I Multi-Use Path – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- Class II Bike Lane – a striped and signed lane for one-way bike travel on a street or highway.
- Class III Bike Route – signing only for shared use with motor vehicles within the same travel lane on a street or highway. Guidance for Class IV Bikeways is provided in Design

Information Bulletin Number 89: Class IV Bikeway Guidance (Separated Bikeways/Cycle Tracks), Caltrans, 2015.

- Class IV Bikeway – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

In the project area, there are no marked bike facilities. Currently, bicyclists could access the project site via the paved shoulders along Lakeville Highway; however this road does not currently have any dedicated bike facilities.

The County has planned bicycle facility improvements on Lakeville Highway, SR 37, and SR 121, as shown in the *Countywide Bicycle and Pedestrian Plan, 2014 Update* and presented in Table 4.10-10

Table 4.10-10: Proposed Bicycle Facility Summary

Facility	Class	Length (miles)	Begin Point	End Point
Lakeville Highway	II	9.84	Frates Road	SR 37
SR 37	II	6.32	Marin County	Solano County
SR 121	II	6.58	SR 116	SR 37

Pedestrian Facilities

In the vicinity of the proposed project, pedestrian facilities are limited to paved shoulders along Lakeville Highway, SR 37, and SR 121. High speed traffic along these sections of road present barriers to pedestrians.

Transit

The project does not propose any change to existing or planned transportation facilities within the vicinity of the project, including transit facilities. The project is not expected to interfere with existing or planned transit facilities, and this issue is therefore not discussed further.

Rail

The project does not propose any change to existing or planned transportation facilities within the vicinity of the project, including rail facilities. The project is not expected to interfere with existing or planned rail facilities, and this issue is therefore not discussed further.

4.10.3 Impacts and Mitigation Measures

4.10.3.1 Future 2022 plus Project Phase A Conditions

Impact TRAF-1: Lakeville Highway (SR 116)/Stage Gulch Road: Phase A of the project would expect to increase average side street delay by more than five seconds, which would be considered significant and cumulatively considerable. However, the intersection currently

warrants the installation of a traffic signal or roundabout based on traffic signal warrants and existing traffic volumes. Since there is no adopted plan or funding mechanism for these improvements, the impact of the project would be considered ***Significant and Unavoidable***.

Impact TRAF-2: Lakeville Highway/Cannon Lane: Phase A of the project would be expected to increase average side street delay by more than five seconds resulting in a LOS E condition which would be considered significant and cumulatively considerable.

Mitigation Measure TRAF-2: The project should provide widening of Cannon Lane near throat of the intersection with Lakeville Highway. Specifically, at least 24 feet of width should be provided on Cannon Lane for 100 feet of length. Since the first 50 feet of Cannon Lane, east of Lakeville Highway, is already 24 feet wide or more, the mitigation would result in widening for approximately the remaining 50 feet. This widening would allow right-turning vehicles to travel around vehicles queued for westbound left-turn movements. Since the westbound left-turn traffic is less than 30 vehicles per hour, Level of Service criteria would not apply to this movement. With mitigation, impacts would be ***less than significant***.

Impact TRAF-3: Lakeville Highway/Cannon Lane: Project traffic volumes would be expected to increase queues in the southbound left-turn lane during the Fall Festival weekend conditions. The queues would be expected to extend well beyond the capacity of the existing left-turn lane on Lakeville Highway which would be considered significant.

Mitigation Measure TRAF-3: The project should provide manual traffic control officers at the intersection between the hours of 11:00 a.m. and 3:00 p.m. on Saturdays and Sundays during the Fall Festival. With mitigation, impacts would be ***less than significant***.

Impact TRAF-4: SR 37/Lakeville Highway-Reclamation Road: The intersection is already operating at unacceptable levels of service. Phase A of the project would increase average delay at the intersection by less than five seconds when compared with the Future 2022 Conditions. Therefore, the project's impact would be considered less-than-significant since it is not cumulatively considerable based on the County's significance criteria.

Impact TRAF-5: SR 37/Arnold Drive (SR 121): The intersection is already operating at unacceptable levels of service. Phase A of the project would increase average delay at the intersection by less than five seconds when compared with the Future 2022 Conditions. Therefore, the project's impact would be considered less-than-significant since it is not cumulatively considerable based on the County's significance criteria.

Impact TRAF-6: Cannon Lane: The County intends to provide improvements to Cannon Lane based on recommendations from the Cannon Lane Roadway Concept, April 17, 2015, Fehr & Peers. However, these improvements will not be completed prior to the opening of the project. Therefore, based on potential safety issues, this would be considered a significant impact.

Mitigation Measure TRAF-6: As an added safety measures for both vehicles and bicycles, the County should provide additional road safety signage such as Reduced Speed Ahead, Share the Road (bicycles), 15 mph advisory, and Narrow Road advisory signs. With mitigation, impacts would be ***less than significant***.

4.10.11.3 Future 2040 plus Project Phase B Conditions

Impact TRAF-7: Lakeville Highway (SR 116)/Stage Gulch Road: Phase B of the project would expect to increase average side street delay by more than five seconds and would be expected to result in a drop in operation from acceptable LOS D to unacceptable LOS E during the weekend midday peak hour, which would be considered significant and cumulatively considerable. However, the intersection currently warrants the installation of a traffic signal or roundabout based on traffic signal warrants and existing traffic volumes. Since there is no adopted plan or funding mechanism for these improvements, the impact of the project would be considered **Significant and Unavoidable**.

Impact TRAF-8: Lakeville Highway/Cannon Lane: Phase B of the project would be expected to increase average side street delay by more than five seconds resulting in an LOS E condition which would be considered significant and cumulatively considerable.

Mitigation Measure: See *Mitigation Measure TRAF-2*. With mitigation, impacts would be **less than significant**.

Impact TRAF-9: Lakeville Highway/Cannon Lane: Project traffic volumes would be expected to increase queues in the southbound left-turn lane during the Fall Festival weekend conditions. The queues would be expected to extend well beyond the capacity of the existing left-turn lane on Lakeville Highway which would be considered significant.

Mitigation Measure – See *Mitigation Measure TRAF-3*. With mitigation, impacts would be **less than significant**.

Impact TRAF-10: SR 37/Lakeville Highway-Reclamation Road: The intersection is already operating at unacceptable levels of service. Phase B of the project would increase average delay at the intersection by less than five seconds when compared with the Future 2040 Conditions. Therefore, the project's impact would be considered less-than-significant since it is not cumulatively considerable based on the County's significance criteria.

Impact TRAF-11: SR 37/Arnold Drive (SR 121): The intersection is already operating at unacceptable levels of service. Phase B of the project would be expected to increase average delay at the intersection by less than five seconds when compared with the Future 2040 Conditions. Therefore, the project's impact would be considered less-than-significant since it is not cumulatively considerable based on the County's significance criteria.

Impact TRAF-12: Arnold Drive (SR 121)/Ram's Gate-South Park Entrance: Phase B of the project would result in LOS F operation on the eastbound (Park exit) approach of the intersection, however, since the approach volume totals less than 30 vehicles, it is less-than-significant by Sonoma County standards. The project would warrant the addition of a northbound left-turn lane on SR 121.

Mitigation Measure TRAF-12: When the project opens its access to SR121, a northbound left-turn lane with a storage of at least 100 feet and appropriate transition meeting Caltrans standards should be installed and operational. The left-turn lane would require widening of SR121 and would also require a Caltrans encroachment permit. With mitigation, impacts would be **less than significant**.

4.11 UTILITIES

This section describes existing utilities near the project site, evaluates potential impacts resulting from project implementation, and identifies mitigation measures to reduce impacts, as appropriate.

4.11.1 Environmental Setting

Utilities and service systems include water supply, wastewater, storm drainage, and solid waste disposal and recycling.

4.11.1.1 Water Supply

The current park use includes about ten buildings on site, as explained in Section 3 of this EIR (Project Description). The Park currently does not provide potable water for public day use, only the park ranger residences and park office are connected to a natural spring for their water supply, located on the east side of the Lake. The spring has the capacity to produce 18 gallons per minute.

Estimated Water Supply

A well is proposed to be constructed in the northeastern part of the Park to provide potable water for public use for the anticipated increase in Park visitation. This well would be installed, in Phase 1, sometime during the first five years of Park operation. Regional Parks considered two options for providing potable water at the Park: developing a surface water source or a groundwater source. From a water quality standpoint, and to minimize operational and maintenance requirements, Regional Parks chose to develop a groundwater source by installing a new well, with associated well heads and conveyance pipes, to the service areas of the Park. The potential well location and water line route are shown on Figure 3-11. Water flow rate data from a test well in that location showed a production capacity of 25 gallons per minute, or approximately 36,000 gallons per day.¹

Projected Water Demand

To estimate water demand for future Park operations, visitation numbers were derived based on trip generation calculations used for the transportation and circulation analysis (see Section 4.10 of this EIR, Transportation and Circulation). The trip generation calculations show that trips to and from the Park would be expected to increase during the course of park development, which can be divided into two phases: Phase A, during the first five years of operation before many planned park facilities are constructed; and Phase B, from year 6 on, when major facilities such as the visitor center, public restrooms, and wastewater treatment facility, and the trail network are either completed or under construction.

¹Weeks Drilling & Pump Co., "Sonoma County Regional Parks - Tolay Lake Well #1, 8-Hour Pump Test," 9/27/2016. Water flow calculations are as follows: 25 gallons per minute x 60 minutes per hour x 24 hours per day = 36,000 gallons per day.

Park visitation estimates derived from the trip generation calculations for the first five years (Phase A) would total approximately 187,580 visitors per year. This number can be further broken down by visitors attending the Tolay Fall Festival, and all other visitation. Tolay Fall Festival visitation is estimated at 3,500 visitors per day on weekend, and 770 visitors per day during the week.² For all other times, visitation is estimated at a maximum of 862 visitors per day on weekends, and a maximum of 319 visitors per day during the week.³

Park visitation from year 6 onward (Phase B) would total approximately 242,830 visitors per year, with visitation during the Tolay Fall Festival remaining the same as during Phase A (3,500 visitors per day on weekend, and 770 visitors per day during the week). For all other times, visitation is estimated at a maximum of 1,149 visitors per day on weekends and a maximum of 425 visitors per day during the week.⁴

Water use is estimated based on the number of visitors (and staff), and the activity of the visitor (or staff). Table 4.11.1 shows the types of activity and related water use, by phase. Water demand assumptions are based on U.S. Forest Service standards, with the exception of Park (office) staff, which are based on a percentage of wastewater treatment rates.

As shown in the table, during Phase A, maximum daily water demand during the weekend days of the Tolay Fall Festival would be approximately 18,568 gallons per day.⁵ For other times of the year under Phase A, water demand would range from 2,123 (weekday visitors; no campers, and no visitor center or cabin visitors during Phase A)⁶ to 4,838 gallons per day (weekends; no campers, and no visitor center or cabin visitors during Phase A).⁷ During Phase B, maximum daily water demand during the weekend days of the Tolay Fall Festival would be approximately 19,210 gallons per day.⁸ For other times of the year under Phase B, water demand would range

²"Tolay Traffic Memo," 10/19/16. Trip assumptions used in this memo included an estimate of 3,500 visitors for each weekend day during the Tolay Fall Festival; in addition, the estimate included 10 school buses with students, teachers, and chaperones per day, plus up to an additional 200 non-school related visitors, during the week. With each school bus carrying a maximum of 54 students (plus one driver, teacher, and chaperone), each bus would contain 57 visitors. 10 buses x 57 bus occupants each = 570 visitors, plus 200 non-school related visitors = 770 visitors per week day. Also, approximately 120 staff and volunteers typically are actively involved to run the Tolay Fall Festival (email from Brandon Brédo, Supervising Park Ranger, Sonoma County Regional Parks; 10/11/16).

³These visitation figures are based on trip generation numbers of 689 and 255 trips for weekends and weekdays, respectively. The calculation of visitors from trip generation was derived from the traffic memo: Visitors = trips ÷ 2 trips per vehicle x 2.5 visitors per vehicle. So, 689 weekend day trips ÷ 2 trips per vehicle x 2.5 visitors per vehicle = 861.25 weekend day visitors (or 862); and 255 weekday trips ÷ 2 trips per vehicle x 2.5 visitors per vehicle = 318.75 week day visitors (or 319).

⁴Following the visitor/trip generation formula: 919 weekend day trips ÷ 2 trips per vehicle x 2.5 visitors per vehicle = 1,148.75 weekend day visitors (or 1,149); and 340 weekday trips ÷ 2 trips per vehicle x 2.5 visitors per vehicle = 425 week day visitors.

⁵17,500 gpd (weekend Tolay Fall Festival visitor water demand) + 600 gpd (Tolay Fall Festival staff/volunteer water demand) + 468 gpd (other rangers/staff) = 18,568 gpd.

⁶1,595 gpd (weekday visitor water demand) + 528 gpd (rangers/staff) = 2,123 gpd.

⁷4,310 gpd (weekend visitor water demand) + 528 gpd (rangers/staff) = 4,838 gpd.

⁸17,500 gpd (weekend Tolay Fall Festival visitor water demand) + 600 gpd (Tolay Fall Festival staff/volunteer water demand) + 270 gpd (visitors to visitor center) + 840 gpd (other rangers/staff) = 19,210 gpd.

from 3,235 (weekdays with no campers or cabin visitors)⁹ to 14,055 gallons per day (weekends with campers, and visitor center and cabin visitors).¹⁰

Table 4.11.1: Estimated Water Demand from Park Visitation

Phase A					
Activity/Use	Days of Activity/Use (per year)	Visitors/Staff (per day)	Gallons per Day (gpd) ^a	Water Demand (gallons)	Daily Water Demand (gallons)
Tolay Fall Festival (weekend)	4	3,500	5	70,000	17,500
Tolay Fall Festival (weekday)	10	770	5	38,500	3,850
Tolay Fall Festival staff	14	120	5	8,400	600
Weekend visitors	104	862	5	448,240	4,310
Weekday visitors	261	319	5	416,295	1,595
Resident Rangers (& family)	365	6	78	170,820	468
Other Park (Office) Staff	365	4	15 ^b	21,900	60
Total Annual Water Demand (gallons)				1,174,155	
Average Daily Water Demand (gpd)				3,216.86	
Phase B					
Activity/Use	Days of Activity/Use (per year)	Visitors/Staff (per day)	Gallons per Day (gpd) ¹	Annual Water Demand (gallons)	Daily Water Demand (gallons)
Tolay Fall Festival (weekend)	4	3,500	5	70,000	17,500
Tolay Fall Festival (weekday)	10	770	5	38,500	3,850
Tolay Fall Festival staff	14	120	5	8,400	600
Weekend visitors	104	1,149	5	597,480	5,745
Weekday visitors	261	425	5	554,625	2,125
Visitors to Visitor Center	365	90	3	98,550	270
Resident Rangers (& family)	365	10	78	284,7000	780
Other Park (Office) Staff	365	4	15 ²	21,900	60
Campers	100	60	50	300,000	3,000
Cabin Visitors (Bunkhouse)	200	60	70	840,000	4,200
Total Annual Water Demand (gallons)				2,814,155	
Average Daily Water Demand (gpd)				7,710.01	
Source: MIG, 2016.					
Notes:					
^a Water demand figures based on U.S. Forest Service recommendations for recreation use (Forest Service Handbook 7409.11, Section 44.11 Exhibit 01;					

⁹2,125 gpd (weekday visitor water demand) + 270 gpd (visitors to visitor center) + 840 gpd (rangers/staff) = 3,235 gpd.

¹⁰5,745 gpd (weekend visitor water demand) + 270 gpd (visitors to visitor center) + 840 gpd (rangers/staff) + 3,000 gpd (campers) + 4,200 gpd (cabin visitors) = 14,055 gpd.

Table 4.11.1: Estimated Water Demand from Park Visitation

<http://www.fs.fed.us/t-d/pubs/htmlpubs/htm07732326/>

^b "Other Park (Office) Staff" water demand based on sewage flow factor from wastewater treatment analysis, adjusted to estimate water use (using a conservative wastewater flow factor of 90% of water supply).

4.11.1.2 Wastewater

The Park is located in a rural area and is not connected to a sanitary sewer system. The park ranger residence uses a septic system. The other buildings are not occupied for residential use, and do not include public restroom facilities. The Park rents four portable toilets for visitors, except during the Tolay Fall Festival, when the number is increased to a total of 22 portable toilets.¹¹

During the first 10 years of Park operation, portable toilets would continue to be used for Park visitors; the ranger residences would continue to use the existing septic system, which would be serviced according to its regular maintenance schedule. As visitation increases, and until the proposed wastewater treatment facilities are constructed, additional portable toilets would be rented, as needed.¹² Public restrooms would be constructed beginning at year 10, along with the visitor center, bunkhouse, showers, and wastewater treatment facility.

Proposed Wastewater Facilities

As discussed in the project description, a wastewater treatment facility is planned to be constructed at the tenth year. This facility would treat wastewater from new, planned facilities in the Park Complex. A dual chamber septic tank, duplex pump system, grease trap, trickling filter, and treatment wetland (with potential for incorporation of a spray irrigation area) would comprise the wastewater system. (More detail is available in Appendix D of the Master Plan.) The septic tank and duplex pump system would be located northeast of the Old Stone Floor Barn and adjacent to the proposed visitor center. In addition, a grease trap would be located near the proposed kitchen building. The trickling filter, treatment wetland and irrigation area would be located on the north and east sides of the Duck Pond. The proposed wastewater facilities are shown on Figure 3-12.

Projected Wastewater Demand

For preliminary planning purposes, the wastewater processing capacity was estimated based on projected visitation and water use. Table 4.11.2 shows projected wastewater flow.

¹¹Email from Brandon Brédo, Supervising Park Ranger, Sonoma County Regional Parks; 10/11/16.

¹²Email from Karen Davis-Brown, Project Manager, Sonoma County Regional Parks; 10/6/16.

Table 4.11-2: Projected Wastewater Flow

Generation Source	Number of People	Gallons per person per day	Gallons per day
Full-time residents (rangers & family)	10	70	700
Full-time office staff	4	13	52
Park Visitors -- Early Spring/Summer	3,770	5	18,880
Park Visitors -- Winter	840	5	4,200
Park Visitors -- Remaining Months	2,790	5	13,950
Average visitors per day	2,548	5	12,740
Total Average Daily Wastewater Generation			13,350
Total Peak Daily Wastewater Generation			19,462
<i>Source: Fall Creek Engineering, July, 2014.</i>			

As shown in the table, the wastewater treatment facility would be capable of handling an average daily flow of approximately 13,350 gallons per day (gpd) with capacity for an average peak daily flow of 19,462 gpd.

4.11.1.3 Storm Drainage

There are several culverts currently located on the site, but otherwise the Park does not have a storm drainage infrastructure (i.e., catch basins, manholes, drain pipes, underground pipes, concrete channels, swales). The Park resides almost entirely within the Tolay Creek watershed, a lake basin with rolling to moderately steep terrain on a northwest-trending ridge that separates the Petaluma River valley and Sonoma Creek (with the exception of the western boundary, which includes the headwaters of several unnamed drainages in the Petaluma River watershed). The headwaters of Tolay Creek emerge north of the Park boundary near Highway 116 (Stage Gulch Road). Several small tributaries and one sizable tributary emerge off-site and enter lower Tolay Creek from adjacent properties to the southeast. Tolay Creek enters the Sonoma Marsh complex immediately off-site to the southeast, meandering south and entering San Pablo Bay approximately six river miles from the Park boundary.

As discussed in chapter 4.7 of this EIR, Land Use and Planning, the Park Complex includes buildings and related structures, though the amount of impervious surface area is small in relation to the amount of open space. Adjacent to the Park Complex is Tolay Lake, which fills during the wet season but typically dries by summer, except for wet years. East of the lake, the topography levels. To the south, the Park becomes more hilly, with Tolay Creek generally running through the center until it loosely shadows the southeast property boundary. Soils in the Park are primarily Clear Lake Clay Loam and Diablo Series (over 80 percent), which are characterized as having slow permeability and negligible to high runoff potential.

4.11.1.4 Solid Waste Disposal and Recycling

Solid waste is managed by Republic Services, which has a contract with the County for hauling and disposal of solid waste. Republic Services collects the Park's two dumpsters (one for solid debris, and one for recyclables) weekly. During the Tolay Fall Festival, the number of dumpsters is doubled, and service is increased to twice weekly. Each dumpster holds approximately four cubic yards.¹³

Table 4.11.3 shows projected solid waste generation based on type of activity, estimated visitation, and phase.

Table 4.11.3: Projected Solid Waste Generation

Activity/Use	Days of Activity/Use (per year)	Visitors/Staff (per day)	Solid Waste Generation (Pounds per Day) ^a	Total Pounds (Daily)
Phase A				
Tolay Fall Festival (weekend)	4	3,500	2.44	34,160.00
Tolay Fall Festival (weekday)	10	770	2.44	18,788.00
Tolay Fall Festival staff	14	120	2.44	4,099.20
Weekend visitors	104	862	1.42	127,300.16
Weekday visitors	261	319	1.42	118,227.78
Resident Rangers (& family)	365	6	4.7	10,293.00
Other Park (Office) Staff	365	4	11.1	16,206.00
Total Annual Solid Waste Generation (pounds)				329,074.14
--in tons				164.54
Average Daily Solid Waste Generation (pounds)				901.57
--in tons				0.45
Phase B				
Tolay Fall Festival (weekend)	4	3,500	2.44	34,160.00
Tolay Fall Festival (weekday)	10	770	2.44	18,788.00
Tolay Fall Festival staff	14	120	2.44	4,099.20
Weekend visitors	104	1,149	1.42	169,684.32
Weekday visitors	261	425	1.42	157,513.50
Visitors to Visitor Center	365	90	1.42	46,647.00
Resident Rangers (& family)	365	10	4.7	17,155.00
Other Park (Office) Staff	365	4	11.1	16,206.00
Campers	100	60	2.7	16,200.00
Cabin Visitors (Bunkhouse)	200	60	2.7	32,400.00
Total Annual Solid Waste				512,853.02

¹³Email from Brandon Brédo, Supervising Park Ranger, Sonoma County Regional Parks; 10/11/16.

Table 4.11.3: Projected Solid Waste Generation

Activity/Use	Days of Activity/Use (per year)	Visitors/Staff (per day)	Solid Waste Generation (Pounds per Day) ^a	Total Pounds (Daily)
Generation (pounds)				
--in tons				256.43
Average Daily Solid Waste Generation (pounds)				1,405.08
--in tons				0.70

Source: MIG, 2016.

Notes:

^a Solid waste generation figures are based on the following sources:

For Tolay Fall Festival visitors and staff (2.44) -- U.S. EPA, Solid Waste Management Office, Solid Waste Management in Recreational Forest Areas, 1971

For other (non-event, non-cabin) visitors (1.42) -- Cal Recycle: Reducing Waste at Venues and Events Home Page

For onsite residents (rangers) (4.7) -- CalRecycle: California's 2015 Per Capita Disposal Rate Estimate

For office workers (11.1) -- CalRecycle: California's 2015 Per Capita Disposal Rate Estimate

For campers (including cabin visitors) (2.7) -- Yosemite: National Park Service, Tool Kit for Solid Waste Management, Intermountain Region, March 1999

Based on this table, future Park operations would generate approximately 262.81 tons of solid waste annually.

The County's solid waste is primarily processed at the Central Disposal Facility (500 Meacham Road, Petaluma). The landfill has a maximum permitted throughput of 2,500 tons per day, and a permitted capacity of 32,650,000 cubic yards, with a remaining capacity of 9,076,760 cubic yards (as of May 15, 2012). The expected date of closure of the Central Disposal Facility is January 1, 2034.¹⁴ For 2015, the County had a total solid waste disposal of 388,362.50 tons, with 262,736 tons going to the Central Disposal Facility.¹⁵ Park solid waste would represent approximately 0.07 percent of total annual County solid waste generation (and approximately 0.1 percent of annual solid waste generation disposed of solely at the Central Disposal Facility), based on 2015 waste disposal figures.¹⁶

¹⁴CalRecycle, Facility/Site Summary Details: Central Disposal Site, <http://www.calrecycle.ca.gov/SWFacilities/Directory/49-AA-0001/Detail/>; accessed 10/10/16.

¹⁵CalRecycle, Jurisdiction Disposal By Facility, <http://www.calrecycle.ca.gov/LGCentral/Reports/Viewer.aspx?P=ReportYear%3d2015%26ReportName%3dReportEDRSJurisDisposalByFacility%26OriginJurisdictionIDs%3d503>; accessed 10/10/16.

¹⁶262.81 (tons of solid waste generated by the Park) ÷ 388,362.50 (tons of solid waste generated by the entire County) = approximately 0.068 percent (or approximately 0.07 percent); 262.81 (tons of solid waste generated by

4.11.2 Regulatory Setting

This section discusses the federal, state, and local laws, and regulations that pertain to public service and utilities.

4.11.2.1 Federal

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) Office of Wastewater Management (OWM) supports the Federal Water Pollution Control Act (Clean Water Act) by promoting effective and responsible water use, treatment, disposal, and management, and by encouraging the protection and restoration of watersheds. The OWM is responsible for directing the National Pollutant Discharge Elimination System (NPDES) permit, pretreatment, and municipal bio-solids management (including beneficial use) programs under the Clean Water Act. The OWM is also home to the Clean Water State Revolving Fund, the largest water quality funding source, focused on funding wastewater treatment systems, non-point source projects, and estuary protection.

Clean Water Act

The Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) are responsible for ensuring implementation and compliance with the provisions of the Federal CWA.

Title 40 of the Code of Federal Regulations

Title 40 of the Code of Federal Regulations (CFR), Part 258 (Resource Conservation and Recovery Act RCRA, Subtitle D) contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the Federal landfill criteria. The Federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills.

4.11.2.2 State

California Water Code

The California Water Code, a section of the California Code of Regulations, is the governing law for all aspects of water management in California.

Title 22 of California Code of Regulations

Title 22 regulates the use of reclaimed wastewater. In most cases, only disinfected tertiary treated water may be used on food crops where the recycled water would come into contact with the

the Park) ÷ 262,736 (tons of solid waste generated by the entire County disposed of at the Central Disposal Facility) = approximately 0.100 percent (or approximately 0.1 percent).

edible portion of the crop. Standards are also prescribed for the use of treated wastewater for irrigation of parks, playgrounds, landscaping, and other non-agricultural irrigation. Regulation of reclaimed water is governed by the nine RWQCBs and the California Department of Public Health (CDPH).

California Department of Water Resources

The California Department of Water Resources is responsible for preparing and updating the California Water Plan, which is a policy document that guides the development and management of California's water resources.

California Safe Drinking Water Act

The Safe Drinking Water Act (SDWA), administered by EPA in coordination with the California Department of Public Health (CDPH), is the main Federal law that ensures the quality of drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

California Department of Public Health

A major component of the California Department of Public Health, Division of Drinking Water and Environmental Management, is the Drinking Water Program (DWP), which regulates public water systems. Regulatory responsibilities include enforcement of the Federal and State Safe Drinking Water acts, regulatory oversight of approximately 8,700 public water systems, oversight of water recycling projects, issuance of water treatment permits, and certification of drinking water treatment and distribution operators.

State Water Resources Control Board

The SWRCB, in coordination with nine RWQCBs, performs functions related to water quality, including programs regulating stormwater runoff, and underground and above-ground storage tanks.

California Department of Resources Recycling and Recovery (CalRecycle; formerly the California Integrated Waste Management Board)

CalRecycle oversees, manages, and monitors waste generated in California. It provides limited grants and loans to help California cities, counties, businesses, and organizations meet the State waste reduction, reuse, and recycling goals. It also provides funds to clean up solid waste disposal sites and co-disposal sites, including facilities that accept hazardous waste substances and non-hazardous waste. CalRecycle develops, manages, and enforces waste disposal and recycling regulations, including AB 939, SB 1016, and AB 341. In addition, CalRecycle designates Local Enforcement Agencies (LEAs) to implement non-hazardous waste management programs, ensure compliance with applicable State solid waste laws, and permit and enforce conditions at solid waste facilities. The Sonoma County Department of Health Services is the state-designated LEA for Sonoma County.

Assembly Bill 939

Assembly Bill 939 (AB 939) (Public Resources Code 41780) requires cities and counties to prepare integrated waste management plans (IWMPs) and to divert 50 percent of solid waste from landfills beginning in calendar year 2000 and each year thereafter. AB 939 also requires cities and counties to prepare Source Reduction and Recycling Elements (SRRE) as part of the IWMP. These elements are designed to develop recycling services to achieve diversion goals, stimulate local recycling in manufacturing, and stimulate the purchase of recycled products.

Senate Bill 1016

Senate Bill (SB) 1016 requires that the 50 percent solid waste diversion requirement established by AB 939 be expressed in pounds per person per day. SB 1016 changed the CalRecycle review process for each municipality's IWMP. The CalRecycle Board reviews a jurisdiction's diversion rate compliance in accordance with a specified schedule. Beginning January 1, 2018, the Board will be required to review a jurisdiction's source reduction and recycling element and hazardous waste element every two years.

California Solid Waste Reuse and Recycling Access Act of 1991.

The California Solid Waste Reuse and Recycling Access Act of 1991 (Public Resources Code Sections 42900 through 42911) requires that any development project for which an application for a building permit is submitted include adequate, accessible areas for collecting and loading recyclable materials.

4.11.2.3 Local

Sonoma County Water Efficient Landscape Regulations

County Code Chapter 7D3, Water Efficient Landscape, adopted December 8, 2015, regulates the design, installation, and maintenance of new and rehabilitated landscapes pursuant to the Water Conservation in Landscaping Act (Government Code section 65591 et seq.) by establishing water efficient landscape standards related to plants; soil amendments, conditioning, and mulching; water features; and irrigation systems. This chapter applies to all new and rehabilitated landscapes in multi-family residential, commercial, industrial, agricultural processing, and public agency projects requiring a building or grading permit or design review.

Sonoma County Water Well Construction Standards

County Code Chapter 25 B, Water Well Construction Standards, adopted July 28, 2015, protects the County's groundwater resource through establishment of standards regulating the placement, construction, reconstruction, abandonment, and destruction of wells and borings. Regulations also specify setback distances, well water treatment, inspections, and reporting requirements.

Sonoma County Code

Sonoma County Code Chapter 11 (Grading, Drainage, and Vineyard and Orchard Site Development) and Chapter 11A (Stormwater Quality) provide regulations to protect streams, lakes, ponds, and wetlands by reducing pollutants in stormwater discharges, maintaining off-site

natural drainage patterns, and limiting runoff, in compliance with the National Pollution Discharge Elimination System (NPDES) and best management practices (BMPs) from the permitting authority (for this Project, the County).

Bay Area Stormwater Management Agencies Association (BASMAA)

BASMAA is a regional alliance of San Francisco Bay Area stormwater programs, of which Sonoma County is a member, whose goal is to improve the quality of stormwater runoff to the San Francisco Bay and Delta. Sonoma County has determined that projects in San Francisco Bay Region regulatory areas (such as the southern portion of Sonoma County) need to incorporate low-impact development (LID) design, using the 2014 BASMAA Post-Construction Manual. The Manual provides site design measures for projects that create or replace 2,500 to 5,000 square feet of impervious surface, such as limiting clearing, grading, and soil compaction; minimizing impervious surfaces; reducing runoff by dispersing runoff to landscape or using pervious pavements; and conserving natural areas and slopes of the site. For projects that create or replace more than 5,000 square feet of impervious surface, the Manual calls for source control measures. The Manual includes LID site design guidance and required bioretention facility size.

Sonoma County Green Building Standards

County Code Chapter 7D1, Green Building Standards, assures that residential, commercial, and civic development is consistent with county's goals supporting and promoting a more sustainable community, including construction and maintenance of buildings, and green building measures are designed to reduce waste generated by construction projects.

4.11.3 Impacts and Mitigation Measures

4.11.3.1 Criteria of Significance

The proposed project would have a significant effect on utilities if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Not have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs;

- Not comply with federal, state, and local statutes and regulations related to solid waste.

4.11.3.2 Less Than Significant Impacts

The project would result in the following less than significant impacts related to utilities.

Impact UTIL-1: Project construction and implementation would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. (LTS)

The San Francisco Regional Water Quality Control Board (SFRWQCB) enforces wastewater treatment and discharge requirements for Sonoma County. The Park would be served by an on-site wastewater treatment system, which would be required to comply with all applicable County (Permit and Resource Management Department), State, and Water Board requirements for on-site sewage disposal systems. The proposed wastewater treatment facilities include a dual chamber septic tank, a duplex pump system, grease trap, trickling filter, treatment wetland, and potential spray irrigation area, all located in the vicinity of the Park Complex (see Appendix D of the Master Plan). The design and permitting process that would be followed prior to implementation of the system would be in accordance with the Sonoma County Onsite Wastewater Treatment System Regulations and Technical Standards (OWTS) Manual to ensure that the treatment system is optimized to minimize effluent pollutant concentrations.

The treatment system would be designed to use naturally occurring processes with fewer requirements for additional energy or chemicals. This system would use "treatment wetlands" (that would receive treated effluent from the trickling filters), which would provide a high degree of treatment, suitable for subsurface irrigation or land disposal that meet state and county requirements. However, before recycled water could be used in the Park, additional treatment (filtration and disinfection) would be required to meet State Water Recycling Laws (Title 22). This would require additional operation and monitoring requirements. In addition, Master Plan guideline OM-G21 calls for maintaining proper function of wastewater and septic systems. Therefore, project compliance with these requirements would ensure that Park operations would not exceed any wastewater treatment requirements, and project impacts on wastewater treatment facilities would be *less than significant*.

Impact UTIL-2: Project construction and implementation would require the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (LTS)

The project proposes construction of a new water well (including well head and conveyance pipes) and new on-site wastewater treatment facilities (described above under subsections 4.11.1.1 and 4.11.1.2). However, construction of these water and wastewater facilities would be temporary; air emissions (dust), noise, erosion and runoff, and other typical construction period effects would be reduced through normal County construction period mitigation procedures and best management practices. No significant environmental impact would be anticipated with this construction activity. Therefore, project impacts related to construction of new water or wastewater treatment facilities would be *less than significant*.

Impact UTIL-3: The project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (LTS)

The Park and project area vicinity does not contain any storm drain. No connections to any storm drains are proposed under the project. Existing impervious surface areas in the Park are relatively small in relation to the size of the Park. Construction of new park facilities would increase the amount of impervious surface area in the area of improvements. These improvements, depending on their size, would require the incorporation of local storm water drainage and treatment methods on the site of the improvements. Therefore, the project would not include the construction of new storm drainage facilities or expansion of existing storm drainage facilities and there would be *no impact*.

Impact UTIL-4: Project construction and implementation would have sufficient water supplies available to serve the project from existing entitlements and resources. (LTS)

Park visitation for the first five years would total a maximum of approximately 187,580 visitors per year. The maximum daily water demand would occur during the weekend days of the Tolay Fall Festival when visitation would be highest (approximately 18,628 gallons per day). For other times of the year, during this first five-year period, visitation would be lower, and water demand would range from approximately 2,123 gpd on weekdays to approximately 4,838 gpd on weekends.

Park visitation from year six on would total a maximum of approximately 242,830 visitors per year. The maximum daily water demand would again occur during the weekend days of the Tolay Fall Festival (approximately 19,210 gpd, slightly higher because of anticipated increases in park staff. For other times of the year, from year six on, visitation would be lower, and water demand would range from approximately from approximately 3,235 gpd during weekdays to 14,055 gallons per day during weekends.

In order to accommodate this anticipated demand, a new well would be constructed during the first five years of Park operation (as described above under subsection 4.11.1.1), which would have a production capacity of approximately 36,000 gpd. This new well would provide sufficient water for Park operations, and therefore, project impacts related to water supplies would be *less than significant*.

Impact UTIL-5: The project would result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments. (LTS)

The project would not be connected to a sanitary sewer system. Instead, Park wastewater needs, which are already served by portable toilets, would continue to be served by portable toilets until the proposed wastewater treatment facilities are constructed, approximately after year 10 (as discussed above under subsection 4.11.1.2). The proposed wastewater treatment facilities would be designed to accommodate an average of 13,350 gallons per day of wastewater. Wastewater generation is estimated to range from 4,812 gallons per day during the winter (approximately 840 visitors per day plus park staff) to a maximum of 19,492 gallons per day during the early spring and summer (3,770 visitors per day plus park staff). The total peak daily wastewater treatment capacity of the plant is 19,462 gallons per day. These peak periods would be expected to occur only during large events (such as the Tolay Fall Festival), which would continue to be

served by portable toilet facilities. Except for large events (which would be supplemented by portable toilet facilities), the peak daily wastewater treatment capacity of 19,462 gallons per day would be sufficient to accommodate anticipated visitation and Park uses.

With a wastewater treatment capacity of 13,350 gallons per day (gpd) average, or 19,462 gpd during a peak time, wastewater treatment for the Park would be sufficient to accommodate anticipated Park visitation and Park uses. Master Plan guidelines related to restrooms (OM-G9) and maintenance of wastewater and septic systems (OM-G21) would ensure Park wastewater disposal facilities would have adequate capacity to serve projected demand, and therefore, project impacts related to wastewater treatment would be *less than significant*.

Impact UTIL-6: Project construction and implementation would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (LTS)

The Park would generate approximately 256.43 tons of solid waste per year, with maximum anticipated visitation. As described above under subsection 4.11.1.4, this would represent a small percentage (approximately 0.1 percent) of overall County solid waste disposed of at the Central Disposal Facility, which has permitted capacity to January 1, 2034. Therefore, project impacts related to solid waste disposal would be *less than significant*.

Impact UTIL-7: Project construction and implementation would comply with federal, state, and local statutes and regulations related to solid waste. (LTS)

Park Ranger staff would continue the current practice of monitoring waste receptacle (dumpster) use and adjusting the quantity and size, or pick-up schedules, as needed to meet waste generation demand and County diversion (recycling) goals. All county facilities comply with solid waste regulations. In addition, Master Plan standard OM-S11 (consistency with local and statewide solid waste disposal regulations) would also help to ensure project compliance with all pertinent solid waste and recycling regulations, and therefore project impacts related to compliance with solid waste regulations would be *less than significant*.

4.11.3.3 Significant Impacts

The project would have no significant impacts related to utilities, and no mitigation measures would be required.

5. ALTERNATIVES

5.1 PURPOSE

The purpose of the alternatives analysis is to assess a range of reasonable alternatives to the proposed project that would feasibly attain most of the basic objectives of the project while avoiding or substantially lessening any of the significant impacts of the project and to evaluate the comparative merits of each alternative (*CEQA Guidelines* Section 15126.6). The *Guidelines* state that the selection of alternatives should be governed by a “rule of reason.” Not every conceivable alternative must be addressed, nor do infeasible alternatives need to be considered (*CEQA Guidelines* Section 15126.6[a]). When addressing feasibility, Section 15126.6 of the *CEQA Guidelines* states, “among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, other plans or regulatory limitations, jurisdictional boundaries....”

Based on the *CEQA Guidelines*, several factors must be considered in determining the range of alternatives to be analyzed in an EIR and the level of analytical detail that should be provided for each alternative. These factors include (1) the nature of the significant impacts of the proposed project, (2) ability of alternatives to avoid or lessen the significant impacts associated with the project, (3) the ability of the alternatives to meet the objectives of the project, and (4) the feasibility of the alternatives. The alternatives analysis methodology, reasoning behind the selection of alternatives, alternatives rejected as infeasible are described below.

5.2 METHODOLOGY

The alternatives analysis is presented as a comparative analysis to the project. Each alternative is considered in light of the project objectives to determine whether the alternative would feasibly attain most of the basic project objectives, and whether it would avoid or substantially lessen any of the significant impacts of the project. Impacts associated with the alternatives are compared to project-related impacts and are classified as greater, less, or essentially similar to (or comparable to) the level of impacts associated with the project.

CEQA also states that, “the EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.” Generally, significant impacts of an alternative are discussed in this section, but in less detail than the proposed project, and should provide decision makers perspective as well as a reasoned choice regarding each alternative.

The following alternatives analysis compares the potential significant environmental impacts of the alternative with those of the proposed project for each of the environmental topics analyzed in Sections 4.1 through 4.11 (Environmental Impact Analysis) of the EIR.

5.2.1 Selection of a Reasonable Range of Alternatives

Section 15126.6(c) of the *CEQA Guidelines* states: “The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as

infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts."

To determine what range of alternatives should be considered, the impacts identified for the proposed project were considered along with the project objectives. The proposed project is described in detail in Section 3, Project Description, and the potential environmental effects of the proposed project are analyzed in Sections 4.1 through 4.11.

5.3 PROJECT OBJECTIVES

To develop project alternatives, the EIR preparers considered the project objectives and reviewed the significant impacts in Section 4 to identify those significant impacts that could be avoided or reduced substantially through an alternative.

The project's objectives are to:

- Preserve a land that is sacred with deep spiritual significance;
- Preserve a land that reflects California's long and storied heritage;
- Create an outdoor destination in the region for all ages and cultures;
- Create a recreation resource to inspire;
- Restore and preserve a thriving, ecologically rich landscape;
- Create a place for innovative and interactive education and experiences;
- Preserve a landscape to experience and learn about its natural and cultural history; and
- Create a space to find peace and respite.

5.4 ALTERNATIVES CONSIDERED

The following discussion is provided to meet the requirement of the *CEQA Guidelines* and provide the public and decision makers with information that will help them understand the significant impacts associated with the alternatives to the proposed project.

The project resulted in impacts to aesthetics, biological resources, and transportation that could be mitigated with the implementation of mitigation measures. Additionally, the project resulted in significant and unavoidable impacts to noise and transportation. Significant unavoidable impacts to noise would be created by the increase in traffic on Cannon Lane, which prior to the project is a lightly-traveled country road. Limiting access to the Park to reduce this impact would fail to meet the project objectives of creating a new park and recreation resource. Therefore, this impact cannot be mitigated or avoided.

Significant unavoidable impacts to transportation would result from existing unacceptable delay at Lakeville Highway (SR 116)/Stage Gulch Road, which the project traffic would incrementally increase. There is no adopted plan or funding mechanism for improvements needed to reduce the delay at this intersection and this impact cannot be mitigated by this project or any other project in the County. Therefore, only a No Project/Interim Master Plan Alternative was evaluated:

- **Alternative A: No Project/Interim Master Plan:** The No Project/Interim Master Plan Alternative assumes that the County would not adopt and implement the Tolay Lake Regional Park Master Plan for the project area. Instead, Regional Parks would continue to manage Tolay Lake Regional Park based on the 2008 Interim Public Access and Resource Management Plan. The 2008 Interim Public Access and Resource Management Plan would allow access to the Park on a day-use permit basis, provide for operation and maintenance of existing facilities, and implement some resource enhancement and management. The 2008 Interim Public Access and Resource Management Plan contains measures required as either part of the Plan or as required in the IS/MND for the 2008 Interim Public Access and Resource Management Plan.

No new facilities would be constructed, lake restoration would not occur, there would be no overnight use, no new backcountry trails or facilities constructed, and there would be no rehabilitation and reuse of any of the Cardoza Ranch buildings. Public access (with the exception of school groups) would still be limited to Saturdays, and Sundays for individuals who hold access permits.

5.4.1 Alternatives Rejected as Being Infeasible

As described above, Section 15126.6(c) of the *CEQA Guidelines* requires an EIR to identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process, and briefly explain the reasons underlying the lead agency's determination.

As stated above, limiting access to the Park to reduce significant unavoidable impacts would fail to meet the project objectives of creating a new park and recreation resource for County and regional residents. Additionally, Tolay Lake is an area rich in cultural resources and history that is important on a state and national level. Therefore, alternatives related to limiting access through some kind of permit system was rejected as infeasible.

Regarding choosing an alternate location, the project is a Master Plan for a Regional Park with unique characteristics. The Park has an intermittent perennial lake/wetland complex, which is not present in any other land owned or managed by Regional Parks. The project area provides important natural resource open space, and scenic values not found at other locations managed by Regional Parks. The Park is the only park that includes a working ranch. Due to these special features, there is not another location managed by Regional Parks that could serve the same purpose as the project area. Therefore, alternative sites were not analyzed.

5.5 ALTERNATIVES ANALYSIS

Following is a description of the alternative, its anticipated environmental impacts, and a comparison of those impacts to the proposed project. The discussion includes a determination as to whether the alternative would reduce, eliminate, or create new significant impacts.

5.5.1 Alternative A: No Project/Interim Master Plan

Under Alternative A: No Project/Interim Master Plan, the project area would remain as it currently exists and would not be opened for general public use without permits. No grading or construction would take place on the project area. Alternative A: No Project/Interim Master Plan

alternative would also not result in any changes to the site's drainage or soils on the site. There would be no construction impacts from the project.

5.5.1.1 Aesthetics

Under Alternative A, there would be no changes to the project site. The visual character of the Park would remain the same since there would be no new development of visitor-serving buildings, parking areas, new trails, or interpretive signage. Impacts to visual resources under Alternative A would be less than the less than significant impacts of the project to visual character and scenic vistas.

Under Alternative A there would be no installation of new nighttime lighting that could potentially create a new source of light and glare. The 2008 Interim Public Access and Resource Management Plan required mitigation measures for lighting, which would continue under Alternative A. Therefore, this impact would be the same as the impacts from light and glare under the project, which were mitigated to less than significant. Therefore, impacts on light and glare under Alternative A would be the same compared to the project. Impacts to visual character and scenic vistas would be incrementally less since the project area would remain unchanged.

5.5.1.2 Agricultural and Forestry Resources

Under Alternative A, grazing would continue on the project site. Additionally, the Williamson Act Contracts on the site would expire. These conditions would be the same as under the project. Although under Alternative A, there would be no General Plan Amendment changing the project site land use designation from Land Extensive Agriculture and Land Intensive Agriculture to Public-Quasi Public/Park; similar to the project, agricultural uses would not change. Therefore, impacts to agricultural and forestry resources would be the same under Alternative A as the project.

5.5.1.3 Air Quality/Greenhouse Gas Emissions

Under Alternative A, there would be no construction of new buildings or trails, paving of Cannon Lane, construction of a wastewater treatment plant, or other improvements requiring grading. The 2008 Interim Public Access and Resource Management Plan required mitigation measures for air quality impacts, which would continue under Alternative A. Therefore, this impact would be the same as the impacts from construction under the project, which incorporated the same measures into the project for construction air quality and were less than significant.

Under Alternative A, there would be no construction or increase in vehicle trips; therefore, no increase in air quality or greenhouse gas (GHG) emissions would occur from construction equipment and vehicles, visitor vehicle trips, grading, paving, or operation of Park facilities. Although there would be no significant impacts to air quality and GHG from the project, air quality and GHG emissions under Alternative A would be lower than under the project because there would be no increase in vehicle trips to and from the Park, construction emissions, and use of energy for Park operations. Therefore, impacts to air quality and GHG emissions under Alternative A would be incrementally lower than under the project.

5.5.1.4 Biological Resources

Under Alternative A, there would be no construction in the project area. Because no construction would occur, no ground disturbing activities, such as grading, fill, and/or excavation, would take place. Additionally, under Alternative A occasional tree removal would sometimes be required for maintenance under the Interim Plan. The 2008 Interim Public Access and Resource Management Plan IS/MND required mitigation measures for tree removal, which would continue under Alternative A. Therefore, this impact would be the same as the impact from tree removal under the project, which were mitigated to less than significant.

However, under Alternative A, the substantial habitat restoration proposed by the project would not occur. Ongoing habitat restoration on the Tolay Creek Ranch property would continue, but the more substantial habitat restoration projects associated with the project would not be undertaken. These more substantial habitat restoration activities include native grassland monitoring, riparian and woodland plantings, and wetland and meadow plantings. Specifically, under Alternative A, there would be no lake restoration—nor improvements to hydrology, that may improve hydrology on upstream neighbors, i.e., Tolay Lake causeway would not be lifted, there would be no installation of new culverts or removal of constrictions at the Farm Bridge. Additionally, drainage channels would not be graded back to 'natural' conditions benefitting numerous wildlife, waterfowl reptiles, mammals etc entire ecosystem

Therefore, under Alternative A, the significant benefits to biological resources from the project would not occur and this impact would be incrementally greater than under the project.

5.5.1.5 Cultural Resources

Under Alternative A, there would be no construction in the project area. Because no construction would occur, no ground disturbing activities, such as grading, fill, and/or excavation, would take place in the project area. There would be no potential to adversely affect archeological or paleontological resources, destroy a unique geologic feature, or disturb any human remains. The 2008 Interim Public Access and Resource Management Plan IS/MND required mitigation measures for impacts to cultural resources, which would continue under Alternative A. However, under Alternative A, the substantial cultural resource protection measures proposed by the project would not occur.

Under Alternative A, there would be no changes to the Park Complex buildings that could affect their historic designation. Again, the Interim Public Access and Resource Management Plan IS/MND required mitigation measures for impacts to historic resources, which would continue under Alternative A. This impact would be the same as the impact to historic and cultural resources under the project, which were mitigated to less than significant. Therefore, under Alternative A, the significant benefits to cultural and historic resources from the project would not occur and this impact would be incrementally greater than under the project.

5.5.1.6 Geology/Soils

Under Alternative A, there would be no construction in the Park. Because no construction would occur, no ground disturbing activities, such as grading, fill, and/or excavation, would take place. Therefore, soil erosion/loss of topsoil during construction and post-construction due to ground disturbances would not occur. The 2008 Interim Public Access and Resource Management Plan

IS/MND required mitigation measures for impacts to geology and soils, which would continue under Alternative A. However, none of the beneficial policies in the Trails Chapter and the Operations and Maintenance Chapter of the Master Plan related to erosion protection would be implemented.

Under Alternative A new buildings would not be constructed in the Park Complex. Therefore, under Alternative A there would be no potential for exposing people or structures to rupture of earthquake fault and seismic-related ground failure/shaking. These impacts would be incrementally less than the impacts under the project, which were less than significant. Similar to the project, Alternative A would have no impacts on potentially exposing people or structures to landslides. Therefore, overall, impacts under Alternative A would be less than impacts under the project since the project area would remain unchanged.

5.5.1.7 Hazards/Hazardous Materials

Under Alternative A, there would be no construction in the Park. Because there would be no construction under Alternative A, there would be no use, transport, or release/disposal of any potentially hazardous construction materials. The 2008 Interim Public Access and Resource Management Plan IS/MND required mitigation measures for impacts to hazards and hazardous materials, which would continue under Alternative A.

Comparable to the project, there would be no impacts on schools or hazardous sites or be located near a private or public airport. Under Alternative A, there would be no new construction or an increase in people on the site. Therefore, impacts to buildings or people from wildfire would be incrementally lower under Alternative A than the project.

5.5.1.8 Hydrology/Water Quality

Under Alternative A, there would be no construction and grading activities that would expose areas susceptible to erosion resulting in sedimentation in Tolay Lake or Tolay Creek. Additionally, there would be no increase in paved surfaces that would contribute additional stormwater runoff contaminants typical of urban landscapes. Under Alternative A, there would be no installation of a water well to extract groundwater. However, the project would not result in significant impacts from erosion, increase in paved surfaces, or reduction of water quality. These impacts would be the same under Alternative A.

Under Alternative A, no grading would occur, nor would there be placement of any fill in the Park, or construction of buildings in the FEMA-designated 100-year flood zone and impacts on the FEMA flood zone. Comparable to the project, Alternative A is not located downstream of any levees or dams, and is therefore not subject to flooding due to dam failure. Tsunami inundation maps indicate that the Park is not located in an area subject to inundation by tsunami.

There are no significant impacts on hydrology/water quality resulting from the project. However, under Alternative A, the various policies contained in the Master Plan that would protect water resources and water quality would not be implemented. Therefore, under Alternative A, the significant benefits to hydrology and water quality from the project would not occur and this impact would be incrementally greater than under the project.

5.5.1.9 Land Use and Planning

Under Alternative A, the Master Plan would not be adopted and implemented. Park access would not be improved and the Park would not be developed and would be able to accommodate increase use beyond current visitation levels. Sonoma County General Plan Goal PF-2.1 would not be met, which is to *Assure that park and recreation, public education, fire suppression and emergency medical, and solid waste services, and public utility sites are available to the meet future needs of Sonoma County residents.* Nor would General Plan Objective PF-2.1 be met, which is to *Provide an adequate supply and equitable geographic distribution of regional and local parks and recreation services based on population projections.* Therefore, Alternative A would not meet regional demand for recreation, which is a stated goal and objective of the Sonoma County General Plan (Goal and Objective PF-2.1).

Similar to the project, Alternative A would not physically divide an established community, nor would it conflict with any applicable habitat conservation plan or natural community conservation plan. Therefore, impacts on land use and planning under Alternative A would be slightly greater than under the project since Sonoma County General Plan goals, particularly related to recreation, would not be met.

5.5.1.10 Mineral Resources

Under Alternative A, rock material (gravel) would continue to be extracted from the quarry for onsite use related to road maintenance and other repairs within the property. Under Alternative A, similar to the project, there would be no change in the availability of a mineral resource. This impact would be the same as under the project.

5.5.1.11 Noise

Under Alternative A, there would be no noise or vibration generated by construction activities and there would be no construction related noise or vibration impacts. Therefore, although construction noise from the project is less than significant, this impact would be less under Alternative A. Similar to the project, Alternative A would not be located near a public or private airstrip.

Although the proposed project would not result in traffic noise that exceeds County standards, the resulting increase in traffic that could occur under the proposed project would nonetheless increase ambient noise levels, resulting in a significant unavoidable impact. Under Alternative A, there would be no increase in vehicle trips on Cannon Lane. Therefore, the permanent ambient noise level increase resulting from the project would not occur under Alternative A and there would be no significant unavoidable impact from noise. Overall, noise impacts under Alternative A would be less than under the project.

5.5.1.12 Public Services and Recreation

Under Alternative A, there would be no impacts to public services (fire protection, police protection, schools, parks, and other public facilities). Impacts to public services under Alternative A would be the same as under the project.

Under Alternative A, there would be no construction of new recreational facilities, thus, there would not be any adverse physical impacts on the environment associated with vehicle noise and

traffic. This would avoid the significant unavoidable impacts of the project to noise and transportation. Therefore, under Alternative A impacts on recreation would be less than under the project.

5.5.1.13 *Transportation*

Under Alternative A, vehicle trips would continue to be contribute to the Lakeville Highway (SR 116)/Stage Gulch Road intersection. This intersection is currently operating at a deficient LOS and this condition would continue under Alternative A. The project would contribute additional traffic to this intersection; therefore, impacts to this intersection would be incrementally greater under Alternative A. However, Alternative A would not avoid this impact. Therefore, while impacts on transportation and traffic under Alternative A would be less than under the project, they would not avoid the significant and unavoidable impact associated with reduction of LOS at Lakeville Highway (SR 116)/Stage Gulch Road.

Under Alternative A, no improvements would be required at the intersection of Lakeville Highway/Cannon Lane or along Cannon Lane. Additionally, Alternative A would not require the construction of a southern entrance to the Park. Therefore, there would be no need for mitigation at Lakeville Highway/Cannon Lane or along Cannon Lane and there would be no impact at the South Park Entrance on SR 121 that would require the installation of a left turn lane. These impacts would be less than under the project. Similar to the project, Alternative A would not cause changes in air traffic patterns, result in inadequate emergency access, or conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

5.5.1.14 *Utilities*

Under Alternative A there would be no construction of any park facilities, including overnight facilities, and consequently increase in water demand, generation of solid waste, or generation of wastewater from increased Park visitation. Alternative A would not require a new source of potable water or require construction of a new wastewater treatment facilities to serve the project area.

Therefore, although there are no significant impacts to utilities resulting from the project, overall, impacts on utilities under Alternative A would be less than under the project since the project site would remain unchanged.

5.5.1.15 *Relationship of the Alternative to the Project Objectives*

Alternative A would only meet three of the eight project objectives; those objectives pertaining to preservation. Alternative A would not create an outdoor destination in the region for all ages and cultures, would not restore and preserve a thriving, ecologically rich landscape, and would not expand the innovative and interactive education and experiences currently held at the Park. In addition, Alternative A would not address Goal and Objective PF-2.1, that pertain to meeting regional demands for outdoor recreation.

5.5.2 *Environmentally Superior Alternative*

As described in 5.1 and 5.2.1, Section 15126.6 of the *CEQA Guidelines* governs the consideration and discussion of alternatives to the proposed project. CEQA requires that an EIR

select the “environmentally superior” alternative and disclose the reasons for its selection as such.

Alternative A: No Project/Interim Plan Alternative would eliminate some of the significant impacts associated with the proposed project. Alternative A would eliminate the significant unavoidable impact related to a substantial, permanent increase in ambient noise levels because it would not increase weekday and weekend ambient noise levels by more than 5 dB.

However, under Alternative A, vehicle trips would continue to contribute to the Lakeville Highway (SR 116)/Stage Gulch Road intersection. This intersection is currently operating at a deficient LOS and this condition would continue under Alternative A and would not avoid the significant unavoidable impact.

Alternative A would not result in any ground-disturbing activities and new construction, which would lessen many of the project’s less than significant impacts. However, all of these impacts (with the exception of noise and traffic) were found to be less than significant.

Additionally, Alternative A would not result in the beneficial impacts of the project. Under Alternative A, the substantial habitat and lake restoration proposed by the project would not occur. Policies protecting biological and cultural resources would not be implemented. Additionally, policies protecting hydrology and water quality would not be implemented. Lastly, Alternative A would result in greater impacts to land use and recreation by not increasing recreational opportunities in Sonoma County. Therefore, under Alternative A, the significant benefits to biological resources, cultural resources, hydrology and water quality, land use, and recreation from the project would not occur and this impact would be greater than under the project.

Although Alternative A avoids most of the environmental impacts of the project, it increases other impacts. Alternative A would have similar (albeit different) impacts as compared to the project. Therefore, there are environmental advantages and disadvantages of the alternative in comparison with the project. Because the alternative would reduce some impacts and increase others, there is no clear environmentally superior alternative to the project.

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6. CEQA-REQUIRED CONCLUSIONS

Section 15126 and 15130 of the *CEQA Guidelines* requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the Draft EIR must also identify (1) significant environmental effects that cannot be avoided if the proposed project is implemented; (2) significant irreversible environmental change that would result from implementation of the proposed project; (3) growth-inducing impacts of the proposed project; and (4) cumulative impacts.

6.1 SUMMARY OF SIGNIFICANT UNAVOIDABLE IMPACTS

Section 15126.2(b) of the *CEQA Guidelines* requires that an EIR describe any significant impacts which cannot be avoided, even with implementation of mitigation measures. Based on the analysis contained in this Draft EIR, with implementation of mitigation measures the project would result in significant unavoidable impacts to noise and traffic.

6.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the *CEQA Guidelines* states that significant irreversible environmental changes associated with a proposed project shall be discussed, including the following:

- Uses of nonrenewable resources during the initial and continued phases of the project that may be irreversible because a large commitment of such resources makes removal or nonuse thereafter unlikely;
- Primary impacts and, particularly, secondary impacts (such as highway improvement that provides access to a previously inaccessible area), which generally commit future generations to similar uses; and
- Irreversible damage that could result from environmental accidents associated with the project.

The proposed project would require the long-term commitment of natural resources. Project construction would result in an irretrievable commitment of natural resources through the direct consumption of fossil fuels, primarily in the form of fuel to power construction equipment, to generate electricity needed for construction, and to transport people and materials to and from construction areas.

The project would also require commitment of other nonrenewable resources, including: lumber and other forest products for construction; sand and gravel for concrete and building materials; asphalt for surfacing roads and parking areas; petrochemical construction materials, such as solvents, engine coolant, and lubricants for construction machinery; steel, copper, lead and other metals for reinforced concrete and pipes.

With the exception of noise generated by increased traffic on Cannon Lane and an increase in traffic at the Lakeville Highway (SR 116)/Stage Gulch Road intersection, primary impacts of the project would be mitigated to less than significant. The project intends to retain the existing agricultural uses, which would ensure preservation of the existing agricultural uses on the site

and the agricultural environment in this part of the County, while expanding open space recreation opportunities to the public.

The project uses would be limited to outdoor recreational users visiting during the day (overnight activities would be confined to permit-only camping and bunkhouse facilities) and would not interfere with the existing agricultural activities. Some building construction is proposed in the Park Complex, an area currently developed with existing buildings. Other improvements include repairs and paving to Cannon Lane and the addition of the Southern Entrance to the Park. The project does not propose the development of land uses (such as residential or commercial development, new roadways, or infrastructure) that would permanently commit Prime Farmland or Farmland of Local Importance. Therefore, development of visitor-servicing uses, including improving access to the Park would not represent a large commitment of land to future uses or create secondary impacts.

Accidental spills of fuels, paints, or other chemicals could occur during construction. However, pursuant to California Health and Safety Code Sections 25500–25520, the construction contractor would be required to limit spills by training construction workers, supervising all construction work, and reporting and cleaning-up any inadvertent spills of chemicals used during construction (e.g., fuel, lubricants) with oversight from Sonoma County’s Certified Unified Program Agency program. In addition, the project does not propose nor would it require the use explosives or other extremely hazardous materials (e.g., pesticides, other toxins) during construction.

6.3 GROWTH-INDUCING IMPACTS OF THE PROPOSED PROJECT

Section 15126.2(d) of the *CEQA Guidelines* requires a discussion of the ways in which a proposed action could be growth inducing. This includes ways in which the project would foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.

In general, a project may foster spatial, economic, or population growth in a geographic area if it meets any one of the criteria identified below:

- The project removes an impediment to population growth (e.g., the establishment or expansion of an essential public service to an area)
- The project results in the urbanization of land in a remote location (leapfrog development)
- The project establishes a precedent-setting action (e.g., a change in zoning or General Plan amendment approval)
- Economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion, etc.)

If a project meets any one of these criteria, it may be considered growth inducing. Generally, growth-inducing projects are located in either isolated, undeveloped, or underdeveloped areas, necessitating the extension of major infrastructure such as sewer and water facilities or roadways, that could encourage premature or unplanned growth.

The project would not remove an impediment to population growth as Cannon Lane is already existing, the Southern Entrance to the Park can be accessed by existing dirt roads, and the water supply and wastewater treatment plant are sized to serve the project uses only.

The project is a park located in a rural area and the outdoor recreational uses, would primarily consist of passive recreational uses such as hiking, horseback riding, mountain biking, and camping. These uses would not be considered urban uses and would not create urban uses that could cause leapfrog development.

The project includes a General Plan Amendment to change the land use designations from Land Extensive Agriculture to Quasi-Public land use, the specific use of the project area would be for public access and protection of sensitive natural and cultural resources. No residential or commercial land uses would be allowed under the new land use designation. This change in land use designation is specific to the Park properties, would not change land use designations to any of the adjacent properties. and would not be precedent setting.

Development of the parcels comprising the Park would not construct housing, directly add residents to the County, or make available new areas of undeveloped land for development. The construction of a new wastewater plant would be specific to and only support use of the Park. Improving Cannon Lane would occur to specifically support increased use of the Park. Finally, development of the Park would not result in a change in the local revenue base or increase employment. Therefore, the project would not induce future growth within Sonoma County.

6.4 CUMULATIVE IMPACTS

Section 15130 of the CEQA Guidelines requires a discussion of cumulative impacts of the project. The analysis must include a discussion of the project's possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

6.4.1 Methodology

When evaluating cumulative impacts, CEQA envisions the use of either a list of past, present, and probable future projects, including projects outside the control of the lead agency, or a summary of projections in an adopted planning document (such as a General Plan and General Plan EIR), or some reasonable combination of the two approaches.

The proposed project includes development of a new open space Regional Park facility to serve the residents of Sonoma County. Given the scope and type of project, the most reasonable approach for the cumulative analysis would be to use the development assumptions in the Sonoma County General Plan 2020 (General Plan) and the environmental analysis of the impacts of the General Plan (General Plan EIR).

6.4.1.1 Aesthetics

The area considered for cumulative aesthetic impacts includes southern Sonoma County. The project would not result in any impacts to visual character of the site or scenic vistas. The project would create an impact from site lighting that was mitigated to less than significant. However,

the General Plan EIR found cumulatively significant impacts related to aesthetics from light pollution. Although the project impact was mitigated to less than significant, it would contribute incrementally to this cumulative impact.

6.4.1.2 Agriculture and Forestry Resources

The area considered for cumulative agricultural and forestry resource impacts includes Sonoma County. The project intends to retain the existing agricultural uses, including grazing, which would ensure preservation of the existing agricultural uses on the site and the agricultural environment in this part of the County. The project does not propose the development of land uses (such as residential or commercial development, new roadways, or infrastructure) that would permanently commit Prime Farmland or Farmland of Local Importance. The General Plan EIR did not find cumulatively significant impacts related to agricultural and forestry resources and the project would not create any cumulative impacts.

6.4.1.3 Air Quality and Greenhouse Gases

The area considered for cumulative air quality/GHG impacts is the San Francisco Bay Area Air Basin. A detailed analysis of the project's air quality and greenhouse gas impacts for the cumulative scenario are described in Sections 4.1.1 and 4.1.3 of the DEIR.

In summary, the project would not create any significant impacts to air quality. However, the General Plan EIR found cumulatively significant impacts related to air quality from ozone precursors. The project would generate vehicles trips and although project impacts to air quality were mitigated to less than significant, the project would contribute incrementally to this General Plan EIR cumulative impact.

6.4.1.4 Biological Resources

The area considered for cumulative biological resource impacts includes Sonoma County. The project would result in an impact from tree removal, which could conflict with local policies, and would be mitigated to less than significant. The General Plan EIR found cumulatively significant impacts related to special status species, sensitive natural communities, and wildlife habitat and movement. The General Plan EIR did not find any impacts related to tree removal.

The project proposes substantial habitat restoration activities including lake restoration, native grassland monitoring, riparian and woodland plantings, and wetland and meadow plantings resulting in a significant benefit to the status species, sensitive natural communities, and wildlife habitat and movement. Due to the size of the project, this benefit would extend to Sonoma County as a whole. Although the General Plan EIR found cumulatively significant impacts to status species, sensitive natural communities, and wildlife habitat and movement, the project would not contribute to any cumulative biological resource impacts.

6.4.1.5 Cultural Resources

The area considered for cultural resources cumulative impacts includes Sonoma County. As with any project that results in construction, the project would result in impacts to historic resources, archeological or paleontological resources, and unknown human remains. These impacts would

be largely avoided by the policies included in the Master Plan and any remaining potential impacts would be mitigated to less than significant by mitigation measures included in the DEIR.

The General Plan EIR found cumulatively significant impacts related to archaeological and paleontological resources. The project would preserve the TVHD and address both the short and long-term effects that may threaten archaeological and tribal cultural resources. The Master Plan contains objectives and standards to ensure that no impacts occur on inadvertent discoveries of cultural resources, including buried human remains, which is consistent with CEQA provisions. Due to the size of the project, the benefits accrued from protecting these cultural resources would extend to Sonoma County as a whole. Although the General Plan EIR found cumulatively significant impacts to archaeological and paleontological resources, the project would not contribute to any cumulative historic or cultural resource impacts.

6.4.1.6 Geology and Soils

The area considered for geology and soils cumulative impacts includes the project site. As with any project requiring construction, seismic hazards would be adequately mitigated by existing law, regulations, and policies, including the California Buildings Code and the County's development review procedures. Development and use of Tolay Lake Regional Park has the potential to result in erosion, particularly due to the steepness of some of the trails and roads, as well as construction activities.

The General Plan EIR found cumulatively significant impacts related to seismic shaking, ground failure, landsliding, settlement, tsunami and seiches, and soil erosion. These impacts are typical of project proposing land development, including housing and infrastructure. The proposed project includes development of a new open space Regional Park facility to serve the residents of Sonoma County. Development would be minimal and impacts would be less than significant. Although the General Plan EIR found cumulatively significant impacts to geology and soils, the project would not contribute to any cumulative geology and soils impacts.

6.4.1.7 Hazards and Hazardous Materials

The area considered for hazards and hazardous materials cumulative impacts includes Sonoma County. The proposed project includes development of a new open space Regional Park facility to serve the residents of Sonoma County and would not result in the use or transport of hazardous materials. The Master Plan includes both emergency access and evacuation plans, including maintenance activities for those facilities and there would be no impact from hazards. The General Plan EIR did not find cumulatively significant impacts related to hazards and hazardous materials and the project would not contribute to any cumulative impacts.

6.4.1.8 Hydrology and Water Quality

The area considered for hydrology and water quality impacts includes Sonoma County, particularly Tolay Creek watershed, which is bounded on the northeast by the Sonoma Mountains and on the southwest by a low line of hills that separate it from the Petaluma Valley to the west and San Pablo Bay. Implementation of the Master Plan would provide for a proactive approach to comply with sensitive resource regulations and protecting water quality. This process would require the implementation of measures to protect water quality during

construction of new park facilities and Tolay Lake restoration elements and future road and trail construction and maintenance.

A key component of the project would be restoration of Tolay Lake, which is intended to improve groundwater attenuation and late season flows in Tolay Creek, thereby improving wildlife habitat in the vicinity of Tolay Lake and in Tolay Creek. Additionally, the project proposes to change existing drainage patterns in the vicinity of Tolay Lake, to remove and replace existing hydraulic structures, and to modify the causeway. The drainage changes and hydraulic structure improvements are intended and would be designed to improve hydraulics/flood conditions in the Park. The project would construct approximately 0.8 acres of new impervious surfaces, mostly in the form of new buildings. These new surfaces, however, would not prevent stormwater runoff flows from recharging the underlying groundwater basin (Petaluma Valley Basin), as drainage would be conveyed to locations where the runoff can infiltrate. In addition, the project would not be located within the Petaluma Valley Basin's primary recharge areas, which are concentrated northwest of Petaluma or scattered on the western flank of the Sonoma Mountains to the east. Therefore, there would be no significant impacts to hydrology and water quality from the project.

The General Plan EIR found cumulative hydrologic and water resources impacts, including increased demand on groundwater supplies, alteration of drainage patterns, and increased impervious surfaces. However, as described above, the project would result in significant benefits to hydrology and water quality and this benefit would extend to Sonoma County as a whole and would not contribute to any cumulative hydrologic and water quality impacts.

6.4.1.9 Land Use and Planning

The area considered for land use and planning cumulative impacts includes Sonoma County. The Master Plan consists of conceptual plans for physical improvements; a resource management plan, educational and interpretive plan, trails plan, and phasing and implementation plan; Park maintenance and operation activities; and Master Plan goals, objectives, and policies that would guide implementation of Park activities and provide resource protection measures and activities. The project would implement Sonoma County General Plan 2020 Open Space and Resource Conservation Goal OSRC-17, which aims to “establish a countywide park and trail system that meets future recreational needs of the County's residents while protecting agricultural uses.” Pursuant to Policy OSRC-17a, the County is requesting a General Plan Amendment to apply the “Public-Quasi Public/Park” land use designation to the Park site. This change in land use designation would allow for implementation of the Master Plan while maintaining the agricultural heritage of the Park, preserving open space and natural resource values, and achieving compatibility among adjacent land uses.

The General Plan EIR found that land use incompatibility resulting from residential/urban land uses in the rural agricultural areas would be a significant impact. The project is not a land use development plan, but the continuation of an existing land use, Tolay Lake Regional Park. The project intends to retain the existing agricultural uses, including grazing, which would ensure preservation of the existing agricultural uses on the site and the agricultural environment in this part of the County. The project does not propose the development of land uses (such as residential or commercial development, new roadways, or infrastructure) that would permanently commit Prime Farmland or Farmland of Local Importance. Development would be minimal and

impacts would be less than significant. Although the General Plan EIR found cumulatively significant impacts to land use and planning, the project would not contribute to any cumulative land use and planning impacts.

6.4.1.10 Mineral Resources

The area considered for mineral resource cumulative impacts includes Sonoma County and the state of California. The project site is designated as MRZ-3a and MRZ3b with respect to Portland concrete cement aggregate and asphalt concrete aggregate, and MRZ-3a, MRZ3b, and MRZ-4 with respect to class II base aggregate by the state of California. The project area is not designated by Sonoma County as an area containing mineral resources.

There is an existing quarry within the project area., but any gravel extracted is used only on-site and is not exported. The Sonoma County Agricultural Preservation and Open Space District's conservation easement for this project site allows for the continued extraction of rock material from this quarry, but prohibits any other exploration, development, and extraction of mineral resources within the project property. The General Plan EIR did not find cumulatively significant impacts related to mineral resources and the project would not contribute to any cumulative impacts.

6.4.1.11 Noise

The project area for noise cumulative impacts for traffic increase is the area surrounding the project site, including nearby roadways. A detailed analysis of the project's noise impacts for the cumulative scenario are described in Section 4.8 of the DEIR. In summary, the project operation would generate noise from off-site vehicle traffic on Cannon Lane. This impact would be significant and unavoidable.

The General Plan EIR found that noise impacts related to vehicle and rail travel would result in significant cumulative noise impacts. However, the project is located in a rural area of southern Sonoma County. The increase in noise would be limited to a very small number of residences along Cannon Lane and would occur only during hours of Park operation when traffic would be generated. Additionally, the proposed improvements to Cannon Lane would result in a paved, improved road surface of uniform width. Thus, the proposed improvements would improve traffic noise below that which would occur without the Master Plan, a factor that is not accounted for in the noise analysis, which presented a conservative estimate. Therefore, due to the remote location of the project, limited number of receptors exposed to this increase in noise, and the potential for improvements to decrease noise, the project's contribution to General Plan EIR noise impacts would not be cumulatively considerable.

6.4.1.12 Population and Housing

The area considered for population and housing cumulative impacts includes Sonoma County. The project is a Master Plan of conceptual plans for physical improvements; a resource management plan, educational and interpretive plan, trails plan, and phasing and implementation plan; Park maintenance and operation activities that would guide implementation of Park activities. Other than Park facilities, no housing is proposed.

The General Plan EIR found that growth, particularly in the cities, would result in significant cumulative population and housing impacts. Although the General Plan EIR found cumulatively significant impacts to population and housing, the project would not remove any housing, does not propose any housing, and would not contribute to any cumulative population and housing impacts.

6.4.1.13 Public Services and Recreation

The area considered for public services and recreation cumulative impacts includes Sonoma County. The General Plan EIR found that impacts to police and fire services and recreation would be cumulatively considerable. These impacts would be primarily due to increases in population created by land use development under the General Plan, which would increase demand for police and fire services and recreation facilities.

The project is a Master Plan of conceptual plans for physical improvements; a resource management plan, educational and interpretive plan, trails plan, and phasing and implementation plan; Park maintenance and operation activities that would guide implementation of Park activities. The project does not propose any housing that would increase population in the area. Police services at the Park are generally handled by Park personnel, who are peace officers. Fire protection would continue to be provided by the Lakeville Volunteer Fire Department and the Schell-Vista Fire Protection District. The Master Plan includes both emergency access and evacuation plans, including maintenance activities for those facilities. There would be no impacts to police and fire services from the project and the project would not contribute to any cumulative police and fire services impacts.

The significant impacts described in Section 4.9 under recreation, come from the project-related to increases in noise and traffic. However, the project itself would result in a net recreational benefit to the County by increasing the level and range of recreational resources available. Therefore, although the General Plan EIR found cumulatively significant impacts to public services and recreation, the project would increase park acreage in the County and would not contribute to any cumulative public services and recreation impacts.

6.4.1.14 Transportation

The area considered for transportation cumulative impacts includes Sonoma County. A detailed analysis of the project's traffic impacts for the cumulative scenario are described in Section 4.10 of the DEIR. In summary, the project operation would generate traffic, which in combination with existing intersection deficiencies would result in impacts at Lakeville Highway (SR 116)/Stage Gulch Road. Since there is no adopted plan or funding mechanism for improvements that would mitigate this impact, the impact of the project would be considered impact would be significant and unavoidable.

The General Plan EIR found that implementation of the General Plan would create cumulative transportation and traffic impacts, resulting from congestion on local County and city roadways, state highways, and key intersections. The project would contribute traffic on County roadways and would create a significant unavoidable impact at the intersection of Lakeville Highway (SR 116)/Stage Gulch Road. Therefore, the project would contribute to cumulative impacts from traffic.

6.4.1.15 Utilities and Service Systems

The area considered for public services and recreation cumulative impacts includes Sonoma County. The project would be supplied by water from an on-site well, which is capable of supplying the project needs. The Park would not be connected to a sanitary sewer system. Instead, Park wastewater needs, which are already served by portable toilets, would continue to be served by portable toilets until the proposed wastewater treatment facilities are constructed, approximately after year 10. With a wastewater treatment capacity of 13,350 gallons per day (gpd) average, or 19,462 gpd during a peak time, wastewater treatment for the Park would be sufficient to accommodate anticipated Park visitation and Park uses. The Park would generate solid waste, which would be disposed of at County facilities.

The General Plan EIR found that impacts to water supply, wastewater treatment, and solid waste would be cumulatively considerable. Although the General Plan EIR found cumulatively significant impacts to water supply and wastewater, the project would not require water supply or wastewater treatment from the same sources as land uses developed under the General Plan. Therefore, the project would be adequately supplied on-site and would not contribute to any cumulative water and wastewater impacts. The project would generate some solid waste from visitors to the site. While it could be conceivably argued that this solid waste would have been generated elsewhere in the County and was not a direct result of the project, solid waste generated by project construction would incrementally contribute to the County's waste flow. Therefore, the project would contribute incrementally to cumulative solid waste impacts.

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7. REPORT PREPARATION

Sonoma County
Regional Parks
2300 County Center Drive, Suite 120a
Santa Rosa, CA
95403

Steve Ehret, Planning Manager
Karen Davis-Brown, Tolay Lake Regional Park Master Plan Project Manager

MIG, Inc.
800 Hearst Avenue
Berkeley, CA 94710

John Baas, Principal
Katrina Hardt-Holoch, AICP, Senior Project Manager
Steve Ridone, Environmental Planner
Ivy Ku, Environmental Planner
Chris Dugan, Senior Project Manager/Senior Analyst
Phil Gleason, Environmental Analyst
Lauren Huff, Senior Biologist
Laurie Matthews, Director of Preservation Planning + Design
Mark Brandi, Graphics

Cultural Resources

Garcia and Associates
1 Saunders Avenue
San Anselmo, CA 94960

Barb Siskin, Senior Archaeologist
Cassidy DeBaker, Senior Archaeologist

Hydrology and Water Quality

Wildscape Engineering, Inc.
3079 Harrison Ave., Suite 5
South Lake Tahoe, CA 96150

Carol Beahan, Principal
Greg Hinds, MS, EIT, QISP, Staff Engineer

Transportation

W-Trans
490 Mendocino Avenue, Suite 201
Santa Rosa, CA 95401

Steve Weinberger PE, PTOE
Lauren Davini, PE

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8. REFERENCES

SECTION 1.0 INTRODUCTION

No references for this section.

SECTION 2.0 EXECUTIVE SUMMARY

No references for this section.

SECTION 3.0 PROJECT DESCRIPTION

No references for this section.

SECTION 4.0 SETTING, IMPACTS, AND MITIGATION MEASURE

4.1 Impacts Found to be LTS

Air Quality and Greenhouse Gas Emissions

Bay Area Air Quality Management District (BAAQMD) website, Guidelines, Tools and Methodology page, accessible at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

BAAQMD. 2010. 2010 Clean Air Plan (CAP). <http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx>.

California Air Resources Board website, Regulations, Tools, Scoping Plan, and Air Quality Monitoring accessible at: <http://www.arb.ca.gov/homepage.htm>

Geology and Soils

Association of Bay Area Governments (ABAG). 2015. Resilience Program: Future Earthquake Shaking Scenarios Interactive Map. <http://gis.abag.ca.gov/website/Hazards/?hlyr=northSanAndreas>. Accessed August 2015.

Sonoma County. 2014. Sonoma County General Plan 2020: Public Safety Element, as amended. Sonoma County Permit and Resource Management Department, Santa Rosa, California. Originally adopted on September 23, 2008.

California Building Code. http://www.sonoma-county.org/prmd/gisdata/pdfs/usgs_crc_cbc.pdf

Fall Creek Engineering, Inc. 2014. Wastewater Disposal Options and Preliminary Wastewater System Plan.

Hazards and Hazardous Materials

California Department of Toxic Substances Control. 2015. EnviroStor. Website: www.envirostor.dtsc.ca.gov. Accessed August 5, 2015.

- California State Water Resources Control Board. 2015. GeoTracker. Website: <http://geotracker.waterboards.ca.gov>. Accessed August 5, 2015.
- CalFire. 2007. Sonoma County Fire Hazard Severity Zones in State Responsibility Areas, Adopted by CalFire on November 7, 2007.
- EBA Engineering. 2004. Phase I Environmental Site Assessment prepared for Tolay Lake Ranch, Petaluma, California.
- Sonoma County. 2014. Sonoma County General Plan 2020: Public Safety Element, as amended. Sonoma County Permit and Resource Management Department, Santa Rosa, California. Originally adopted on September 23, 2008. Figure PS-1g, Wildland Fire Hazard Areas.
- Sonoma County. 2015. Permits and Inspections for Fire Prevention. <http://sonomacounty.ca.gov/FES/Fire-Prevention/Permits-and-Inspections/>. Accessed August 2015.

Mineral Resources

- California Department of Conservation. Special Report 175, Mineral Land Classification of Aggregate Materials in Sonoma County, California. Plate 2, 3, and 4.
- Circuit Rider Productions. 2006. Tolay Lake Regional Park Baseline Documentation. Document prepared for Sonoma County Agricultural Preservation and Open Space District.

Population and Housing

No references.

4.2 Aesthetics

- California Department of Transportation (Caltrans). 2016. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.
- Sonoma County. 2016. Sonoma County General Plan 2020: Open Space and Resource Conservation Element, as amended. Sonoma County Permit and Resource Management Department, Santa Rosa, California. Originally adopted on September 23, 2008.

4.3 Agriculture

- California Department of Conservation. 2014. California Farmland Conversion Report 2008-2010. Sections cited: Appendix E, page 101. <http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2008-2010/fcr/FCR%200810%20complete.pdf>. Accessed October 2015.
- California Department of Conservation. 2015. FMMP Important Farmland Categories. http://www.conservation.ca.gov/dlrp/fmmp/mccu/Pages/map_categories.aspx. Accessed August 10, 2015.
- California State Board of Equalization. 2015. Timber Yield Tax & Harvest Values Schedules, July 2007, Reprinted January 2015. <http://www.boe.ca.gov/proptaxes/timbertax.htm>, Accessed October 19, 2015.

- Sonoma County Permit and Resource Management Department (PRMD). 2012. ActiveMap, Williamson Act Land Contracts - 2012, Feature Report. <http://www.sonoma-county.org/prmd/activemap/reports/wact.pdf>. Accessed August 27, 2015.
- Sonoma County PRMD. 2013. Phase Out of Substandard Parcels in Agricultural Preserves – FAQs. http://www.sonoma-county.org/prmd/docs/ag_preserve_rules/phaseout_substandard_parcel.pdf. Accessed October 2015.
- Sonoma County PRMD. 2016. Sonoma County General Plan 2020 – Agricultural Resources Element, Amended August 2, 2016. <http://www.sonoma-county.org/prmd/gp2020/Agricultural-Resources-Element-amended-20160802.pdf>.
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2015. Custom Soil Resource Report for Sonoma County, California. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed August 11, 2015.

4.4 Biological Resources

- Barbour, M.G., T. Keeler-Wolf, and A.A. Schoenherr (eds.). 2007. Terrestrial Vegetation of California, 3rd Edition. University of California Press, Berkeley, CA. 712 pp.
- Baye, Peter. 2014. Tolay Lake Restoration: Summary of Preliminary Review of WRA Revised Memorandum September 2013.
- Block, W.M. and M.L. Morrison. 1998. Habitat Relationships of Amphibians and Reptiles in California Oak Woodlands. *Journal of Herpetology*, Vol 32(1): 51-60.
- Blood, D.A. 2002. Badgers. Biodiversity Branch, Ministry of Water, Land, and Air Protection, Victoria, British Columbia. Available online at <http://env.gov.bc.ca/wld/documents/badger.pdf>. Accessed August 24, 2016.
- Bulger, J.B., N.J. Scott, Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. *Biological Conservation* 110: 85-95.
- Burridge, B. (ed.). 1995. Sonoma County Breeding Bird Atlas, A Project of Madrone Audobon Society. Madrone Audobon Society, Santa Rosa, CA. 203 pp.
- California Department of Conservation, California Geological Survey. 2002. Geologic Map of the Sears Point 7.5 Minute Quadrangle, Sonoma, Solano, and Napa Counties, California: A Digital Database.
- California Department of Fish and Wildlife (CDFW). 2016a. Special Animals List. California Natural Resources Agency, CDFW, Biogeographic Data Branch, Natural Diversity Database, Sacramento, CA. Periodic publication. 51 pp.
- CDFW. 2016b. California Natural Diversity Database (CNDDDB), Wildlife and Habitat Data Analysis Branch. Sacramento, CA. Accessed: August 2016.
- CDFW. 2009. Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities. California Natural Resources Agency, CDFW, Biogeographic Data Branch. November 24, 2009.

- CDFW. 2010. List of Vegetation Alliances and Associations. Vegetation Classification and Mapping Program, CDFW. Sacramento, CA. September 2010.
- CDFW. 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code.
- California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory: Cal-IPC Publication 2006-2. California Invasive Plant Council, Berkeley, CA. Available online: <http://www.cal-ipc.org/ip/inventory/index.php>. Accessed: August 2016.
- California Native Plant Society (CNPS). 2001. CNPS Botanical Survey Guidelines. California Native Plant Society Publication.
- CNPS. 2016. Inventory of Rare and Endangered Plants (online edition, v8-01a). California Native Plant Society, Sacramento, California. Available at: www.cnps.org/inventory. Accessed: August 2016.
- Ducks Unlimited. 2005. Feasibility Analysis for the Restoration of Tolay Lake, Sonoma County, California. Prepared for: Sonoma County Agricultural Preservation and Open Space District. March 2005.
- Dunk, J.R. 1995. White-tailed Kite (*Elanus leucurus*). In: Poole, A. and F. Gill, eds. *The Birds of North America*, No. 178. The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.
- Fellers, G. and P. Kleeman. 2007. California red-legged frog (*Rana draytonii*) movement and habitat use: Implications for conservation. *Journal of Herpetology* 41:271-281.
- Hayes, M. P. and M. R. Jennings. 1986. Decline of ranid frog species in western North America: Are bullfrogs (*Rana catesbeiana*) responsible? *Journal of Herpetology* 20(4):490-509.
- Hickman, J.C. (ed.). 1993. *The Jepson Manual, Higher Plants of California*. Berkeley: University of California Press.
- Holland, D.C. 1994. *The Western Pond Turtle: Habitat and History*. Final Report. Portland, OR: U.S. Department of Energy, Bonneville Power Administration.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resource Agency. California Department of Fish and Game. Sacramento, CA. 156 pp.
- Jackson, L.E. 1985. Ecological origins of California's Mediterranean grasses. *Journal of Biogeography* 12: 349-361.
- Jennings, M. R. and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California. Contract No. 8023.
- Jennings, M. R. 1988. Natural history and decline of native ranids in California. Pp. 61-72 in: H. F. DeLisle, P. R. Brown, B. Kaufman, and B. M. McGurty (editors), *Proceedings of the conference on California herpetology*. Southwestern Herpetologists Society, Special Publication (4).

- Jepson Flora Project (eds.). 2016. Jepson eFlora, <http://ucjeps.berkeley.edu/IJM.html>. Accessed August 18, 2016.
- Kamman Hydrology and Engineering, Inc. (Kamman). 2003. Hydrologic Feasibility Analysis for The Tolay Lake Ranch Property, Sonoma County, California. Prepared for: Sonoma County Agricultural Preservation and Open Space District. December 2003.
- Knopps, J.M.H. and J.F. Barthell. 1996. Flower abundance in a population of sky lupine (*Lupinus nanus*) over three years in Central Coastal California. *Madroño* 43(1): 85-92.
- Koenig, J.B. 1963. Geologic Map of California, Santa Rosa Sheet. Olaf P. Jenkins Edition.
- Kotchert, M.N. J.H. Doremus, C.L. McIntyre, and E.H. Craig. 2002. Golden Eagle (*Aquila chrysaetos*). In *The Birds of North America* (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, DC.
- Leidy, R.A. 2007. Ecology, Assemblage Structure, Distribution, and Status of Fishes in Streams Tributary to the San Francisco Estuary, California. San Francisco Estuary Institute, Contribution No. 530.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 Wetland Ratings. *Phytoneuron* 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
- Long, C.A. 1973. *Taxidea taxus*. American Society of Mammalogy, Mammalian Species No. 26. 4 pp.
- Lowther, P. E., C. Celada, N. K. Klein, C. C. Rimner, and D. A. Spector. 1999. Yellow Warbler (*Dendroica petechia*). In *The Birds of North America*, No. 454 (A. Poole and F. Gill, eds.). The Birds of North America Online, Ithaca, New York.
- LSA Associates, Inc. (LSA). 2008a. Biological Resources Study Tolay Regional Park Project. Sonoma County, California.
- LSA. 2008b. Administrative Draft Rangeland Resource Study Tolay Regional Park Project. Sonoma County, California.
- LSA. 2009a. Biological Resources Study: Tolay Lake Regional Park, Sonoma County, California. Prepared for: Sonoma County Regional Parks Department, April 24, 2009.
- LSA Associates, Inc. (LSA). 2009b. Biological Resources Study: Tolay Creek Ranch, Sonoma County, California. Prepared for: Sonoma Land Trust, May 20, 2009.
- MacWhirter, R. B., and K. L. Bildstein. 1996. Northern Harrier (*Circus cyaneus*). In *The Birds of North America*, No. 210 (A. Poole and F. Gill, eds.). The birds of North America Online, Ithaca, New York.
- Madrone Audobon Society, Inc. 2011-2014. Madrone Leaves. Santa Rosa, California.
- McNaughton, S.J. 1968. Structure and function in California grasslands. *Ecology* 49(5): 962-972.
- Menges, T. 1998. Common Yellowthroat (*Geothlypis trichas*). In *The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in*

- California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html
- MIG, Inc. 2016. Tolay Lake Regional Park Draft Master Plan.
- Parsons Harland Bartholomew and Associates, Inc. (Parsons). 1996. Draft EIR/EIS Santa Rosa Subregional Long-term Wastewater Project. Prepared for City of Santa Rosa and U.S. Army Corps of Engineers.
- Pierson, E.D. and W.E. Rainey. 1998. Distribution, Status and Management of Townsend's Big-eared Bat (*Corynorhinus townsendii*) in California. Department of Fish and Game. BMCP Technical Report Number 96-7.
- Peeters, H. and P. Peeters. 2005. Raptors of California. California Natural History Guide No. 82. U.C. Press, Berkeley, CA. 295 pp.
- Powell, J.A. 1969. A Synopsis of Nearctic Adelid Moths, with Descriptions of New Species. *Journal of the Lepidopterists' Society* 23: 211-240.
- Reese, D. A. and H. H. Welsh. 1997. Use of Terrestrial Habitat by Western Pond Turtles, *Clemmys marmorata*: Implications for Management. Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles. An International Conference held in 1997 by the New York Turtle and Tortoise Society. pp. 352-357.
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, 2nd Edition. California Native Plant Society in collaboration with California Department of Fish and Game. Sacramento, CA. 1300 pp.
- Shapiro, A.M. and T.D. Manolis. 2007. California Natural History Guides: Field Guide to Butterflies of the San Francisco Bay and Sacramento Valley Regions. UC Press, Berkeley, CA. pp. 345.
- Shuford, W.D. and T. Gardali (eds.). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. *Studies of Western Birds* 1. Western Field Ornithologists, Camarillo, CA and California Department of Fish and Game, Sacramento, CA.
- Sonoma County. 2013. Sonoma County General Plan 2020: Open Space and Resource Conservation Element, as amended. Sonoma County Permit and Resource Management Department, Santa Rosa, California. Originally adopted on September 23, 2008.
- Sonoma Land Trust. 2014. Sonoma Valley Wildlife Corridor Project: Management and Monitoring Strategy. Santa Rosa, California.
- Talcroft, C. 2009-2013. Sonoma County Bird Watching Spots: Ferruginous Hawk. Found online at: colintalcroft.com/Sonoma_County_Bird_Watching_Spots/Ferruginous_Hawk.html. Site visited: August 16, 2016.
- Texas Parks and Wildlife. 1997. Pallid Bat in the Mammals of Texas. Available at: <http://www.nsr1.ttu.edu/tmot1/antrpall.html>.

- U.S. Department of Agriculture (USDA), National Resources Conservation Service (NRCS). 2016a. Field Office Technical Guidelines: Sonoma County, California. Available online at <https://efotg.sc.egov.usda.gov/treemenuFS.aspx>. Accessed online August 18, 2016.
- USDA, NRCS. 2016b. Web Soil Survey. Available online at websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed online August 18, 2016.
- USDA, NRCS. 1972. Soil Survey of Sonoma County, California.
- U.S. Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter No. 05-05. Ordinary High Water Mark Identification. December 7.
- USACE. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). May 2008.
- U.S. Fish and Wildlife Service (USFWS). 2016a. National Wetland Inventory Mapper Version 2.0. Available online at <https://www.fws.gov/wetlands>. Accessed online August 2016.
- USFWS. 2016b. IPaC Trust Resources Report. IPaC version 3.0.8. Available online: <http://ecos.fws.gov/ipac/>. Accessed online August 16, 2016.
- USFWS. 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon.
- U.S. Fish and Wildlife Service (USFWS). 2008. Revised Critical Habitat for the California Red-Legged Frog (*Rana aurora draytonii*); Rule. Federal Register 50 CFR Part 17: September 16, 2008 (Volume 73, Number 180). Pages 53491-53540.]
- USFWS. 2006. Designation of Critical Habitat for the California Red-Legged Frog, and Special Rule Exemption Associated with Final Listing for Existing Routine Ranching Activities; Final Rule. Federal Register 71(71): 19243-19346. April 13.
- USFWS. 1998. Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area. Portland, Oregon.
- Vickery, P. D. 1996. Grasshopper Sparrow (*Ammodramus savannarum*). In *The Birds of North America*, No. 239 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, DC.
- West Coast Watershed. 2009. Tolay Creek Riparian Enhancement Plan. Developed for: Sonoma Land Trust. With assistance from: Rob Evans & Associates. November 2009.
- Western Bat Working Group. 2013. Species Accounts. Available at: http://www.wbwg.org/speciesinfo/species_accounts/species_accounts.html. Accessed: March 2013.
- WRA Environmental Consultants. 2013. Biological Resources Report: Tolay Lake Regional Park.
- Yosef, Reuven. 1996. Loggerhead Shrike (*Lanius ludovicianus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/231doi:10.2173/bna.231>

4.5 Cultural Resources

- Altimira, J. *Diario de la expedicion verificada con objeto de reconocer terranos para la neuva planta de la Mision de N.P.S. Francisco...: ms.S, 1823 June 25 - July 6. 1823, Bancroft Library: Berkeley, CA*
- Architectural Resources Group, Inc. 2012. *Tolay Lake Cordoza Ranch Historic Structures Report*. Prepared by Architectural Resources Group, Inc., San Francisco, California. Prepared for Sonoma County Parks Regional Department, Santa Rosa, California.
- Beardsley, R. K. 1954. *Temporal and Areal Relationships in Central California Archaeology*. University of California Archaeology Survey Reports 24 and 25. Berkeley.
- Elsasser, Albert B. 1954. *A Charmstone Site in Sonoma County*. University of California Archaeological Survey Reports 28:29-33.
- Erlandson, J.M, and T., L Jones. 2002. *Catalyst to Complexity: Late Holocene Societies of the California Coast*. Cotsen Institute of Archaeology, University of California, Los Angeles.
- Fagan, B. 2003. *Before California: An Archaeologist Looks at Our Earliest Inhabitants*. Altamira Press, Walnut Creek, California.
- Fredrickson, D. A. 1973. *Early Cultures of the North Coast Ranges, California*. Ph.D. dissertation, Department of Anthropology, University of California, Davis.
- Fredrickson, D. A. 1989. *Spatial and Temporal Patterning of Obsidian Materials in the Geysers Region*. In *Current Directions in California Obsidian Studies*, edited by R.E. Hughes, pp.95-109. Contributions of the University of California Archaeological Research Facility no.48
- Fredrickson, D. A. 1993. *Archaeological Taxonomy in Central California Reconsidered*. In *Toward a New Taxonomic Framework for Central California Archaeology*, pp 91-103. Edited by Richard Hughes. Contribution of the University of California Archaeological Research Facility, Berkeley.
- Gerow, B. A. 1968. *An Analysis of the University Village Complex with a Reappraisal of Central California Archaeology*. Stanford University Press, Stanford.
- Hildebrandt, W. R. 2007. *Northwest California: Ancient Lifeways among Forested Mountains, Flowing Rivers and Rocky Ocean Shores*. In *California Prehistory: Colonization, Culture, and Complexity*, edited by V. Terry L. Jones and Kathryn A. Klar, pp. 83-98. AltaMira Press, Lanham, Maryland.
- Hylkema, M. G. 2002. *Tidal Marsh, Oak Woodlands, and Cultural Fluorescence in the Southern San Francisco Bay Region*. Chapter 13 in *Catalysts to Complexity: Late Holocene Societies of the California Coast*. In: J. Erlandson and T. Jones, editors. *Perspectives in California Archaeology, Volume 6*, Cotsen Institute of Archaeology, University of California Los Angeles, Los Angeles, California.
- Lightfoot, K., and E. Luby. 2002. *Late Holocene in the Bay Area: Temporal Trends in the Use and Abandonment of Shell Mounds in the East Bay*. Chapter 14 in *Catalysts to Complexity: Late Holocene Societies of the California Coast*. J. Erlandson and T. Jones, Editors. *Perspectives in California Archaeology, Volume 6*, Cotsen Institute of Archaeology, University of California Los Angeles, Los Angeles.

- Lillard, J. B., R. F. Heizer, and F. Fenenga. 1939. An Introduction to the Archaeology Central California. Sacramento Junior College, Department of Anthropology, Bulletin 2.
- LSA. 2008. A Cultural Resources Study for the Tolay Lake Regional Park Project. Prepared by LSA Associates Inc., Point Richmond, California. Prepared for Sonoma County Regional Parks Department, Santa Rosa, California.
- LSA. 2009. A Cultural Resources Study of the Tolay Creek Ranch. Prepared by LSA Associates Inc., Point Richmond, California. Prepared for Sonoma Land Trust, Santa Rosa, California.
- MIG. 2013. Tolay Lake/Cardoza Ranch Cultural Landscape Inventory. Prepared by MIG Inc., Berkeley California. Prepared for Sonoma County Regional Parks Department, Santa Rosa, California.
- Milliken, R., R. T. Fitzgerald, M. G. Hylkema, R. Groza, T. Origer, D. G. Bieling, A. Leventhal, R. S. Wiberg, A. Gottsfield, D. Gillette, V. Bellifemine, E. Strother, R. Cartier, and D.A. Fredrickson. 2007. "Punctuated Culture Change in the San Francisco Bay Area". Chapter 8 in California Prehistory: Colonization, Culture, and Complexity. Terry L. Jones and Katharine A. Klar, eds. Altamira Press, Rowman and Littlefield Publishers, Inc. New York.
- Moratto, M. J. California Archaeology. First Edition Academic Press, San Diego.
- Nelson, P. 2016. Summary of Unrecorded Archaeological Sites at Tolay Lake Regional Park (Peter Nelson, Federated Indians of Graton Rancheria, Chair of the Sacred Sites Protection Committee).
- Nelson, P. 2016. Tolay Cultural Affiliation and Interpretive Document.
- Origer, T. 2011. Cultural Resources Investigations at CA-SON-371 and CA-SON-1158, Tolay Lake Regional Park For Proposed Facilities For Lake Inundation. Prepared by Tom Origer & Associates, Rohnert Park, California. Prepared for Sonoma County Regional Parks Department, Santa Rosa, California.
- Phebus Jr., George. 1965. Preliminary Excavations at Son-12. The Digger's Digest 4(4):2.
- Phebus Jr., George. 1990. Archeological Investigations in the San Pablo-Suisun Region of Central California. Privately published, Astoria, Oregon.
- Schwitalla, W. A., and C. Powell. 2014. Archaeological Data Recovery at CA-MRN-67. Prepared by Holman and Associates, San Francisco California. Report Submitted to Larkspur Land 8 Owner, LLC. Walnut Creek California.
- White, G. 2002. Cultural Diversity and Culture Change in Prehistoric Clear Lake Basin: Final Report of the Anderson Flat Project. Center for Archaeological Research at Davis Publication No. 13.

4.6 Hydrology and Water Quality

- AWS (AWS Analytical Sciences), 2016. Laboratory Report. For Tolay Lake Water System. Prepared by Mark A. Valentini, Ph.D. for Meeks Drilling and Pumping. October 10, 2016.

- Blake, M.C., Graymer, R.W., and Jones, R.L., 2000. Geologic map and map database of II parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma Counties, III California. U.S. Geological Survey, digital database and pamphlet to accompany miscellaneous field studies MF-2337, version 1.0.
- Cardwell, G.T., 1958. Geology and ground water in the Santa Rosa and Petaluma Valley areas, Sonoma County, California. Geological Survey Water Supply Paper 1427, prepared in cooperation with the California Department of Water Resources, 273p.
- Circuit Rider Productions, Inc., 2006. Tolay Lake Regional Park Baseline Documentation, report prepared to the Sonoma County Agricultural Preservation & Open Space District, June 2006.
- DWR (California Department of Water Resources), 2001. Bulletin 118 Groundwater Basin Description: Petaluma Valley Groundwater Basin (Basin 2-1).
- DWR (California Department of Water Resources), 2016. DWR Well Completion Records. Well Completion Report No. e0313794.
- EBA Engineering, 2004. Report of Investigation, Tolay Lake Ranch, Petaluma, California. EBA Project No. 03-1050 (8). Prepared for Stuart Martin, Sonoma County Agricultural & Open Space District. September 14, 2004.
- Ellen, S.D., Mark, R.K., Wiezorek, G.F., Wentworth, C.M., Ramsey, D.W., and May, T.F., 1997. Map showing Principal Debris flow Source Areas in Sonoma County, CA. USGS. Map of 97-745.
- EPA (Environmental Protection Agency) Maximum Contaminant Levels and Regulatory Dates for Drinking Water. US EPA versus California Last Updated July 2014. July 1, 2014.
- FEMA (Federal Emergency Management Agency), 2012. Digital Flood Insurance Rate Map Database, Sonoma County. Metadata updated June 19, 2015.
<https://catalog.data.gov/dataset/digital-flood-insurance-rate-map-database-sonoma-county-californiad8fb0>
- Florsheim, J., 2009. Baseline Geomorphic Assessment of Tolay Creek, Sonoma County, California. Prepared for Sonoma Land Trust. Prepared by Joan Florsheim, Geology Department, University of California, Davis.
- Graymer, R.W., Jones D.L., and Brabb, E.E., 2002. Geologic map and map database of northeastern San Francisco Bay region, California, including most of Solano County and parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties, USGS Miscellaneous Field Studies Map 2403.
- Graymer, R.W., Brabb, E.E., Jones, D.L., Barnes, J., and Nicholson, R. S., Stamski, R.E., 2007. Geologic Map and Data Base of Eastern Sonoma and Western Napa Counties, CA. USGS Scientific Investigations Map 2956.
- Graymer, R.W., Bryant, W.C., McCabe, C.A., Hecker, S., and Prentice, C.S., 2006. Map of Quaternary-active Faults in the San Francisco Bay Region. USGS. Scale 1:275,000.
- Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., and Knudsen, K.L., 2006. Geologic Map of the San Francisco Bay Region. USGS. Scale 1:275,000.

- Goerke, B., 2007. Chief Marin. Heyday Books, Berkeley, CA., 292 p.
- Hitchcock, e.S. and Kelsori, KJ., 1998. Final technical report for assessment of seismogenic sources between the Rodgers Creek and San Andreas faults, northwestern San Francisco Bay region, Sonoma County, California. U.S. Geological Survey National Earthquake Hazards Reduction Program, award 1434-HQ-97-GR03153, November.
- Huffman, M.E. and Armstrong, C.F., 1980. Geology for planning in Sonoma County. California Department of Mines and Geology, Special Report 120, prepared in cooperation with the Sonoma County Planning Department, 31p.
- Kennedy/Jenks Consultants. 2015. Potable Water Options for Tolay Lake Regional Park. Memorandum dated February 10, 2015.
- KHE (Kamman Hydrology & Engineering, Inc.), 2003. Hydrologic Feasibility Analysis for the Tolay Ranch Property, Sonoma County, California. Report by Kamman Hydrology & Engineering, Inc., prepared for Sonoma County Agricultural Preservation & Open Space District, 18 p.
- Kulongoski, J.T., Belitz, Kenneth, Landon, M.K., and Farrar, C., 2010. Status and understanding of groundwater quality in the North San Francisco Bay groundwater basins, 2004: California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2010-5089, 88 p.
- Maley, M. and McLeod, M., 2012. Memorandum. Progress Report Groundwater Assessment and Well Siting Analysis for Tolay Lake Regional Park. Prepared by Kennedy/Jenks Consultants. Prepared for Sonoma County Regional Parks.
- Metcalf and Eddy, 1971. Report on Wastewater Disposal for U.S. Naval Security Group Activity at Skaggs Island, Sonoma California. Palo Alto California, 1971.
- McKee, L., Grossinger, R., Brewster, E., Dale, R., Cornwall, C., Hunger, R., Lawton, R., 2000. Summary of existing information in the watershed of Sonoma Valley in Relation to the Sonoma Creek Watershed Restoration Study and recommendations on how to Proceed. A report prepared by San Francisco Estuary Institute (SFEI) and Sonoma Ecology Center for US Army Corps of Engineers, San Francisco District. San Francisco Estuary Institute, December 2000. 167 p.
- NVVE, Inc. (Napa Valley Vineyard Engineering, Inc.) 2009. Water Availability Analysis Appropriative Application 30558 County of Sonoma Regional Parks. April 1, 2008. Revised February 18, 2009.
- Rantz, S.E., 1971. Mean annual precipitation depth-duration-frequency data for the San Francisco Bay Region, California. United States Geological Survey, Water Resources Division open file report, prepared in cooperation with the U.S. Department of Housing and Urban Development, 23p.
- Rantz, S.E., 1974. Mean annual run off in the San Francisco Bay Region, California, 1931-70. United States Geological Survey, Water Resources Division Miscellaneous Field Studies Map (MF-613).
- Schumm, S.A., 1993. River response to baselevel change: implications for sequence Stratigraphy, *Journal of Geology* 101,279-294.

- Soil Conservation Service, 1971. Cardoza Bros. Channel Project, US Department of Agriculture, Plan Tolay Creek Scale 1 inch=100 feet.
- Sonoma County. 2016. Onsite Wastewater Treatment System Regulations and Technical Standards (OWTS Manual). Part 2. Version 1.01. Prepared by County of Sonoma. February 19, 2019. http://sonoma-county.org/prmd/docs/misc/Draft-OWTS-ver1_01-20160219.pdf.
- Takekawa, J.Y., Bias, M.A., Woo, I., Demers, S.A., and Downard, G.T., 2002. Restoration Research and Monitoring in Bayland Wetlands of the San Francisco Bay Estuary: the Tolay Creek Project. USGS, Unpubl. Prog. Rep., Vallejo, CA., 69 pp.
- Trimble, S.A., and Mendel, A. C., 1995. The cow as a geomorphic agent—a critical review. *Geomorphology*, 13(1-4):233-253.
- University of California, Davis, 1986a. Determining Daily Reference Evapotranspiration (ET_o). Leaflet 21426, Cooperative Extension, Division of Agriculture and Natural Resources, 10p.
- University of California, Davis, 1986b. Using Reference Evapotranspiration (ET_o) and Crop Coefficients to Estimate Crop Evapotranspiration (E_c) for Agronomic Crops, Grasses, and Vegetable Crops. Leaflet 21427, Cooperative Extension, Division of Agriculture and Natural Resources, 12p.
- USDA (U.S. Department of Agriculture), 1972. Soil survey Sonoma County, California. Forest Service and Soil Conservation Service, in cooperation with University of California Agricultural Experiment Station, 188p.
- USGS (U.S. Geological Survey), 2016. <http://water.usgs.gov/owq/hardness-alkalinity.html>. May 5, 2016. Wagner, D.L., Rice, S.R., Bezore, S., Randolph-Loar, C.E., Allen, J., and Witter, R.C., 2002a. Geologic Map of the Petaluma River, 7.5' Quadrangle Marin and Sonoma Counties, California: A Digital Database, v.1, California Geological Survey.
- Wagner, D.L., Randolph-Loar, C.E., Bezore, S., Witter, R.C., and Allen, J., 2002b. Geologic Map of the Sears Point, 7.5' Quadrangle Marin and Sonoma Counties, California: A Digital Database, v.1, California Geological Survey.
- Weeks Drilling and Pumping. 2016. Well test results for Tolay Lake Well #1 dated September 26, 2016.
- Wentworth, C.M., Graham, S.E., Pike, R.J., Beukelman, G.S., Ramsey, D.W., and Barron, A.D., 1997. Summary Distribution of Slides and Earthflows in Sonoma County, CA., USGS ofr 97-745C.
- WESTNAVCOM (Western Division, Naval Facilities Engineering Command), 1977. Soil and Water Conservation Plan for Agricultural Outlease, Naval Security Group Activity, Skaggs Island, Sonoma, California). Prepared by Natural Resources Management Branch, Real Estate Division, San Bruno, California.
- WESTNAVCOM, 1989. Master Plan, Naval Security Group Activity Skaggs Island, Sonoma California. Includes references for:
- Wildscape (Wildscape Engineering, Inc.), 2016. Hydrology and Hydraulic Report for the Tolay Lake Restoration Project. Prepared by: David Thompson, Ph.D., P.E., P.H., D.WRE,

CFM, Greg Hinds, M.S., E.I.T., Carol Beahan, P.E. Prepared for: MIG, Inc. and Sonoma County Regional Parks, November 14, 2016.

WRA (WRA, Inc.), 2013. Tolay Lake Restoration Alternatives Memorandum. Prepared by WRA, Inc. September 19, 2013.

4.7 Land Use and Planning

Sonoma County. 2016. Sonoma County General Plan 2020: Land Use Element, as amended. Sonoma County Permit and Resource Management Department, Santa Rosa, California. Originally adopted on September 23, 2008.

4.8 Noise

California Department of Transportation (Caltrans) 2013a. Technical Noise Supplement. Prepared by ICF Jones and Stokes for Caltrans Division of Environmental Analysis. Sacramento, CA. September 2013.

Caltrans. 2013b. Transportation and Construction Vibration Guidance Manual. Sacramento, CA. September 2013.

County of Sonoma (Sonoma County) 2012. Sonoma County General Plan 2020 Noise Element. Updated and Approved October 23, 2012.

Sonoma County. 2016. Comprehensive Land Use Plan. Revised March 14, 2016. Accessed December 18, 2016 at <http://www.sonoma-county.org/prmd/docs/airport/>.

National Asphalt Pavement Association (NAPA) ND. Types of Asphalt Pavement: Quiet Pavement. Accessed December 19, 2016 at http://www.asphaltpavement.org/index.php?option=com_content&view=article&id=194&Itemid=328.

Sonoma County Regional Parks Department 2008. Tolay Lake Interim Public Access and Resource Management Plan Initial Study. August 2008.

U.S. Federal Highway Administration (FHWA) 2010. "Construction Noise Handbook, Chapter 9 Construction Equipment Noise Levels and Ranges." U.S. Department of Transportation FHWA. July 5, 2011. Web. April 28, 2015. http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm

U.S. Federal Transit Administration (FTA) 2006. Transit Noise and Vibration Impact Assessment. U.S. Department of Transportation FTA. May 2006. Web. December 18, 2016. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf

W-Trans 2016. Tolay Lake Traffic Impact Analysis, Traffic Memo. Dated October 19, 2016.

4.9 Public Services and Recreation

Adobe Creek Golf Club. 2015. <http://www.adobecreek.com/>. [Website Accessed October 2015].

- CDFW. 2015. Petaluma Marsh Wildlife Area. <https://www.wildlife.ca.gov/Lands/Places-to-Visit/Petaluma-Marsh-WA>. [Website Accessed October 2015].
- California State Parks. 2015a. Olompali State Historic Park. http://www.parks.ca.gov/?page_id=465. [Website Accessed October 2015].
- California State Parks. 2015b. Petaluma Adobe State Historic Park. <http://www.petalumaadobe.com/>. [Website Accessed October 2015].
- City of Petaluma. 2015a. Del Oro Park. <http://cityofpetaluma.net/parksnrec/parks-pages/del-oro.html>. [Website Accessed October 2015].
- City of Petaluma. 2015b. Rocky Memorial Park. <http://cityofpetaluma.net/parksnrec/parks-pages/rocky.html>. [Website Accessed October 2015].
- City of Petaluma. 2015c. Shollenberger Park. <http://cityofpetaluma.net/parksnrec/parks-pages/shollenberger.html>. [Website Accessed October 2015].
- City of Petaluma. 2015d. Steamer Landing Park. <http://cityofpetaluma.net/parksnrec/parks-pages/steamer-landing.html>. [Website Accessed October 2015].
- County of Sonoma. 2015a. Fire and Emergency Services. <http://sonomacounty.ca.gov/Fire-and-Emergency-Services/>. [Website Accessed October 2015].
- County of Sonoma. 2015b. Transportation and Public Works. <http://sonomacounty.ca.gov/Transportation-and-Public-Works/>. [Website Accessed October 2015].
- Lakeville Volunteer Fire Department. 2015. <http://lakeville-fire.com/>. [Website Accessed October 2015].
- Marin County Parks. 2015. Mount Burdell Open Space Preserve. <http://www.marincountyparks.org/depts/pk/divisions/open-space/mount-burdell>. [Website Accessed October 2015].
- Sonoma County Sheriff's Office. 2015. <http://www.sonomasheriff.org/>. [Website Accessed October 2015].
- Sonoma Raceway. 2015. <http://www.sonomaraceway.com/>. [Website Accessed October 2015].
- USFWS. 2015. San Pablo Bay National Wildlife Refuge. http://www.fws.gov/refuge/San_Pablo_Bay/plan_your_visit.html. [Website Accessed October 2015].

4.10 Transportation

- American Association of State Highway and Transportation Officials. 2011. A Policy on Geometric Design of Highways and Streets, 6th Edition.
- California Department of Transportation. 2012. Highway Design Manual, 6th Edition.
- California Department of Transportation. 2014. California Manual on Uniform Traffic Control Devices for Streets and Highways.
- County of Sonoma. 2013. Sonoma County General Plan 2020.

- County of Sonoma. 2014. Sonoma County Bicycle and Pedestrian Master Plan.
- County of Sonoma. 2016. Guidelines for Traffic Impact Studies.
- Institute of Transportation Engineers. 2012. Trip Generation Manual, 9th Edition.
- Municipal Code Corporation. 2016. Sonoma County Municipal Code.
- Sonoma County Transit. 2016. Transit Map. <http://sctransit.com/>. Accessed November 2016.
- Transportation Research Board. 2010. Highway Capacity Manual.

4.11 Utilities and Service Systems

- California Department of Resources Recycling and Recovery. 2015. Solid Waste Characterization and Estimates. <https://www2.calrecycle.ca.gov/WasteCharacterization/>. [Website Accessed October 2015.]
- County of Sonoma, Permit and Resource Management Department. 2004. Groundwater Availability. http://www.sonoma-county.org/prmd/gisdata/pdfs/grndwater_avail_b_size.pdf. [Website Accessed October 2015.]
- County of Sonoma, Permit and Resource Management Department. 2008a. Groundwater Basins and Sub-Basins. <http://www.sonoma-county.org/prmd/gp2020/fig-wr2.pdf>. [Website Accessed October 2015.]
- County of Sonoma, Permit and Resource Management Department. 2008b. Sonoma County General Plan 2020: Water Resources Element. <http://www.sonoma-county.org/prmd/gp2020/wre.pdf>. [Website Accessed October 2015.]
- County of Sonoma, Permit and Resource Management Department. 2008c. Watershed Boundaries. <http://www.sonoma-county.org/prmd/gp2020/fig-wr1.pdf>. [Website Accessed October 2015.]
- Kamman Hydrology & Engineering, Inc. 2003. Hydrologic Feasibility Analysis for the Tolay Lake Ranch Property in Sonoma County, California. [Website Accessed October 2015.]
- Kennedy/Jenks Consultants. 2015. Potable Water Options for Tolay Lake Regional Park. [Website Accessed October 2015.]
- Sonoma County Waste Management Agency. 2014. Annual Report Summary. http://www.recyclenow.org/pdf/reports/annual_report_2014.pdf. [Website Accessed October 2015.]

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