Middle Green Valley Specific Plan Project

Second Revised Recirculated Draft Environmental Impact Report State Clearinghouse #2009062048

PREPARED FOR:
Solano County, Department of Resource Management
675 Texas Street, Suite 5500
Fairfield, CA 94533-6341

June 2016

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ACRONYMS AND ABBREVIATIONS

afy	acre-feet per year
Basin Plan	Water Quality Control Plan for the San Francisco Bay Basin
BCC	USFWS Bird of Conservation Concern
BMPs	best management practices
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CFD	Community Facilities District
CFP	CDFW Fully Protected Species
CNPS	California Native Plant Society
CRLF	California red-legged frog
CSA	County Services Area
CSB	Callippe silverspot butterfly
CTS	California tiger salamander
DEIR	Draft Environmental Impact Report
DPS	Distinct Population Segment
DWR	California Department of Water Resources
EFH	Essential Fish Habitat
FE	Federal Endangered
FESA	federal Endangered Species Act
FT	Federal Threatened
gpm	gallons per minute
HCP	Habitat Conservation Plan
LAFCO	Local Agency Formation Commission
MBTA	Migratory Bird Treaty Act

NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OHWM	ordinary high water mark
RDEIR	Recirculated Draft EIR
RRDEIR	Revised Recirculated Draft EIR
SCWA	Solano County Water Agency
SID	Solano Irrigation District
Specific Plan	Middle Green Valley Specific Plan
SSC	Species of Special Concern
ST	State Threatened
SWRCB	State Water Resources Control Board
TDR	transfer of development rights
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle
Water Board	San Francisco Regional Water Quality Control Board
WBWG	Western Bat Working Group High Priority
WPT	Western pond turtle
WSA	water supply assessment

1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE OF THE SECOND REVISED RECIRCULATED DRAFT ENVIRONMENTAL IMPACT REPORT

The *Solano County General Plan*, as updated in 2008, designates approximately 1,905 acres of Middle Green Valley as a "special study area." This land use designation is applied to those areas where the County's objectives for future development and conservation are described only in broad language in the General Plan and are to be more fully defined through future area-specific planning studies. (General Plan Table LU-5 and Implementation Programs LU.I-6 and LU.I-7.) For the Middle Green Valley special study area, the General Plan establishes a broad goal of protecting and maintaining the rural character of Middle Green Valley while allowing opportunities for compatible residential development. (General Plan Goal SS.G-1.) To accomplish this goal, the County is to adopt a specific plan detailing the distribution, location, and extent of a mix of land uses that are consistent with the Residential, Natural Resource, or Agricultural land use designations of the General Plan. (General Plan Table LU-5; see also General Plan Policies SS.P-1 – SS.P-8 and Implementation Programs SS.I-1 and SS.I-2.)

In August 2008, the Board of Supervisors formed the Middle Green Valley Citizens Advisory Committee to work with County staff and consultants in preparing a specific plan for the Middle Green Valley special study area. The draft Middle Green Valley Specific Plan and the Draft Environmental Impact Report (DEIR) (State Clearinghouse #2009062048) for the Specific Plan were released by the County for public review and comment in December 2009.

The Specific Plan proposes mixed-use development of up to 400 new residences, agricultural tourism, local neighborhood retail and community facility uses, and over 1,400 acres of protected agriculture and open space. The Specific Plan describes two options for providing public water service to the project area for domestic uses: Option A would connect the Specific Plan area to the City of Fairfield municipal water system, which obtains water from surface supplies managed by the Solano County Water Agency (SCWA); and Option B would extract local groundwater from the Suisun-Fairfield Valley Groundwater Basin. Although the Middle Green Valley Specific Plan area is within the water service area of the Solano Irrigation District (SID), the District had indicated during preparation of the Specific Plan that it was not interested in providing public water service for domestic use to serve the new development.

The DEIR evaluated the environmental impacts of providing public water service under the two water source options and concluded that potentially significant impacts of using either source would be mitigated to a less-than-significant level with implementation of mitigation measures recommended in the DEIR. The EIR included two Water Supply Assessments (WSAs) prepared pursuant to California Water Code Section 10910, one prepared by the City of Fairfield for Option A and another prepared by the County for Option B.

The Board of Supervisors certified the EIR and adopted the Specific Plan on July 27, 2010. Shortly thereafter, litigation was filed challenging the adequacy of the EIR on numerous grounds. (Upper Green Valley Homeowners Association vs. County of Solano, Solano County Superior Court case no. FCS036446.) In October 2011, the Superior Court issued its ruling, which found that the City of Fairfield's Measure L created legal uncertainty as to the ultimate availability of water supplied by the City of Fairfield under Option A, and that the EIR's analysis of groundwater as an alternative water

supply under Option B was insufficient. The Court issued a writ directing the County to set aside its certification of the EIR and approval of the Specific Plan.

To address the concerns expressed in the Court's ruling and to respond to the writ, the County prepared a Recirculated Draft EIR (RDEIR) that revised Chapter 16 of the EIR (Public Services and Utilities – Water) and contained a more thorough analysis of the project's water supply. As in the original DEIR, two water supply options were evaluated: a municipal connection to the City of Fairfield (Option A) and the use of groundwater wells within the Specific Plan area (Option B). In accordance with the Court's ruling, the RDEIR focused on incorporating more detailed information on the proposed groundwater supply (Option B) than what had been available during preparation of the original DEIR. The Water Supply Assessments (WSAs) prepared by the City of Fairfield (for a municipal connection) and by Solano County (for groundwater) both identified sufficient water to serve buildout of the Middle Green Valley Specific Plan.

After the County released the RDEIR for public review and comment, the SID indicated that it would be willing to provide public water service for domestic uses within Specific Plan area. SID prepared a WSA demonstrating adequate water supplies to serve the project demand. The District proposed to serve the area by wheeling water through the City of Fairfield's water system, contracting with the City to treat the water but with SID remaining the public water service provider to the Specific Plan area.

The potential environmental impacts of the SID option (Option C) would be the same as the City of Fairfield option (Option A). Both SID and the City would provide public water service to the Specific Plan area from the same surface water sources and use essentially the same water treatment and delivery infrastructure. Nevertheless, Solano County prepared a Revised Recirculated Draft EIR (RRDEIR) that further revised Chapter 16 of the EIR to describe the project evaluated by the EIR as including the option of using SID as a public water service provider. A third WSA, prepared by SID, was included in the RRDEIR. The County released the RRDEIR for public review and comment in June 2014.

On November 25, 2014, the Board of Supervisors recertified the EIR, which now included the RRDEIR, and readopted the Specific Plan. The County then filed a motion asking the Court to find that the RRDEIR addressed the issues raised by the Court in its October 2011 ruling and that the recertified EIR was legally adequate.

In an order filed September 24, 2015, the Court denied the County's motion. Although the Court was satisfied with the recertified EIR's assessment of the sufficiency of water supply from the groundwater alternative, it also found the recertified EIR did not adequately consider the possible biological resources impacts that could result from use of groundwater.

The purpose of the SRRDEIR, therefore, is to evaluate the possible significant biological impacts of the groundwater alternative by revising and recirculating portions of Chapter 6 (Biological Resources) of the EIR.

1.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

Pursuant to the *Solano County General Plan* (2008) objectives, the County is proposing to adopt and implement the Middle Green Valley Specific Plan.[1] The project, as articulated in the draft *Middle Green Valley Specific Plan*, December 21, 2009 (Draft Specific Plan), is intended to carry out the goals and policies identified by the *Solano County General Plan* for the approximately 1,905-acre Middle Green

[1] Solano County. 2008 (November). Solano County General Plan. Available: http://www.co.solano.ca.us/depts/rm/planning/general_plan.asp.

Valley special study area (which is synonymous with the Specific Plan area). The project description remains unchanged from the description contained in the 2009 DEIR, other than the addition of water supply Option C (SID Surface Water), as described in the 2014 RRDEIR (see Appendix F of the 2014 RRDEIR). Following is a brief summary.

1.2.1 Middle Green Valley Specific Plan Area

The "special study area," the approximately 1,905-acre Specific Plan area, is located along Green Valley Road, in Green Valley, an unincorporated area of Solano County (Figures 1.1 and 1.2).

The Specific Plan area consists of a valley floor with two drainage corridors, Green Valley Creek and Hennessey Creek, surrounded by foothills including steep slope areas and oak woodland. The Plan Area includes grazing lands in the hills, a mixture of cultivated and cultivable agricultural land on the valley floor, over 200 acres of vineyard, and a number of existing rural building and infrastructure elements.

The Specific Plan area is located north of Interstate 80, Jameson Canyon, and the Hidden Meadows subdivisions (City of Fairfield); south of existing unincorporated subdivisions and the Green Valley Country Club in upper Green Valley; west of Suisun Valley and the Rockville Hills; and northwest of the Eastridge subdivision (City of Fairfield). The Specific Plan area is highly valued for its rural character and scenic qualities.

1.2.2 General Plan Background

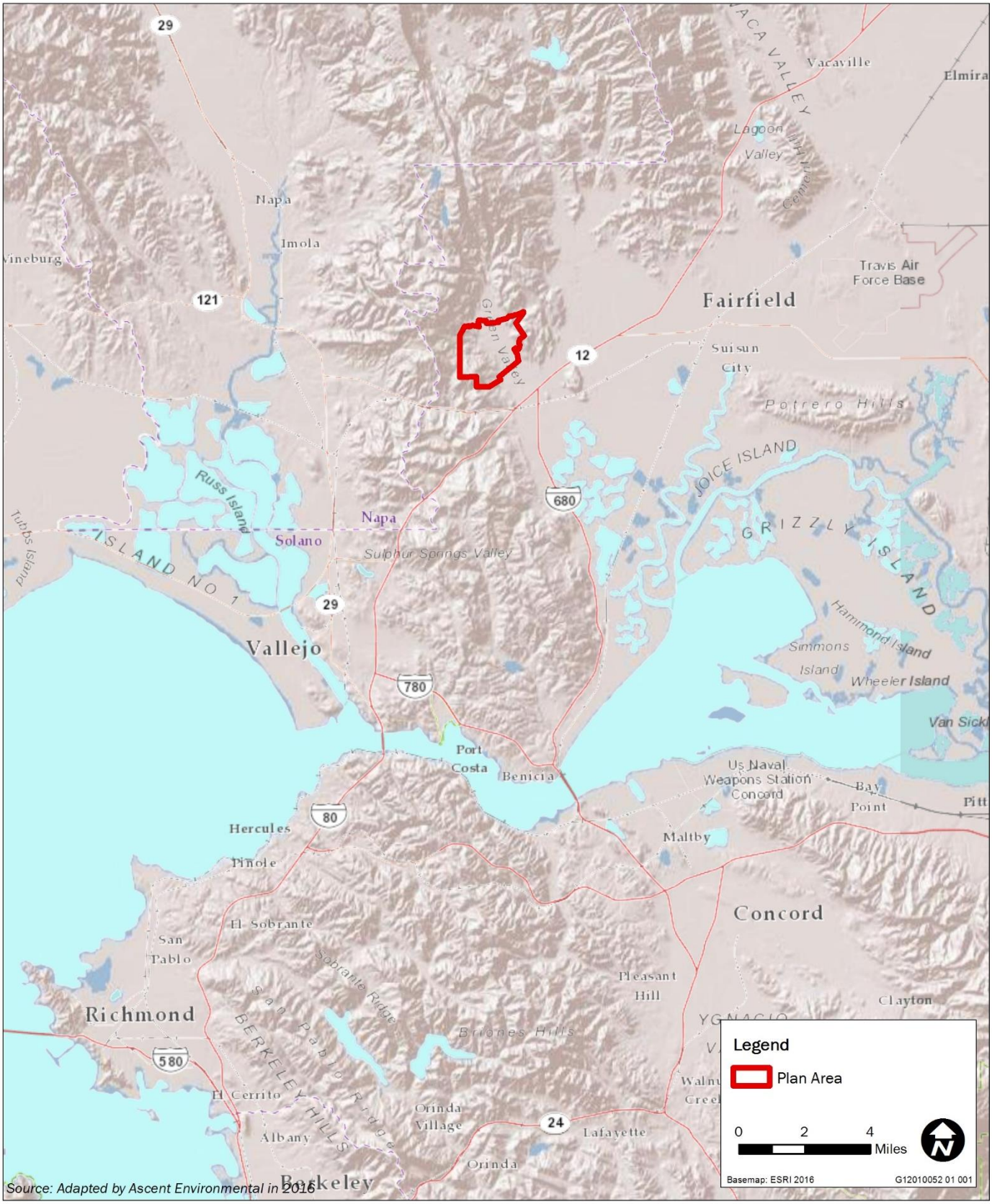
The General Plan-stated goal for the area is to maintain the rural character of the valley while allowing some opportunity for compatible residential development. The General Plan calls for use of land use tools such as clustering and transfer of development rights (TDR) to limit the effects of residential development on the rural character of the valley, including the valley's viewsheds, wildlife habitat, wildlife movement corridors, and agricultural activities. The General Plan calls for adoption of a plan (either a specific plan or master plan) for Middle Green Valley that would implement these objectives.

1.2.3 Proposed Specific Plan

In response to these General Plan objectives, the Draft Specific Plan would establish a land use and circulation layout and associated land use tools such as development clustering, a TDR program, and use of conservation easements to limit the effects of residential development on the rural character of the valley, and on the valley's viewsheds, wildlife habitat, wildlife movement corridors, and agricultural activities.

(a) Plan Vision

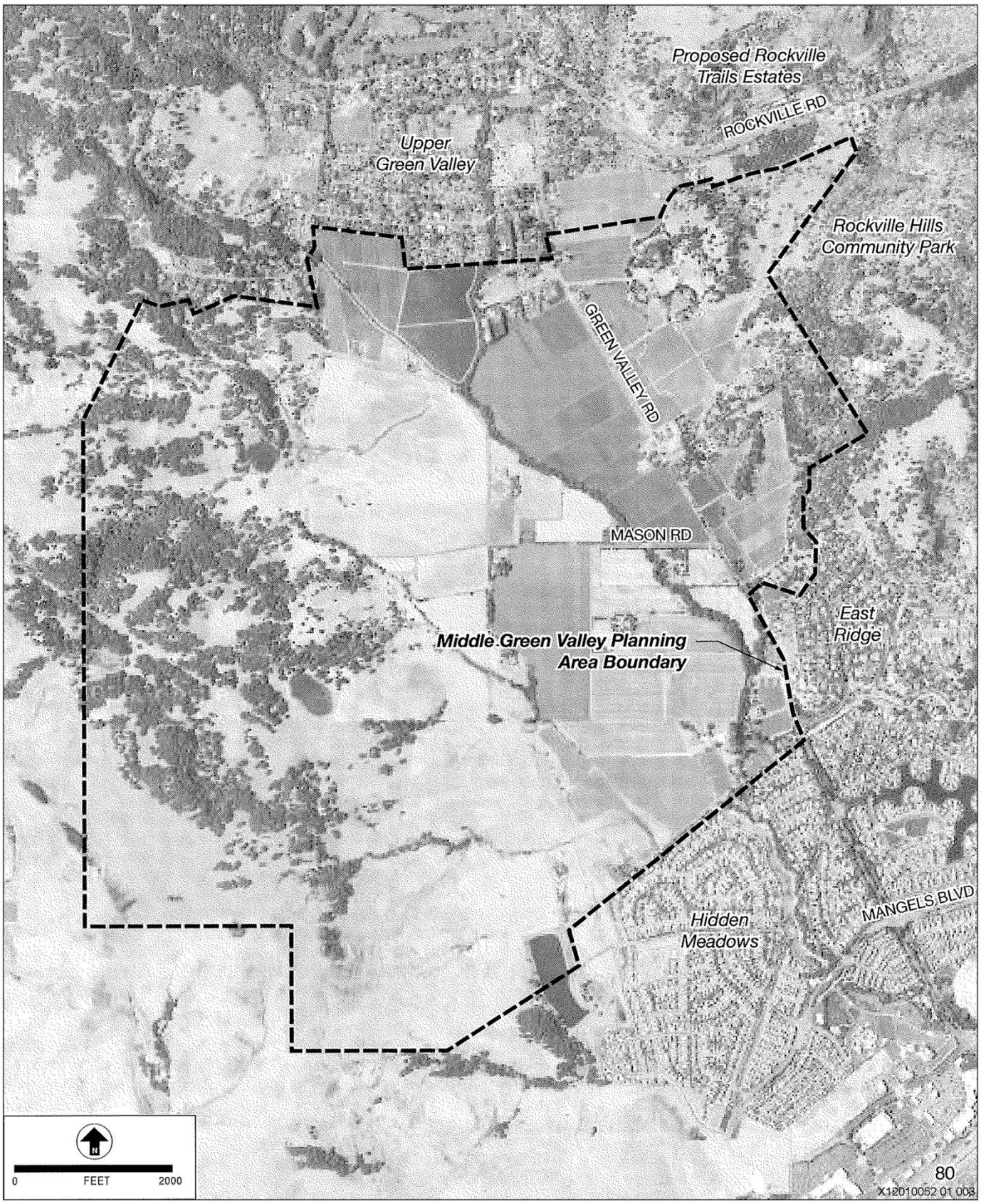
The Draft Specific Plan includes a described "vision" and set of proposed principals, goals, concepts, neighborhood framework, and associated land use and character policies; land use designations; related use standards; financial and infrastructure implementation provisions; community design themes; neighborhood design code provisions; building type, form and character standards; landscape standards; open land requirements; street and circulation standards; sign standards; and design review guidelines for the Middle Green Valley Specific Plan area formulated to implement the General Plan objectives.



Source: Adapted by Ascent Environmental in 2016

Source: Provided by Luhdorff & Scalmanini, Consulting Engineers in 2013

FIGURE 1.1
PROJECT LOCATION



Source: Provided by Solano County in 2012

FIGURE 1.2
SPECIFIC PLAN AREA

The Specific Plan proposes an interwoven combination of land conservation and development provisions designed to create a limited number of new residential units, capped at a maximum of 400 new primary residential units (consistent with General Plan stated objectives for the Specific Plan area) and up to 100 new secondary residential units in compact cluster development patterns, surrounded by an interconnected network of agricultural and natural open lands, and served by a circulation system of rural streets, bikeways, pedestrian pathways, and trails (Figure 1.3).

Approximately 1,490 acres (about 78 percent) of the Specific Plan area is designated as permanent open land, of which approximately 440 acres would be preserved as working agriculture. The remainder of the planning area (approximately 415 acres or about 22 percent) is designated for development in a "neighborhood framework," with each of four proposed neighborhood areas having a designated informal pattern of rural roads, residential building types, and community buildings.

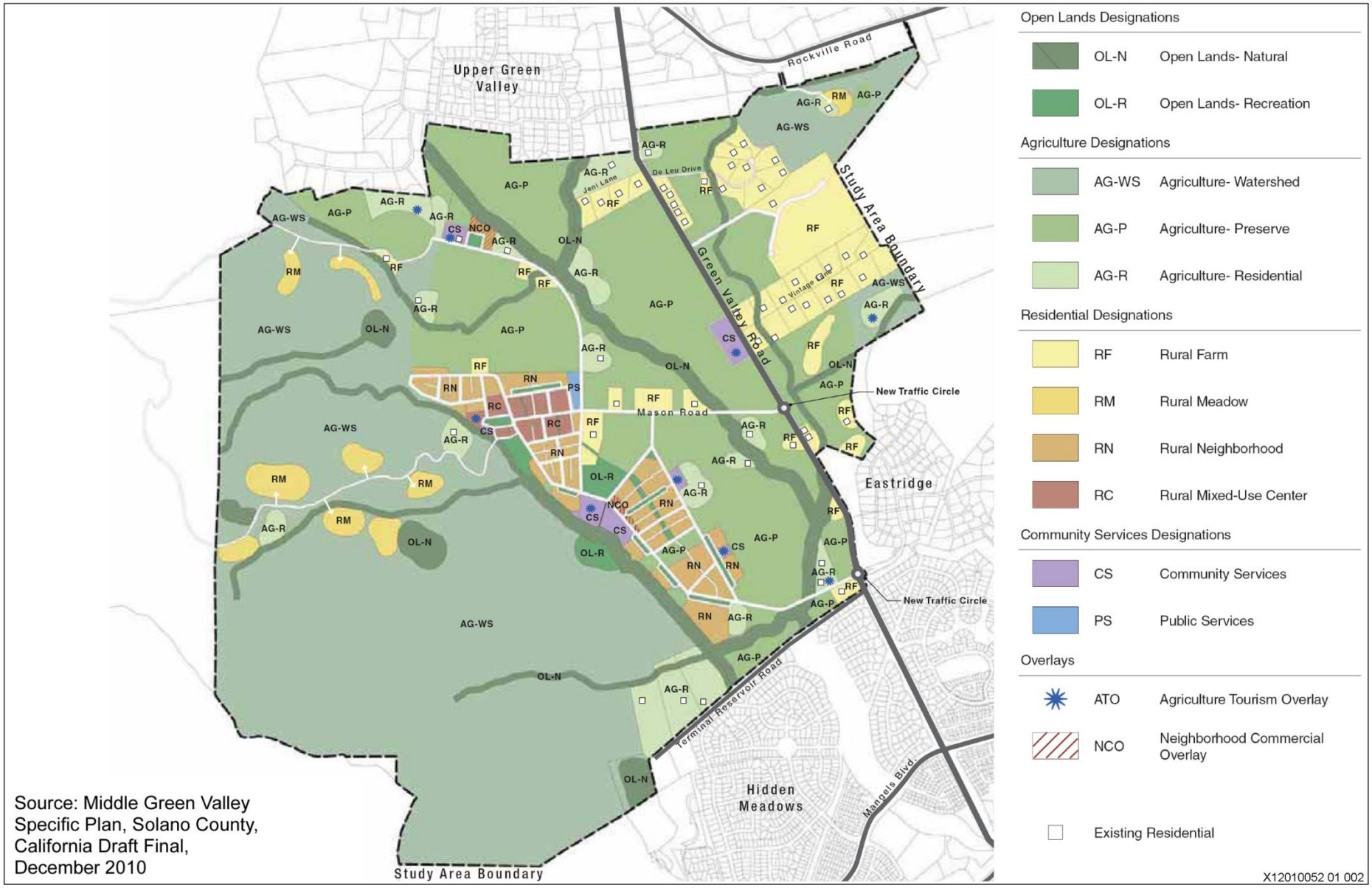
(b) Water Supply

The Specific Plan water supply options include obtaining domestic (potable) water from the City of Fairfield (Option A), establishing a new groundwater system in the Specific Plan area (Option B), obtaining surface water from SID (Option C), or variations on the SID option in which it would be combined with the first two (Options C1 or C2). Option C is the preferred water supply option. Under all three water supply options, SID reclaimed water would continue to be used for Specific Plan area agricultural and domestic irrigation purposes within the existing SID boundary. For areas outside the SID boundary, agricultural or domestic irrigation needs would continue to be supplied by onsite wells.

According to the Superior Court order (September 24, 2015), the assessment of groundwater and its use as a source of supply for the project in the RRDEIR was sufficient and supported by substantial evidence in the record, but the potential impacts to biological resources resulting from groundwater extraction need to be revisited. Therefore, the analysis herein is focused on evaluating the potential biological resource impacts of use of onsite groundwater under Option B. This option would use local groundwater for domestic supply as the sole source of potable drinking water to the residents and businesses in the Specific Plan area. Groundwater use would be solely for domestic purposes, and SID water would continue to be used for agricultural and domestic irrigation purposes (consistent with existing conditions). The proposed onsite groundwater system would consist of at least three groundwater wells at a sustained flow of potentially 100 gallons per minute (gpm) each, approximately 4.5 miles of pipelines, and 500,000 gallons of storage in two water storage tanks (Figure 1.4). The proposed wells and distribution system would provide the estimated total annual water requirement for the potable domestic supply of 186 afy (Luhdorff & Scalmanini 2013, see Appendix B of the 2014 RRDEIR). It should be noted that under water supply Option C1, the County would supplement SID surface water with groundwater. Option C1 would therefore also involve a new well and drawing groundwater for Specific Plan use. However, Option C1 would require a lesser amount of groundwater than Option B, because it would only be used to supplement the SID surface water supply rather representing the sole source of Specific Plan domestic water supply. Therefore, the potential drawdown of groundwater from Option C1 is fully encompassed within the evaluation of groundwater drawdown from Option B.

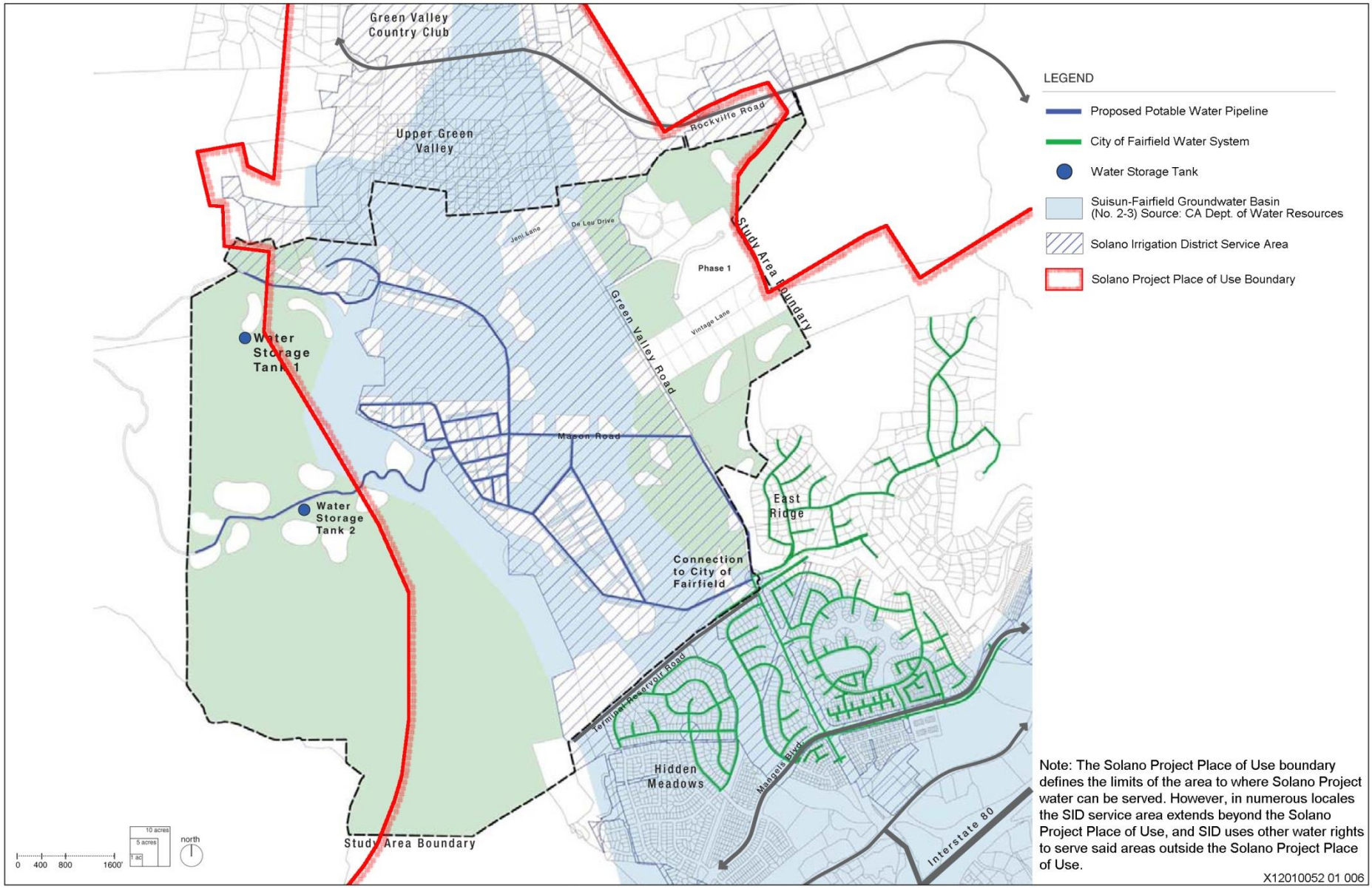
(c) County Services Area

Under all three possible water system approaches, the Specific Plan proposes formation of a County Services Area (CSA) to maintain and operate Specific Plan area sewer, storm drainage, recycled water, and parks and recreation services. The water system would be maintained by the CSA for the approaches that involve municipal connection (Option A) and exclusive use of groundwater (Option B), but would be maintained by SID for the preferred approach involving use of SID surface water from the Solano Project (Option C).



Source: Provided by Solano County in 2012

FIGURE 1.3
PROPOSED LAND USE DESIGNATIONS, MIDDLE GREEN VALLEY SPECIFIC PLAN AREA



Source: Provided by Solano County in 2012

FIGURE 1.4
PROPOSED SPECIFIC PLAN WATER SYSTEM FEATURES

(d) Community Facilities District

The plan describes possible CSA establishment of a Community Facilities District (CFD) which, pursuant to California Assembly Bill 1600, would issue revenue bonds and establish an associated special assessment charged on a fair-share basis to new Specific Plan area development benefiting from CFD-funded infrastructure.

(e) Conservation Easement Program

The plan also proposes establishment of a Green Valley Conservancy to oversee the protection and management of the agricultural and open lands.

The Specific Plan proposes buffers around the riparian corridors in the Specific Plan area to support and maintain stormwater management and visual values, while improving downstream water quality, decreasing flood potential, and protecting the functionality of wildlife corridor movement (Figure 1.3). These buffers, which would also establish the minimum distance of groundwater wells from riparian corridors, are as follows:

- Green Valley Creek: minimum 200-foot-wide corridor
- Upper Hennessey Creek: minimum 200-foot-wide corridor
- Lower Hennessey Creek: minimum 200-foot-wide corridor
- Unnamed drainages: minimum 100-foot-wide corridor (applied to Northwest Tributary and West Tributary to Green Valley Creek)

(f) Transfer of Development Rights Program

In addition, the plan proposes a TDR program and conservation easement program to offer Specific Plan area property owners the opportunity to place agricultural lands under conservation easement and transfer development rights.

1.2.4 Required Approvals

Implementation of the proposed Specific Plan would require County approval of the Specific Plan and associated Zoning Map amendments to incorporate the Specific Plan. Implementation of the Specific Plan would also require County establishment of the CSA to maintain and operate Specific Plan area water (under water supply Options A and B), sewer, storm drainage, recycled water, and parks and recreation infrastructure; and County approval of a Master Development Agreement with Specific Plan area property owners. Implementation of the Specific Plan may also require local and state agency approvals from the City of Fairfield, Fairfield-Suisun Sewer District, Solano County Local Agency Formation Commission (LAFCO), SID, State Water Resources Control Board (SWRCB), California Department of Public Health, California Department of Fish and Wildlife, and the Regional Water Quality Control Board.

1.3 FOCUS AND CONTENT OF THIS SECOND REVISED RECIRCULATED DEIR

Consistent with the requirements of Sections 15088.5(c) and 15088.5(g) of the State CEQA Guidelines, this SRRDEIR contains only that technical section of the EIR required to be recirculated, Section 6, “Biological Resources,” and the changes address only those issues required by the ruling to be remedied: biological resources impacts related to groundwater drawdown associated with water supply Option B (Onsite Groundwater) and the lesser groundwater supply for Option C1 (SID Surface Water

and Onsite Groundwater). As such, this SRRDEIR does not further discuss or evaluate the County's preferred water supply Option C (SID Surface Water) nor Option A (Municipal Connection).

1.3.1 Contents of this Second Revised Recirculated DEIR

This document consists of the following chapters and sections. All chapter and section numbering is consistent with the chapter and section numbering in the DEIR (released December 2009).

Chapter 1, "Introduction." This chapter describes the purpose and organization of the SRRDEIR. A summary description of the proposed project is also provided. Other than the addition of Option C (SID Surface Water) to serve the Specific Plan, no changes to the project description (e.g., land use plan, number of units, density) have occurred since the project was approved on July 27, 2010.

Chapter 6, "Biological Resources (Revised)." Chapter 6, "Biological Resources," of the 2009 DEIR is revised to more fully evaluate the potential biological resource impacts related to the drawdown of groundwater due to water supply Option B (Onsite Groundwater). The information in this SRRDEIR complies with the court order to expressly consider and evaluate the potential for groundwater drawdown to affect aquatic and riparian habitat, and associated special status species to fulfill its purpose as an informational document. Although the land uses and environmental conditions of the Specific Plan area remain unchanged since 2009, the relevant portions of Section 6.1, "Setting," and Section 6.2, "Pertinent Plans and Policies," are updated to reflect a 2016 site reconnaissance survey of riparian areas, updated record searches, and regulations as of 2016. In Section 6.3, "Impacts and Mitigation Measures," the significance criteria used to determine whether water supply Option B would result in an adverse significant effect on biological resources are defined, then the 2009 DEIR impact discussions are presented and updated for those riparian resources that could potentially be affected by drawdown of groundwater under water supply Option B (Onsite Groundwater) or Option C1 (SID Surface Water and Onsite Groundwater). All other biological resources impacts and mitigation measures presented in the 2009 DEIR remain valid and unaltered by the SRRDEIR.

Chapter 17, "List of Preparers." This chapter identifies the authors and consultants that provided analysis in support of the SRRDEIR conclusions.

Appendices. Appendices contain additional materials used or relied heavily upon during preparation of the SRRDEIR.

Pursuant to CEQA Guidelines Section 15088.5(g), the principal revisions made to the 2009 DEIR include the analysis of potential biological resource impacts due to the drawdown of groundwater associated with water supply Option B (which, by virtue of its higher groundwater volumes, fully covers Option C1 as well) and the associated cumulative impacts.

1.4 ENVIRONMENTAL REVIEW PROCESS FOR THIS SECOND REVISED RECIRCULATED DEIR

Consistent with the requirements of Section 15087 of the State CEQA Guidelines, this SRRDEIR is being made available on June 24 2016, for public review for a period of 45 days. The public review period will end on August 8, 2016. During this period, the general public, agencies, and organizations may submit written comments on the content of the SRRDEIR to the County. Pursuant to procedures set forth in Section 15088.5(f)(2) of the State CEQA Guidelines, reviewers are directed to limit their comments to the information contained in this SRRDEIR. Specifically, comments should be limited to the revised discussion of the project's potential biological resource impacts related to groundwater drawdown due to water supply Option B (Onsite Groundwater) (contained in Chapter 6). The lead

agency (Solano County) need only provide written responses to comments submitted in regard to this SRRDEIR.

Copies of the SRRDEIR are available for review at the Department of Resource Management, Planning Services Division (at the below address); the Fairfield Cordelia Library at 5050 Business Center Drive; the Fairfield Civic Center Library at 1150 Kentucky Street; and online at https://admin.solanocounty.com:4433/depts/rm/planning/middle_green_valley_specific_plan.asp.

All written comments on this SRRDEIR should be addressed to:

Solano County
Department of Resource Management
Planning Services Division
Attention: Matt Walsh, Principal Planner
675 Texas Street, Suite 5500
Fairfield, CA 94533-6341

Public notice of availability of the SRRDEIR has been published in the *Daily Republic*.

After close of the comment period, the County will consider all comments received on this SRRDEIR within the comment period. The Final EIR (FEIR) will consist of the DEIR, RDEIR, RRDEIR, SRRDEIR, written responses to comments on these draft documents, and any text changes. The FEIR will be considered anew by the County for certification. Following certification of the EIR, the County will consider the proposed project for approval.

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6. BIOLOGICAL RESOURCES (REVISED)

Sections 6.1 and 6.2 of this chapter describe the biological resources setting in and near the Middle Green Valley Specific Plan (Specific Plan) area and applicable biological resource regulations. The setting and regulations described in Sections 6.1 and 6.2 of the 2009 Draft Environmental Impact Report (2009 DEIR) are updated where necessary to reflect 2016 conditions. Section 6.3 of this chapter then reevaluates only those biological resource that could be adversely impacted by the drawdown of groundwater (lowering of the water table or creation of a cone of depression near a groundwater well) that could be caused by use of proposed water supply Option B, which would involve new onsite groundwater wells pumping up to 186 acre-feet per year (afy) of groundwater to serve potable water to the Specific Plan area.

It should be noted that under water supply Option C1, the County would supplement SID surface water with groundwater. Option C1 would therefore also involve a new well and extraction of groundwater for Specific Plan use. However, Option C1 would require a lesser amount of groundwater than Option B, because it would only be used to supplement the SID surface water supply rather than constitute the sole source of Specific Plan domestic water supply. Therefore, the drawdown of groundwater from Option C1 is fully encompassed within the evaluation of groundwater drawdown from to Option B.

Because specific designs and location of groundwater wells will not be developed until the County makes a decision to proceed with either Option B or Option C1, potential impacts on biological resources due to well construction and operation are discussed in a broad sense that is not site specific. Accordingly, the mitigation measures recommended herein include undertaking detailed site-specific surveys and resultant actions, implementation of best management practices (BMPs), permitting requirements that would need to be met during well design, construction, and operation, and other similar features that can be incorporated into or imposed on any future decision to proceed with Option B or Option C1.

Section 4.4 of the proposed Middle Green Valley Specific Plan describes administrative and jurisdictional procedures related to biological resources that would apply in implementing the Specific Plan.

This chapter is based on independent research conducted by Ascent Environmental, the Water Supply Assessment (WSA) for Option B (Luhdorff & Scalmanini 2013, see Appendix B of the 2014 RRDEIR), and field reconnaissance and impact analysis conducted by Vollmar Natural Lands Consulting, Inc. (see Appendix A of this SRRDEIR).

6.1 SETTING

6.1.1 Countywide Context

(a) County Biological Resources Overview.

Solano County contains a variety of habitat types, including extensive areas of marshland and wetlands along the Bay and Delta, woodlands of the Coast Range, oak savannah, and freshwater marshes, vernal pool complexes, and streamside riparian woodlands. Pasture and agricultural lands are widespread and also provide natural habitat. These habitat types support numerous plants and animals, including species classified as rare or threatened such as the California red-legged frog,

Callippe silverspot butterfly, giant garter snake, Swainson's hawk, fairy shrimp, California tiger salamander, and a large number of plant species.

(b) Solano County General Plan.
The Solano County General Plan establishes policies and standards related to a wide variety of anticipated actions within the unincorporated areas of Solano County. The General Plan identifies the Middle Green Valley area as a "Special Study Area" for development of a specific plan or master plan, with the goal to "Protect and maintain the rural character of Middle Green Valley while allowing opportunities for compatible residential development to occur."[1] Pertinent Solano County General Plan policies specifically related to the protection of biological resources are described in Subsection 6.2.1(a) below.

(c) Solano Multispecies Habitat Conservation Plan.
The 2012 Public Draft Solano Multispecies Habitat Conservation Plan (HCP)[2] has been developed by the Solano County Water Agency, the U.S. Fish and Wildlife Service (USFWS), and partner agencies to permit many activities within Solano County that have the potential to affect federally listed endangered species. The HCP establishes the procedures, conditions, and conservation requirements to authorize take of 37 plant and animal species in compliance with Section 10 of the Federal Endangered Species Act and 14 plant and animal species in compliance with Section 2081 of the California Endangered Species Act resulting from covered activities by the plan participants. The HCP proposes a variety of BMPs to avoid and minimize impacts to special-status species in Solano County. For unavoidable impacts, the HCP proposes the establishment of a system of preserves as a means of compensating for biological resource impacts that result from activities that are covered by the HCP. The HCP is discussed in more detail in Subsections 6.2.1(b) and 6.3.3 below. HCP BMPs for species with the potential to occur in the Middle Green Valley Specific Plan area are recommended as mitigation measures in this SRRDEIR.

6.1.2 Middle Green Valley Specific Plan Area

The Middle Green Valley Specific Plan area consists of cultivated agricultural fields, rural residences, vineyards, grazed grasslands, and oak woodlands. The plan area is a broad valley surrounded by hills to the east and west. The western hills are largely undeveloped and contain grazed annual grassland with some oak woodlands. The hills to the east are partially developed with estate lots, and contain oak woodland and grassland habitats. The valley floor contains cultivated agricultural fields, vineyards, riparian areas, and rural development. Green Valley Creek and Hennessey Creek cross the valley floor, flowing south to Suisun Bay and supporting riparian trees that run the length of the plan area. The elevation of the plan area ranges from approximately 54 to 750 feet NGVD.

The following description of biological resources present, or with the potential to be present, in the plan area is based on a review of background information and field visits conducted by WRA, Inc. on March 2 and April 23 and 24, 2009 (see Appendix 23.2 of the 2009 DEIR), a biological reconnaissance site visit focused on riparian habitats by Vollmar Natural Lands Consulting, Inc. on March 7, 2016 (see Appendix A of this SRRDEIR), and updated species record searches from May 2016 (see Appendix B of this SRRDEIR). The land uses of the plan area have not changed since 2009; the vegetation and aquatic communities mapped in the plan area (see Table 6.1) remain valid. Information reviewed for the biological resource analysis in this SRRDEIR includes:

[1] Solano County, Solano County General Plan, December 2008, page LU-54.

[2] Solano County Water Agency (SCWA), Public Draft Solano Habitat Conservation Plan (HCP), prepared by LSA, October, 2012.

- Soil Survey of Solano County, California (Natural Resources Conservation Service [NRCS], U.S. Department of Agriculture [USDA] 1977),
- U.S. Geological Survey (USGS) Cordelia 7.5' quadrangle map,
- National Wetland Inventory (NWI) mapping (USFWS 2014)[3],
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB 2016)[4],
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS 2016)[5],
- U.S. Fish and Wildlife Service (USFWS) species list for the plan area (USFWS 2016)[6],
- Public Draft Solano Habitat Conservation Plan (Solano County Water Agency 2012), and
- available aerial photography of the plan area.

Plan area plant communities were mapped based on descriptions contained in the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986).[7] In some cases it was also necessary to identify variants of community types or to describe non-vegetated areas that are not described in the Holland report.

WRA biologists also developed lists of plant and wildlife species, including special-status species that were observed during the field visits in the plan area (see Appendix 23.2 of the 2009 DEIR). In addition, the potential for special-status species that were not observed was evaluated based on background information listed above and available species-specific literature, as updated in 2016. The following sections present the results of the field surveys, vegetation community mapping, and evaluation of special-status species known to occur and with potential to occur within the plan area.

The field surveys and biological resource evaluation results are intended to provide detailed information for the evaluation of biological resources within the plan area and associated potential project impacts at the program level. In addition, further protocol-level surveys necessary to establish the presence or absence of special-status species and/or extent of regulated vegetation communities for individual project-level applicants are detailed in the mitigation discussion in this chapter.

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[3] U. S. Fish and Wildlife Service. 2014. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/ Accessed May 24, 2016.

[4] California Natural Diversity Database. 2016 (May). Results of electronic records search. Sacramento: California Department of Fish and Wildlife, Biogeographic Data Branch. 5-mile buffer around project site. Accessed May 25, 2016.

[5] California Native Plant Society, Rare Plant Program. 2016. Inventory of Rare and Endangered Plants (online edition, v8-02). Nine quad search around Cordelia 7.5-minute quadrangle. California Native Plant Society, Sacramento, CA. Website http://www.rareplants.cnps.org [accessed 24 May 2016].

[6] U.S. Fish and Wildlife Service. 2016 (May 24). Information for Planning and Conservation (IPaC) Trust Resources Report. https://ecos.fws.gov/ipac/project/KPWKUY5BJBAOJBILHIB6W6JXAM/overview.

[7] Holland, Dan C., Preliminary Descriptions of the Terrestrial Natural Communities of California, 1986.

(a) Vegetation and Aquatic Communities.

Vegetation and aquatic communities within the plan area are described below in order of largest to smallest. Figure 6.1 shows the location and extent of each vegetation community. Table 6.1 summarizes the approximate acreage of each vegetation and aquatic community mapped during the plan area field surveys. The description below also includes discussions of applicable federal, state or local laws and regulations pertaining to each community.

Table 6.1
VEGETATION AND AQUATIC COMMUNITIES MAPPED IN THE PLAN AREA

	Community	Mapped Acreage
(1)	Non-Native Grassland	573.6 acres
(2)	Cultivated Agriculture	408.7 acres
(3)	Mixed Oak Woodland	274.3 acres
(4)	Vineyard	212.0 acres
(5)	Developed Land	158.4 acres
(6)	Coast Live Oak Woodland	106.0 acres
(7)	Ruderal Field	57.1 acres
(8)	Blue Oak Woodland	36.2 acres
(9)	Great Valley Mixed Riparian Forest	30.2 acres
(10)	Stock Ponds and Reservoirs	17.1 acres
(11)	Wetlands	13.0 acres
(12)	Ephemeral, Intermittent, and Perennial Streams	6.8 acres
(13)	Central Coast Arroyo Willow Riparian Forest	5.7 acres
(14)	Purple Needlegrass Grassland	4.8 acres
(15)	Northern Coyote Brush Scrub	0.8 acre
(16)	Diablan Sage Scrub	0.2 acre
	Total	**1,904.9 acres**

Note: As of 2016, the land uses and habitat types in the Middle Green Valley Specific Plan area have not changed. These mapped vegetation and habitat communities remain valid.

SOURCE: WRA, Inc., 2009

(1) Non-Native Grassland.

Non-native grassland is a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered, native annual forbs. The plan area contains approximately 573.6 acres of non-native grassland (see Figure 6.1). Non- native grassland communities are located throughout the plan area, but primarily in the western hills. Non-native grassland occurs intermixed with oak woodland communities, agricultural areas, and ruderal fields, and is dominated by medusahead (*Taeniatherum caput-medusae*), Italian ryegrass (*Lolium multiflorum*), foxtail barley (*Hordeum murinum*), soft chess (*Bromus hordeaceus*), bindweed (*Convolvulus arvensis*), and rose clover (*Trifolium hirtum*).

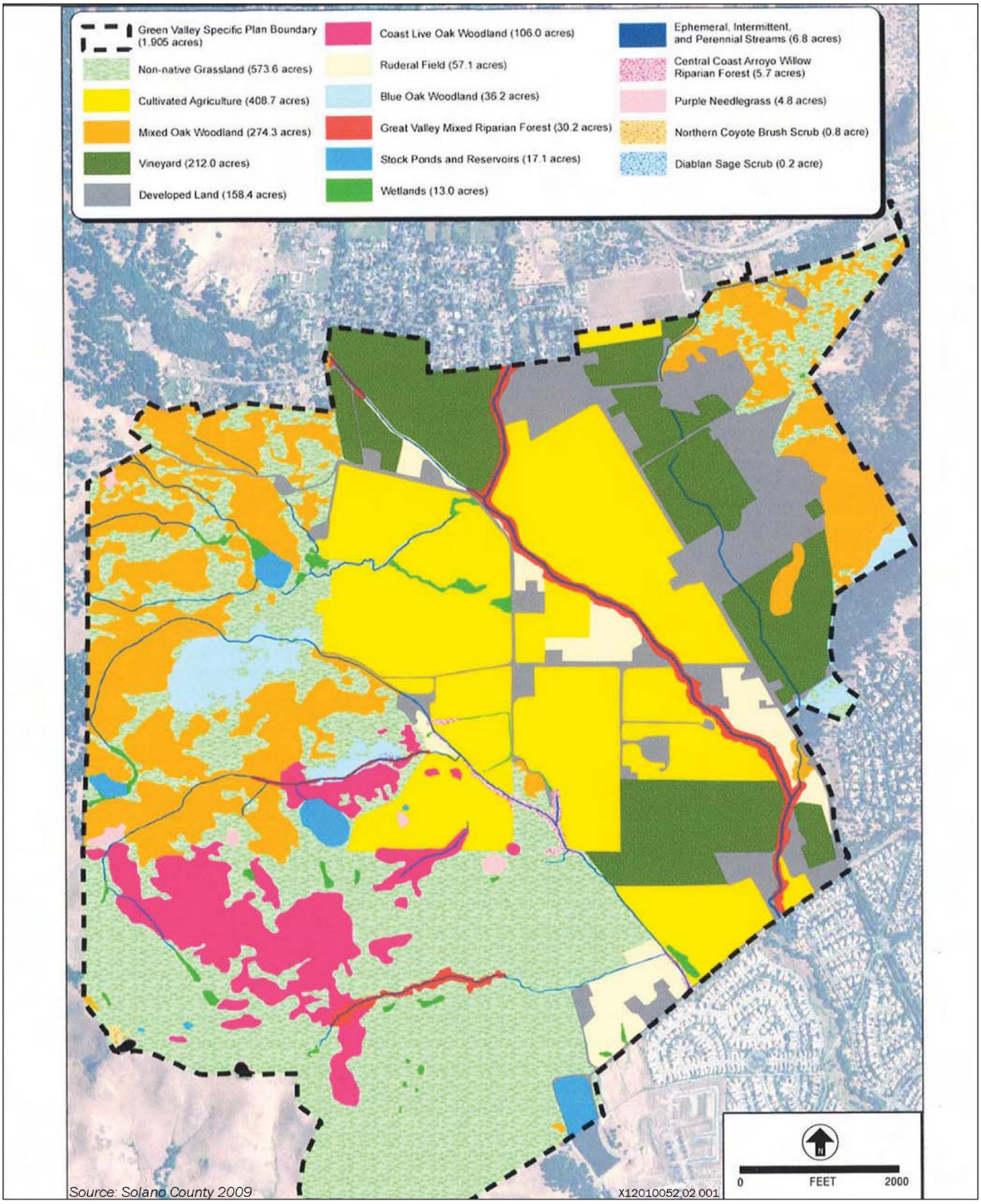


FIGURE 6.1
EXISTING VEGETATION AND AQUATIC COMMUNITIES IN THE PLAN AREA

(2) Cultivated Agriculture.
Cultivated agricultural fields are areas that are irrigated, tilled, and cultivated for agricultural row crops such as vegetables or wheat. The plan area contains approximately 408.7 acres of cultivated agriculture. Agricultural crops are planted early in the season and often rotated with other crops on a yearly or seasonal basis. Cultivated agriculture areas within the plan area occur mostly on the valley floor and are dominated by wheat (*Triticum* sp.) and oats (*Avena* sp.), primarily for hay production, with some fields planted with alfalfa or vegetable crops. These areas typically occur adjacent to active vineyards, developed areas, and riparian corridors.

(3) Mixed Oak Woodland.
Mixed oak woodland occurs as a mix of hardwood species, dominated by valley oak (*Quercus lobata*), coast live oak, and California bay (*Umbellularia californica*) at nearly equal relative cover. Approximately 274.3 acres of mixed oak woodland are located primarily within the eastern and western hills in the plan area. Species composition within varies somewhat within this community, with one or more of the above listed species dominant in a particular area. Additional tree species that are common in this community type include blue oak and California buckeye (*Aesculus californica*). Within the plan area, mixed oak woodland is the predominant woodland community. The understory varies from moderate to sparse cover by shrubs such as poison oak (*Toxicodendron diversilobum*) and snowberry (*Symphoricarpos albus*), along with species typical of non-native grassland communities.

Oak woodland is a sensitive plant community identified by CDFW on its List of California Natural Communities Recognized by the CNDDB, and therefore must be considered and evaluated under CEQA.[8] In addition, California Senate Bill (SB) 1334 requires analysis of potential impacts on oak woodland communities under CEQA and requires counties to develop ordinances designed to protect and mitigate for potential impacts on oak woodland communities.

(4) Vineyard.
Vineyard areas within the plan area occur on the valley floor and are characterized by the cultivation of grapes (*Vitis* sp.) for viticulture purposes. Small populations of mustard and rose (*Rosa* sp.) border the vineyard areas and are planted in intermediary rows with the grapes. Approximately 212.0 acres of vineyard are present in the plan area. Vineyards are classified separately from cultivated agriculture here because the agricultural practices involved in viticulture differ from those in cultivated agriculture.

(5) Developed Land.
Developed land comprises approximately 158.4 acres within the plan area and includes rural residences, agricultural outbuildings, and single-family residential developments. Rural residential areas are characterized by large lots (typically 1 to 5 acres) and may contain remnants of native or naturalized plant communities, typically non-native grasslands. However, human activities, development, and ornamental vegetation typically dominate these areas. Ornamental vegetation observed in developed areas includes eucalyptus (*Eucalyptus globulus*), oleander (*Nerium oleander*), and Monterey pine (*Pinus radiata*). Single family residential developments in the plan area are located along the base of the eastern hills, east of Green Valley Road.

(6) Coast Live Oak Woodland.
The coast live oak community is dominated by coast live oak (*Quercus agrifolia*), with few, if any, co-dominants. The shrub layer of this community is poorly developed, but may include toyon (*Heteromeles arbutifolia*), laurel sumac (*Rhus laurina*), and blue elderberry (*Sambucus mexicana*). The herb under story of coast live oak woodlands is continuous and dominated by non-natives, including ripgut brome

[8] California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

(*Bromus diandrus*) and bull thistle (*Cirsium vulgare*). Within the plan area, coast live oak woodland occurs along the slopes and ravines in the western hills, comprising approximately 106.0 acres.

As noted in the description of mixed oak woodland, oak woodland is a sensitive plant community identified by CDFW on its List of California Natural Communities Recognized by the CNDDB and therefore must be considered and evaluated under CEQA.[9] In addition, Senate Bill (SB) 1334 requires analysis of potential impacts on oak woodland communities under CEQA and requires counties to develop ordinances designed to protect and mitigate for potential impacts on oak woodland communities.

(7) Ruderal Field.
Ruderal habitat includes areas that have been used or disturbed in some manner and may contain ruderal herbaceous weeds no longer in a natural state. Within the plan area, approximately 57.1 acres of ruderal habitat occurs in former agricultural fields and pasture lands, in highly disturbed areas, and along roads. Plant species observed in ruderal portions of the plan area include mustard (*Brassica* spp.), Italian thistle (*Carduus pycnocephalus*), periwinkle (*Anagalis arvensis*), spring vetch (*Vicia sativa*), and redstem filaree (*Erodium cicutarium*). These ruderal field areas were primarily observed along the edges of the western hills.

(8) Blue Oak Woodland.
Blue oak woodland communities are dominated by blue oak (*Quercus douglasii*). Coast live oak and California bay are also found in the canopy of these areas, but at lower density than in areas classified as mixed oak and coast live oak woodland. Blue oak woodland is common throughout central and northern California from 100 to 5000 feet in elevation and consists of an open to closed tree canopy with or without shrubs and an understory of grasses and herbs. The plan area blue oak woodland understory contains sparse to moderate cover by shrubs such as poison oak and snowberry, along with vegetation associated with non-native grassland. Approximately 36.2 acres of blue oak woodland are present in two areas in the western and eastern hills within the plan area.

Blue oak woodland is a sensitive plant community identified by CDFW on its List of California Natural Communities Recognized by the CNDDB and therefore impacts on this community must be considered and evaluated under CEQA.[10] SB 1334 also requires analysis of potential impacts on oak woodland communities under CEQA and requires counties to develop ordinances designed to protect and mitigate for potential impacts on oak woodland communities.

(9) Great Valley Mixed Riparian Forest.
Great valley mixed riparian forest is a comparatively tall, dense, winter-deciduous, broadleafed riparian forest type (Holland 1968). The tree canopy is fairly well closed and populated by species including black walnut (*Juglans hindsii*), cottonwood (*Populus fremontii*), and willow (*Salix laevigata*). This community is usually found on floodplains of low-gradient, depositional streams of the Great Valley below an elevation of 500 feet. Within the plan area, approximately 30.2 acres of this community are found along the Green Valley Creek corridor.

Such riparian habitat within the plan area is protected under Sections 1600 through 1608 of California Fish and Game Code. Removal of riparian vegetation could require a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

[9] California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

[10] California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

(10) Stock Ponds and Reservoirs.
Stock ponds are human-made water-bodies used to support livestock. Reservoirs are generally larger bodies of water that are subject to more routine maintenance activities, and contain water that is pumped, diverted, or impounded. Approximately 17.1 acres of areas classified as stock ponds and reservoirs are present in the plan area. These areas are minimally vegetated and hold water seasonally or throughout the year. Within the plan area, stock ponds occur in the western hills. One reservoir, the USBR Solano Project Terminal Reservoir (see Section 16.1.1[c] herein), is located at the southern boundary of the plan area at the end of Reservoir Lane and maintained by SID (pumped water).

Stock ponds within the plan area are potentially regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act and by the San Francisco Regional Water Quality Control Board (Water Board) under Section 401 of the Clean Water Act and the Porter-Cologne Act. Projects involving impacts on stock ponds and reservoirs may require permits from USACE and Water Board.

(11) Wetlands.
Wetland communities occurring within the plan area are dominated by hydrophytic vegetation and contain indicators of wetland hydrology and/or soils. Wetland area types observed in the plan area include seasonal wetlands, freshwater seeps, and emergent marsh. Vegetation communities in wetlands varied depending on the hydrology regime of a particular area. The areas were typically dominated by hydrophytic vegetation such as spreading rush (*Juncus effusus*), Irish-leaved rush (*Juncus xiphiodies*), water knotweed (*Polygonum amphibium*), and tall nutsedge (*Cyperus eragrostis*).

Based on the assessment level site visits, there are approximately 13.0 acres of potentially jurisdictional wetland areas within the plan area. Such wetland areas are potentially regulated by the USACE under Section 404 of the Clean Water Act, and by the Water Board under Section 401 of the Clean Water Act and the Porter-Cologne Act.

Projects involving impacts on delineated wetlands require permits from USACE and Water Board.

(12) Ephemeral, Intermittent, and Perennial Streams.
Green Valley Creek is the only perennial or semi-perennial stream within the plan area--i.e., the stream contains water throughout the year in most years. Intermittent and ephemeral streams within the plan area occur in the hills, interspersed within oak woodlands and grassland communities. These intermittent and ephemeral streams support seasonal water flows and short-term water flow after storm events. Areas that were mapped as perennial, intermittent, and ephemeral streams were identified as contained within an ordinary high water mark as defined by regulations of USACE 2005 Regulatory Guidance Letters. The plan area contains a total of approximately 6.8 acres of ephemeral, intermittent, or perennial stream area.

Streams within the plan area are potentially regulated by USACE under Section 404 of the Clean Water Act, by the Water Board under Section 401 of the Clean Water Act and the Porter- Cologne Act, and by CDFW under Sections 1600 through 1616 of California Fish and Game Code. Projects involving impacts on streams may require permits from all three of these resource agencies. USACE regulatory jurisdiction in streams extends to the “ordinary high water mark” as defined by Section 404 regulations. CDFW jurisdiction extends to the top of bank of the stream, or to the edge of surrounding riparian vegetation, whichever is farthest.

(13) Central Coast Arroyo Willow Riparian Forest.
Central Coast Arroyo Willow Riparian Forest consists of a dense, low, closed canopy, broadleaf and winter deciduous forest. This community is dominated by arroyo willow (*Salix lasiolepis*), which often

grows as a large, tree- like shrub. Additional characteristic species include white alder (*Alnus rhombifolia*), California wax-myrtle (*Myrica californica*), and other willow species. Within the plan area, approximately 5.7 acres of this community occur along a portion of Hennessey Creek.

Such riparian habitat within the plan area may be subject to CDFW regulations. Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

(14) Purple (Valley) Needlegrass Grassland.
Purple needlegrass grassland occurs on fine- textured soils, often near oak woodland communities, and typically contains approximately 20 to 50 percent cover by purple needlegrass (*Nassella pulchra*) (Holland 1986). Native and introduced annuals occur between the perennial, tussock forming purple needlegrass; characteristic species observed include yarrow (*Achillea millefolium*), blow wives (*Achyrachaena mollis*), and blue-eyed grass (*Sisyrinchium bellum*). Within the plan area, small patches of this community comprising approximately 4.8 acres are present in the western hills, interspersed with non-native grassland and oak woodland habitats.

Purple needlegrass grassland is a sensitive plant community identified by CDFW on its List of California Natural Communities Recognized by the CNDDB. Impacts on sensitive natural communities identified in local or regional plans, policies, or regulations or by CDFW or USFWS must be considered and evaluated under CEQA.[11]

(15) Northern Coyote Brush Scrub.
Northern Coyote Brush Scrub consists of low shrub, usually dense but with scattered grassy openings. This community is dominated by coyote brush (*Baccharis pilularis*), along with sticky monkeyflower and poison oak. Within the plan area, a small area (approximately 0.8 acres) of this vegetation community occurs in the western hills, near the southwestern boundary of the plan area.

(16) Diablan Sage Scrub.
Diablan sage scrub typically occurs in shallow rocky soils on hot southern exposures of inner coast mountain ranges from Mount Diablo south to the Cholame Hills. Typical Diablan sage scrub species within the plan area include California sage, sticky monkeyflower, poison oak (*Toxicodendron diversilobum*), and toyon (*Heteromeles arbutifolia*). A small patch (approximately 0.2 acre) of Diablan sage scrub occurs in the western hills within the plan area.

(b) <u>Special-Status Plant Species in the Plan Area.</u>
Special-status species are those plants and animals that, because of their recognized rarity or vulnerability, are recognized by federal, state, or other agencies as deserving special consideration. Some of these species receive specific legal protection pursuant to federal or state endangered species legislation. Others lack such legal protection, but have been characterized as “sensitive” on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies (counties, cities, and special districts) to meet local conservation objectives. These species are referred to collectively as “special-status species.”

Listed below are special-status plant species that were observed during the site visits, or have the potential to occur within the plan area based on the species habitat requirements and evaluation of habitats present in the plan area. Table 23.3.1 in Appendix 23.3 of the 2009 DEIR contains a complete list of plant species that were observed during the site visits. Table 6.2 in this chapter contains a complete list of special-status plant species reviewed as part of this evaluation, including habitat

[11] 1California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

requirements and the evaluation of habitat suitability in the plan area. Table 6.2 was created based on available information from the CDFW California Natural Diversity Database (2016), California Native Plant Society (CNPS) Online Database (2016), 2012 HCP, USFWS list for the plan area (2016), and a review of species habitat requirements noted in available literature. Figure 6.2 shows recorded special-status plant species occurrences within the vicinity of the plan area.

(1) Special-Status Plant Species with Potential Habitat in the Plan Area.
The plan area also contains potential habitat for the following special-status plant species.

- Napa false indigo (*Amorpha californica* var. *napensis*) (CRPR1B.2). Napa false indigo is a perennial deciduous shrub in the pea family (Fabaceae). It occurs in broadleaved upland forest openings, chaparral, and cismontane woodland. The species is known from Lake, Monterey, Marin, Napa, and Sonoma counties. Blooming occurs April to July.

- Alkali milk-vetch (*Astragalus tener* var. *tener*) (CRPR 1B.2) and a Primary Covered Species as outlined in the HCP. Alkali milk-vetch is an annual herb in the pea family (Fabaceae). It occurs within alkali playa, valley and foothill grassland, and vernal pool habitats, and is most often seen in association with low ground, alkali flats and flooded lands. This species is known from Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanislaus, and Yolo counties and grows at elevations ranging from 1 to 170 meters. Blooming occurs from March to June. Though no alkali or vernal pool habitat has been observed in the plan area, there are a few known occurrences of alkali milk vetch in areas that are not specified as alkaline. Wetlands, streams, and surrounding low-lying areas in the plan area valley may support this species.

- Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*) (CRPR 1B.2). Big-scale balsamroot is a perennial herb in the sunflower family (Asteraceae) that typically occurs in cismontane woodland, valley and foothill grassland, and chaparral habitats, sometimes with serpentinite soils, from 90 to 1,400 meters in elevation. This species typically occurs in areas of thin soil coverage, such as rocky areas on hillsides in sandy, clay, and serpentine soils. It is known from many counties in the greater San Francisco Bay Area and Central Valley and blooms March to June. Grazed grassland, woodland, and shrub/scrub communities in the plan area eastern and western hills may support this species. Uncultivated areas with shallow soils in the plan area valley may also support this species.

Figure 6.2 shows a portion of the big-scale balsamroot occurrence within the plan area. As noted in the CNDDB, this occurrence was mapped from a collection from the year 1933.

The collection did not contain specific information regarding the exact location of this species occurrence, and so the location was mapped as a “best guess” in the CNDDB (CNDDB 2009). Therefore, this species has the potential to be present in the plan area but is not included in the list of species with known occurrences in the plan area because the exact location of this occurrence is not known.

- Big tarplant (*Blepharizonia plumosa*) (CRPR 1B.1). Big tarplant is an annual herb in the composite family (Asteraceae) that typically inhabits valley and foothill grasslands. Recent occurrences are primarily in non-native grasslands. It is known from Alameda, Contra Costa, San Benito, San Joaquin, San Luis Obispo, Solano, and Stanislaus counties. This species typically occurs at elevations from 30 to 505 meters, with a blooming period of July through October. Non-native grasslands in the plan area hills and valley may support this species.

Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Amorpha californica var. napensis Napa false indigo	CRPR 1B.2	Broadleafed upland forest, chaparral, cismontane woodland. 120-200 meters. Blooms April – July.	Moderate Potential. Suitable habitat present within the plan area.
Astragalus tener var. *tener* alkali milk vetch	RP, CRPR 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools/ alkaline. 1-60 meters. Blooms March-June.	Moderate Potential. No vernal pools or alkaline wetlands were observed during the site visits. However, a few species occurrences are known from seasonally wet meadows.
Atriplex persistens vernal pool smallscale	CRPR 1B.2	Vernal pools (alkaline). 10-115 meters. Blooms June-October.	No Potential. Vernal pool habitat does not occur within the plan area; suitable habitat for this species is not present.
Balsamorhiza macrolepis var. *macrolepis* Big-scale balsamroot	CRPR 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/ sometimes serpentinite. 90-1,400 meters. Blooms March-June.	Moderate Potential. Rockier portions of the hillside grassland areas have the potential to support this species.
Blepharizonia plumose Big tarplant	CRPR 1B.1	Valley and foothill grassland. 30-505 meters. Blooms July -October.	Moderate Potential. Suitable habitat present within the plan area.
Brodiaea californica var. *leptandra* Narrow-anthered California brodiaea	CRPR 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/volcanic. 110-915 meters. Blooms May-July.	Moderate Potential. Suitable habitat present within the plan area. A documented observation of this species occurs within three miles of the plan area.
Calochortus pulchellus Mt. Diablo fairy lantern	CRPR 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. 30-Valley and foothill grassland. 60-400 meters. Blooms April-June.	Moderate Potential. Suitable habitat present within the plan area.
Carex lyngyei Lyndbye's sedge	CRPR 2B.2	Marshes and swamps. 0-10 meters. Blooms April-August.	No Potential. Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Castilleja affinis ssp. *neglecta* Tiburon Indian paintbrush	FE, ST, CRPR 1B.2	Valley and foothill grassland. 60-400 meters. Blooms April-June.	Moderate Potential. Suitable habitat present within the plan area.

Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Ceanothus purpureus holly-leaved ceanothus	CRPR 1B.2	Chaparral, cismontane woodland. Rocky, volcanic sites. 120-640 meters. Blooms February-June.	Moderate Potential. Though this species is strongly associated with thin, volcanic soils, which were not observed in the plan area, a nearby occurrence is present on a mapped soil unit similar to some mapped soil units within the plan area.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	CRPR 1B.1	Valley and foothill grassland; often alkaline. 0-230 meters. Blooms May- November.	Moderate Potential. Although no alkaline areas are known to occur in the plan area, this species has been known to occur in non-alkaline habitats as well. Some areas of valley and foothill grassland, particularly surrounding wetland margins, within the plan area may be suitable habitat for this species.
Centromadia parryi ssp. *parryi* pappose tarplant	CRPR 1B.2	Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland (vernally mesic); often alkaline. 2-420 meters. Blooms May- November.	Moderate Potential. Although no alkaline areas are known to occur in the plan area, this species has been known to occur in non-alkaline habitats as well. Some areas of valley and foothill grassland, particularly surrounding wetland margins, within the plan area may be suitable habitat for this species.
Chloropyron molle ssp. *molle* soft bird's beak	FE, SR, CRPR 1B.2	Marshes and swamps. 0-3 meters. Blooms July-November.	No Potential. Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Cicuta maculata var. *bolanderi* spotted hemlock	CRPR 2B.1	Marshes and swamps, coastal, fresh, or brackish marsh. 0-200 meters. Blooms July-September.	No Potential. Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Cirsium hydrophilum var. *hydrophilum* Suisun thistle	FE, CRPR 1B.1	Marshes and swamps. 0-1 meters. Blooms June-September.	No Potential. Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Dirca occidentalis western leatherwood	CRPR 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland. 50-395 meters. Blooms January-March.	Moderate Potential. Suitable habitat is present within the plan area.

Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Downingia pusilla dwarf downingia	CRPR 2B.2	Valley and foothill grassland (mesic sites), vernal pools. 1-445 meters. Blooms March-May.	Moderate Potential. Although vernal pool habitat is not present within the plan area, the species is also known to occur along the edges of marsh habitats, such as those present along the margins of larger stock ponds in the plan area.
Erigeron greenei narrow-leaved daisy	CRPR 1B.2	Chaparral (serpentinite or volcanic). 75-1,060 meters. Blooms May-September.	No Potential. Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	CRPR 1B.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland in serpentinite areas, sandy to gravelly soils. 0-700 meters. Blooms May-September.	No Potential. Serpentine, gravelly, and/or sandy soils do not occur within the plan area; suitable habitat for this species is not present.
Eriogonum truncatum Mt. Diablo buckwheat	CRPR 1B.1	Chaparral, coastal scrub, valley and foothill grasslands on sandy soil. 3-350 meters. Blooms April-September.	No Potential. Serpentine, gravelly, and/or sandy soils do not occur within the plan area. Suitable habitat for this species is not present.
Extriplex joaquiniana San Joaquin spearscale	CRPR 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland/alkaline. 1-835 meters. Blooms April- October.	No Potential. Species is strongly associated with alkaline conditions. Alkaline habitat does not occur within the plan area. Suitable habitat is not present.
Fritillaria liliacea fragrant lily	CRPR 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/ often serpentinite. 3-410 meters. Blooms February-April.	Moderate Potential. Suitable habitat is present within the plan area.
Gilia capitata ssp. *tomentosa* wolly-headed gilia	CRPR 1B.1	Coastal bluff scrub (rocky, outcrops). 15-155 meters. Blooms May-July.	No Potential. Coastal scrub habitat does not occur within the plan area; suitable habitat for this species is not present.
Helianthella castanea Diablo helianthella	CRPR 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 60-1,300 meters. Blooms March-June.	Moderate Potential. Suitable habitat is present within the plan area.

Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Hesperolinon breweri Brewer's western flax	CRPR 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/ usually serpentinite. 30-900 meters. Blooms May-July.	Moderate Potential. Suitable habitat is present within the plan area.
Isocoma arguta Carquinez goldenbush	CRPR 1B.1	Valley and foothill grassland; often alkaline. 0-20 meters. Blooms August- December.	Moderate Potential. Although no alkaline areas are known to occur in the plan area, this species has been known to occur in non-alkaline habitats as well. Some areas of valley and foothill grassland, particularly surrounding wetland margins, within the plan area may be suitable habitat for this species.
Juglans hindsii Northern California black walnut	CRPR 1B.2	Riparian forest, riparian woodland. 0-440 meters. Blooms April-May.	Unlikely. Black walnut individuals were observed in riparian area along Hennessey Creek, but likely non-native hybrids
Lasthenia conjugens Contra Costa goldfields	CRPR 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools/mesic. 0-470 meters. Blooms March-June.	Unlikely. This species is strongly associated with vernal pools, which are not known to be present in the plan area.
Lathyrus jepsonii var. *jepsonii* Delta tule pea	CRPR 1B.2	Marshes and swamps (freshwater and brackish). 0-4 meters. Blooms May-July.	No Potential. Brackish marsh habitat does not occur within the plan area; suitable habitat for this species is not present.
Layia septentrionalis Colusa layia	CRPR 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/ sandy, serpentinite. 100-1,095 meters. Blooms April-May.	No Potential. Serpentine, gravelly, and/or sandy soils do not occur within the plan area. Suitable habitat for this species is not present.
Legenere limosa legenere	RP, CRPR 1B.1	Vernal pools. 1-880 meters. Blooms April-June.	No Potential. Vernal pool habitat does not occur within the plan area; suitable habitat for this species is not present.
Leptosiphon jepsonii Jepson's leptosiphon	CRPR 1B.2	Chaparral, cismontane woodland. Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. 100-500 meters. Blooms April-May.	No Potential. Serpentine and volcanic soils do not occur within the plan area. Suitable habitat for this species is not present.
Liliaeopsis masonii Mason's lilaeopsis	SR, CRPR 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub. 0-10 meters. Blooms April-November.	No Potential. Species occurs at the margins of brackish water habitats in the Sacramento-San Joaquin delta. No suitable habitat is present in the plan area.

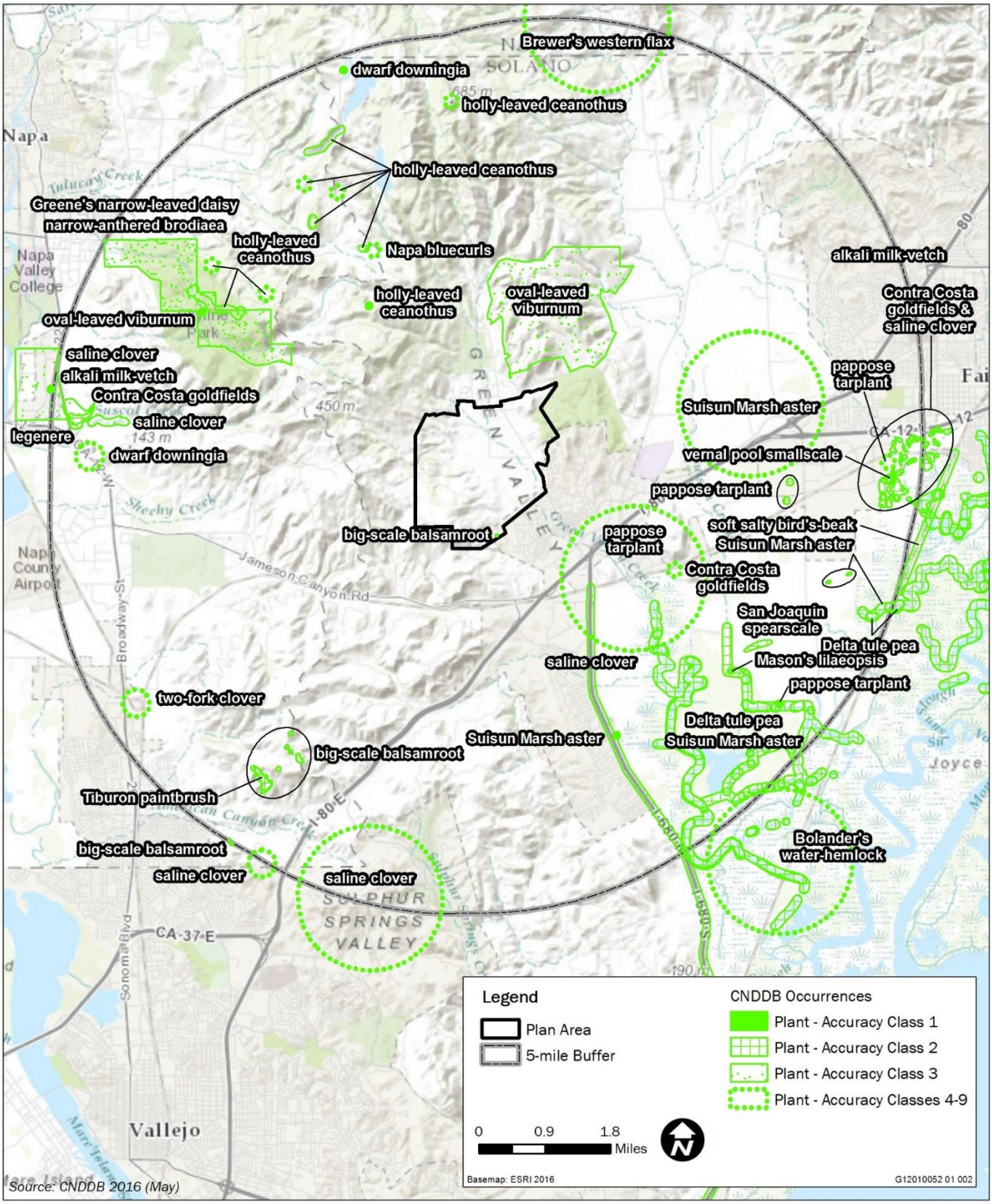
Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Limosella australis Delta mudwort	CRPR 2B.1	Marshes and swamps (freshwater or brackish), riparian scrub. 0-3 meters. Blooms May-August.	No Potential. Species occurs at the margins of brackish water habitats in the Sacramento-San Joaquin delta. No suitable habitat is present in the plan area.
Monardella villosa ssp. *globosa* robust monardella	CBR	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, coastal scrub, valley and foothill grassland. 100-915 meters. Blooms June-July.	Moderate Potential. Suitable habitat is present within the plan area.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	CRPR 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. 5-1,740 meters. Blooms April-July.	Moderate Potential. Suitable habitat is present within the plan area.
Puccinellia simplex California alkali grass	CRPR 1B.2	Alkaline, vernally mesic habitats; sinks, flats, and lake margins, chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools. 2-930 meters. Blooms March-May.	Unlikely. This species is strongly associated with alkaline and vernal habitats, which are not known to be present in the plan area.
Rynchospora californica California beaked rush	CRPR 1B.1	Bogs and fens, lower montane coniferous forest, meadows and seeps (seeps), marshes and swamps (freshwater). 45-1,010 meters. Blooms May-July.	No Potential. Bogs, fens, or coniferous forest do not occur within the plan area; suitable habitat for this species is not present.
Senecio aphanactis rayless ragwort	CRPR 2B.2	Chaparral, cismontane woodland, coastal scrub, sometimes in alkaline areas. 15-800 meters. Blooms January - April.	Moderate Potential. Suitable habitat is present within the plan area.
Sidalcea hickmanii ssp. *viridis* Marin checkerbloom	CRPR 1B.3	Chaparral (serpentinite). 50-430 meters. Blooms May-June.	No Potential. Serpentine soil does not occur within the plan area; suitable habitat for this species is not present.
Stuckenia filiformis spp. alpine slender-leaved pondweed	CRPR 2B.2	Marshes and swamps (shallow freshwater). 300-2,150 meters. Blooms May- July.	No Potential. Marshes and swamps do not occur within the plan area; suitable habitat for this species is not present.

Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Symphyotrichum lentum Suisun Marsh aster (formerly Aster lentus)	CRPR 1B.2	Marshes and swamps (brackish and freshwater). 0-3 meters. Blooms May-November.	No Potential. Marshes and swamps do not occur within the plan area; suitable habitat for this species is not present.
Trichostema ruygtii Napa bluecurls	CRPR 1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools. 30-680 meters. Blooms June - October.	Moderate Potential. Suitable habitat is present within the plan area.
Trifolium amoenum two-forked clover	FE, CRPR 1B.1	Valley and foothill grassland, coastal bluff scrub (sometimes serpentinite); open sunny sites, swales. 5-560 meters. Blooms April-June.	Moderate Potential. Suitable habitat is present within the plan area.
Trifolium depauperatum var. *hydrophilum* saline clover	CRPR 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. 0-300 meters. Blooms April-June.	Moderate Potential. Suitable habitat is present within the plan area.
Viburnum ellipticum oval-leaved viburnum	CRPR 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1,400 meters. Blooms May-June.	Moderate. Suitable habitat present within the plan area.

* Key to status codes:
FE Federal Endangered
RP Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
ST State Threatened
SR State Rare
CRPR California Rare Plant Ranks:
CBR Considered But Rejected
1 Rare in California and elsewhere
2 Rare in California, but not elsewhere
A Presumed extirpated or extinct
B Rare, threatened, or endangered Threat Ranks
0.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3 Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Source: Species list compiled CNDDB 2016, CNPS 2016, and USFWS 2016.



Source: CNDDB 2016 (May)

FIGURE 6.2
RECORDED (CNDDB) OCCURRENCES OF SPECIAL-STATUS PLANT SPECIES IN THE PLAN AREA VICINITY

- Narrow-anthered California brodiaea (*Brodiaea californica* var. *leptandra*) (CRPR 1B.2). Narrow-anthered brodiaea (also called "Sonoma brodiaea") is a perennial bulbiferous herb in the lily family (Liliaceae). This species typically inhabits areas with volcanic soils, and habitats including broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and grasslands. It is found in Sonoma, Lake, and Napa counties at elevations from 110 to 915 meters. Narrow-anthered brodiaea blooms from May to July. This species is typically associated with thin volcanic soils, which are not present in the plan area. However, some occurrences are known from oak woodland and chaparral scrub communities that may not be consistent with these typical soil types. Thin soiled areas, such as scrub communities, as well as oak woodland communities in the plan area hills, may support this species.

- Mt. Diablo fairy lantern (*Calochortus pulchellus*) (CRPR 1B.2). Mt. Diablo fairy lantern is a perennial bulbiferous herb in the lily family (Liliaceae) that inhabits cismontane woodland, valley and foothill grassland, chaparral, and riparian woodland from 30 to 840 meters in elevation. The species is known from Alameda, Contra Costa, and Solano counties and blooms from April to June. Oak woodlands, riparian forest, scrub, and grassland areas surrounding these communities in the plan area hills and valley may support this species.

- Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*) State Threatened, Federal Endangered, (CRPR 1B.2). Tiburon paintbrush is a hemiparasitic perennial herb in the figwort family (Scrophulariaceae) that is found in serpentinite valley and foothill grasslands from 60 to400 meters in elevation. This species is known from Marin, Napa, and Santa Clara Counties and blooms from April through June. Presently, this species is threatened by development, gravel mining, and grazing activities. This species is strongly associated with serpentine soils, which are not present in the plan area. However, there is a nearby occurrence within five miles of the plan area. Therefore, there is the potential that it may exist in the plan area, although unlikely.

- Holly-leaved ceanothus (*Ceanothus purpureus*) (CRPR 1B.2). Holly-leaved ceanothus is a perennial shrub in the buckthorn family (Rhamnaceae) that typically inhabits rocky volcanic sites supporting chaparral and cismontane woodland from 120 to 640 meters in elevation. The species is known from Napa, Shasta, Solano, Sonoma, and Trinity counties and blooms from February to June. There is a nearby occurrence within five miles of the plan area on soils similar to those present in the plan area.

- Pappose tarplant (*Centromadia parryi* ssp. *parryi*) (CRPR 1B.2) and a Primary Special Management Species as outlined in the HCP. Pappose tarplant is an annual herb in the Asteraceae family that typically inhabits alkaline areas of chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic grassland from 2 to 420 meters in elevation. This species has also been observed in flat grassland areas surrounding wetlands. The species is known from Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma counties and blooms from May to November. Grasslands and ruderal areas, particularly those surrounding wetlands in the plan area hills and valley, have the potential to support this species.

- Western leatherwood (*Dirca occidentalis*) (CRPR 1B.2). Western leatherwood is a deciduous shrub in the Thymelaeaceae family that typically occurs in mesic sites in broadleaf upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland. This species is usually found at elevations from 50 to 395 meters and is known from Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma Counties. It has a blooming period of January to March. Oak woodland and riparian communities in the plan area may support this species.

- Dwarf downingia (*Downingia pusilla*) (CRPR 2B.2) and a Primary Special Management Species as outlined in the HCP. Dwarf downingia is an annual herb in the bellflower family (Campanulaceae). It is typically found in vernal pools and seasonal wetlands in grasslands at elevations from 1 to 445 meters. The species, which blooms between March and May, occurs primarily in vernal pools, but can also occur in seasonal wetlands with higher plant cover. Known populations exist in Napa, Sonoma, and Solano counties in addition to many counties in California's Central Valley. Although vernal pool habitat is not present within the plan area, the species is also known to occur along the edges of marsh habitats, such as those present along the margins of larger stock ponds in the plan area hills. Therefore, there is the potential that it may exist in the plan area, although unlikely.

- Fragrant fritillary (*Fritillaria liliacea*) (CRPR 1B.2). Fragrant fritillary is a perennial bulbiferous herb in the Liliaceae family that typically inhabits cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland that frequently support serpentinite soils from 3 to 410meters in elevation. The species is known from Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma counties and blooms from February to April. Grassland communities present in the plan area hills and valley may support this species.

- Diablo helianthella (*Helianthella castanea*) (CRPR 1B.2). Diablo helianthella is a perennial herb in the sunflower family (Asteraceae) that blooms from March to June. It is found in a variety of plant communities: broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. It is known from 60 to 1,300 meters in elevation in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and San Francisco counties. It tends to occur in rocky, azonal soils and in partial shade at interfaces between chaparral, woodland, and grassland communities. Suitable shallow soils and rock outcrops in the plan area hills may support this species.

- Brewer's western flax (*Hesperolinon breweri*) (CRPR 1B.2). Brewer's western flax is an annual herb in the Asteraceae family that typically inhabits cismontane woodland, valley and foothill grassland, and chaparral, sometimes on serpentine soils, from 30 to 900 meters in elevation. The species is known from Contra Costa, Napa, and Solano counties and blooms from May to July. Oak woodlands and grassland communities in the plan area hills and valley may support this species.

- Carquinez goldenbush (*Isocoma arguta*) (CRPR 1B.1 and a Primary Special Management Species as outlined in the HCP). Carquinez goldenbrush is a perennial shrub in the Asteraceae family that typically inhabits alkaline areas in valley and foothill grassland from 1 to 20 meters in elevation. The species is known from Solano County. Grassland communities in the plan area may support this species.

- Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) (CRPR List 1B.1) and a Primary Special Management Species as outlined in the HCP. Baker's navarretia is a California endemic annual herb in the phlox family (Polemoniaceae) that typically inhabits cismontane woodlands, lower montane coniferous forests, meadows, seeps, valley and foothill woodlands, and mesic vernal pools. It is known from Colusa, Glenn, Lake, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties. The species typically occurs at elevations from 5 to 1,740 meters, with a blooming period of April to June. Oak woodland and wetland communities in the plan area hills and valley may support this species.

- Rayless ragwort (*Senecio aphanactis*) (CRPR 2B.2). Rayless ragwort is an annual herb from the aster family (Asteraceae) that typically inhabits chaparral, cismontane woodland, and coastal scrub habitats at elevations from 15 to 800 meters. This species is known from many counties, including Alameda, Contra Costa, Los Angeles, Santa Clara, Santa Rosa, and Solano, and blooms from

January through April. Oak woodland and scrub communities in the plan area may support this species.

- Napa bluecurls (*Trichostema ruygtii*) (CRPR 1B.2). Napa bluecurls is an annual herb from the Lamiaceae family that typically inhabits chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools from 30 to 680 meters. This species is known from Napa and Solano counties, with an unconfirmed record from Lake County. The species blooms from June to October.

- Two-fork clover (*Trifolium amoenum*) Federal Endangered (CRPR 1B.1). Two-fork clover is an annual herb in the pea family (Fabaceae) that typically inhabits valley and foothill grassland and coastal bluff scrub (sometimes on serpentine soil) from 5 to 560 meters in elevation. The species is known from Alameda, Marin, Napa, Santa Clara, Solano, and Sonoma counties and blooms from April to June. Most known occurrences of this species are 50 to 100 years old, but recent observations have been made in Marin and Sonoma counties in grasslands with clay soils. Grassland habitats in the plan area may support this species.

- Saline clover (*Trifolium depauperatum* var. *hydrophilum*) (CRPR 1B.2) and a Primary Special Management Species as outlined in the HCP. Saline clover is an annual herb in the Fabaceae family that typically inhabits marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools from 0 to 300 meters in elevation. The species is known from Alameda, Colusa, Monterey, Napa, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Solano, and Sonoma counties and blooms from April to June. This species tends to occur in alkaline soils, but can also be present in non- alkaline areas. Wetlands and the margins of larger stock ponds in the plan area may support this species.

- Oval-leaved viburnum (*Viburnum ellipticum*) (CRPR 2B.3). Oval-leaved viburnum is a deciduous shrub in the honeysuckle family (Caprifoliaceae) that typically inhabits chaparral, cismontane woodland, and lower montane coniferous forest habitats. It is known from Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Mendocino, Napa, Placer, Sonoma and Shasta counties as well as in Oregon and Washington. The species typically occurs from 215 to 1,400 meters with a blooming period of May to June. Oak woodland and scrub communities in the plan area hills may support this species.

(2) Special-Status Plant Species Unlikely to Occur within the Plan Area.
The following species is considered unlikely to occur in the plan area.

- Northern California black walnut (*Juglans hindsii*) (CRPR 1B.1). Northern California black walnut is a tree in the walnut family (Juglandaceae) that occurs in riparian forest and riparian woodland from 0 to 440 meters in elevation. The species is historically known from Alameda, Butte, Contra Costa, Lake, Napa, Sacramento, Solano, Sonoma, and Yolo counties; however, it can be difficult to determine which stands are native. Because of a history of grafting non-native walnut species on to existing northern California black walnut, as well as hybridization with southern California black walnut (*Juglans californica*), there is mounting evidence in the botanical community that there are very few northern California black walnut remaining in naturally occurring populations. The species blooms from April to May.

(c) Special-Status Wildlife Species.
Special-status wildlife species that were observed during field visits, are known to occur, or have the potential to occur in the plan area are listed below. Table 23.3.2 in Appendix 23.3 of the 2009 DEIR contains a complete list of wildlife species observed during the assessment site visits. Table 6.3 in this

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Mammals			
Suisun shrew *Sorex ornatus sinuosus*	SSC	Occurs in tidal marshes of the northern shores of San Pablo and Suisun Bays. Requires dense low-lying cover, driftweed and other litter above the mean high tide line for nesting and foraging.	No Potential. The plan area provides no tidal marsh habitat, and is also outside of the known range of this species. The nearest documented occurrence is 1.9 miles southeast of the plan area (CDFG 2009).
Pallid bat *Antrozous pallidus*	SSC, WBWG	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Sensitive to disturbance of roosting sites.	Moderate Potential. The plan area hills provide woodland and some rocky habitats for roosting, and this species may also forage there. There are several documented occurrences within 10.0 miles to the west of the plan area (CDFG 2009).
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG	Habitat variable, but most common in mesic sites. Day roosts highly associated with caves and mines. Need appropriate roosting, maternity, and hibernacula sites free from human disturbance.	Unlikely. The plan area does not provide caves or mines for roosting. May occasionally forage over the plan area.
Spotted bat *Euderma maculatum*	SSC, WBWG	Little known; rare throughout much of range. Habitat is variable; roosts in crevices and caves, generally on tall cliffs in remote areas. Foraging range can be large.	Unlikely. The plan area does not provide mines or suitable rocky habitats for roosting. May occasionally forage over the plan area.
Western red bat *Lasiurus blossevillii*	SSC, WBWG	Roosts primarily in trees, 2-40 ft. above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	Moderate Potential. The Project Area's mixed woodland habitat provides potentially suitable roost sites. May also forage over the plan area.
Fringed myotis *Myotis thysanodes*	WBWG	Associated with a wide variety of habitats, including mixed coniferous-deciduous forest and redwood/sequoia groves. Buildings, mines and large snags are important day and night roosts.	Moderate Potential. The woodland habitats of the Project Area provide potentially suitable roost sites. May also forage over the plan area.
Long-legged myotis *Myotis volans*	WBWG	Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	Moderate Potential. The woodland habitats of the plan area provide potentially suitable roost sites. May also forage over the plan area.

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Greater western mastiff bat *Eumops perotis californicus*	SSC, WBWG	Habitat variable. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	Unlikely. The plan area does not provide suitable boulders or boulder piles roosting. May occasionally forage over the plan area.
Big Free-tailed bat *Nyctinomops macrotis*	SSC, WBWG	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	Unlikely. Rock outcrops within the plan area are likely too limited in area and height to provide roosting habitat for this species. The nearest documented occurrence is approximately 14.4 miles south of the plan area (CDFG 2009).
Salt-marsh Harvest Mouse *Reithrodontomys raviventris*	FE, SE, CFP	Found only in saline emergent wetlands of San Francisco Bay and its tributaries. Primary habitat is dominated by pickleweed (Salicornia). Requires adjacent, upland areas as refuge during high tides. Does not burrow.	No Potential. The plan area provides no tidal marsh habitat, and is also outside of the known range of this species. The nearest documented occurrence is approximately 3.3 miles south of the plan area (CDFG 2009).
American Badger *Taxidea taxus*	SSC	Most abundant in drier open stages of shrub, woodland and herbaceous habitats, with friable soils. Requires open, uncultivated ground in which to dig burrows. Preys on burrowing rodents.	Moderate Potential. The Study provides some suitable habitat, particularly in western portion (grasslands and open woodland). The nearest documented occurrence is approximately 7.4 miles west of the plan area (CDFG 2009).
Birds			
American white pelican *Pelecanus erythrorhynchos*	SSC	Winter visitor to the region, favoring lakes, larger rivers, and coastal estuaries. Not a marine species. Nests on large lakes, providing safe roosting and breeding places in the form of well-sequestered islets.	Unlikely. The plan area does not provide typical aquatic wintering habitat for this species, or a suitable forage base.
Golden eagle *Aquila chrysaetos*	CFP, BCC	Resident in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff- walled canyons provide nesting habitat in most parts of range; also nests in large trees in open areas.	Moderate Potential. The plan area and vicinity provides some suitable foraging and nesting habitat. The nearest documented nesting occurrence is approximately 7.2 miles west of the plan area (CDFG 2009).
Swainson's hawk *Buteo swainsoni*	ST, BCC	Summer resident in the region. Forages in grasslands and nests in the immediate vicinity, often in relatively isolated, trees or tree groves. Most of the California population breeds in the	Moderate Potential. The agricultural lands and associated groves of trees in the eastern portion of the plan area provide moderate quality nesting and foraging habitat for this species. The nearest documented

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
		Central Valley. Forages on insects and rodents, also other vertebrates.	nesting location is approximately 2.0 miles southeast of the plan area (CDFG 2009).
Northern harrier *Circus cyaneus*	SSC	Resident and winter visitor. Forages in open meadows, savannah and grassland habitats, often in association with wetlands. Nests on ground in shrubby vegetation; nest built of a large mound of sticks in wet areas. Generally avoids forested and mountainous areas.	Moderate Potential. Much of the plan area provides suitable foraging habitat. Potential nesting habitat exists in portions of the plan area Valley and in the vicinity of at least one pond in the plan area hills. The nearest documented nesting occurrence is approximately 7.1 miles east of the plan area (CDFG 2009).
White-tailed kite *Elanus leucurus*	CFP	Resident of coastal and valley lowlands; often associated with agricultural areas. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	High Potential. The plan area provides open habitats typically associated with this species (including agricultural fields), and suitable nesting substrates (e.g., large shrubs and smaller trees). The nearest documented nesting occurrence is 2.5 miles southeast of the plan area (CNDDB 2009).
Ferruginous hawk *Buteo regalis*	BCC	Winter visitor. Frequents open habitats including grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Preys on rodents and other vertebrates.	Moderate Potential. The plan area provides suitable open habitats for this species, including grasslands and agricultural fields. However, it does not breed in the region. The nearest documented occurrence is approximately 7.7 miles west of the plan area (CNDDB 2009).
Bald eagle *Haliaeetus leucocephalus*	FD, SE, CFP	Largely a winter visitor to the region. Requires large bodies of water, or free- flowing rivers with abundant fish, and adjacent snags or other prominent perches. Nests in large, old-growth, or dominant live tree with open branch-work.	Unlikely. The plan area does not provide suitable nesting habitat or the open, aquatic habitats typically used by wintering birds. The nearest documented nesting attempt is approximately 12.6 miles north of the Project Area (CDFG 2009).
Prairie falcon *Falco mexicanus*	BCC	Resident and winter visitor in the region. Inhabits dry, open terrain. Breeding sites located on cliffs. Preys on a variety of smaller vertebrates.	Unlikely. The plan area and vicinity provides foraging habitat but lacks cliffs or similar substrates that are typically used for nesting by this species. May visit the plan area during the non-breeding season.
American peregrine falcon *Falco peregrinus anatum*	FD, SD, CFP, BCC	Resident and winter visitor near wetlands, lakes, rivers, or other water bodies; on cliffs, banks, dunes, mounds. Also utilizes manmade structures for foraging and nesting. Nest consists	Unlikely. Suitable aquatic habitats are limited in area within the plan area, and it does not contain typical breeding habitat. May occur occasionally in the vicinity, but nesting is unlikely.

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
		of a scrape on a depression or ledge in an open site. Preys on birds.	
California Black Rail *Laterallus jamaicensis coturniculus*	ST, CFP, BCC	Extremely secretive resident of emergent marshes in the San Francisco Bay Estuary and portions of the Central Valley. Occurs in salt, brackish and freshwater habitats. Nests in dense stands of emergent vegetation.	No Potential. The plan area does not provide the densely- vegetated, emergent brackish marsh habitat occupied by this species in the region. The nearest documented location is approximately 6.0 miles east of the plan area (CDFG 2009).
Ridegway's rail *Rallus longirostris obsoletus*	FE, SE, CFP	Resident in salt marshes of the San Francisco Bay Estuary, with largest populations in south San Francisco Bay. Requires mud flats for foraging and dense vegetation on higher ground for nesting.	No Potential. The plan area does not contain tidal marsh and thus provides no habitat for this species. The nearest documented location is approximately 6.3 miles east of the plan area (CDFG 2009).
Western snowy plover *Charadrius 6-24lexandrines nivosus*	FT, SSC, BCC, RP	Federal listing applies only to the Pacific coastal population. Resident on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	No Potential. The plan area does not contain beaches, levees or shores and thus provides no habitat for this species. The nearest documented nesting location is approximately 8.4 miles west of the plan area (CDFG 2009).
Mountain plover *Charadrius montanus*	SSC	Winter visitor primarily to the Central Valley, found on short-grasslands and plowed fields below 1000m.	Unlikely. The flat, sparsely-vegetated wintering habitat typical of this species was not found within the plan area, and it is also just outside of this species' wintering range as recently described (Hunting and Edson 2008). Does not breed in the region.
Long-billed curlew *Numenius americanus*	BCC	Winter visitor to large coastal estuaries, upland herbaceous areas, and croplands. Within California, breeds only in the northeastern section of the state, in wet meadow habitat.	Unlikely. The plan area does provide potentially suitable wintering and migratory habitat for this species, including grassland and agricultural fields. However, this species does not breed in the region.
California least tern *Sternula* (formerly Sterna) *antillarum browni*	FE, SE, CFP	Summer resident, nesting colonially along the coast from San Francisco Bay south. Breeding colonies in the San Francisco Bay Estuary found on abandoned salt ponds and estuarine shores. Prefers barren or sparsely vegetated, flat substrates near water. Forages for small surface fish along shores, coasts, etc.	No Potential. The plan area does not contain salt ponds or suitable beaches/shores for nesting. There are no documented occurrences within 10.0 miles of the plan area (CDFG 2009).

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT, SE, BCC	Summer resident, breeding in riparian forests and jungles. Utilizes densely foliaged deciduous trees and shrubs for nesting and foraging. Eats mostly caterpillars.	Unlikely. Riparian habitats within the plan area are too limited in area and density to support this species. The plan area is also outside of this species' restricted breeding range.
Short-eared owl *Asio flammeus*	SSC	Resident and winter visitor in open lowlands, including salt and freshwater marshes, meadows, and irrigated fields. Tall grass and/or tule patches needed for nesting and roosting. Nests on dry ground in depression concealed in vegetation.	Unlikely. The agricultural fields and foothill meadows of the plan area provide some foraging habitat for this species, but potential nesting habitat is of poor quality; the woodland habitats are not suitable. The nearest documented nesting occurrence is approximately 12.0 miles southeast of the plan area (CNDDB 2009).
Long-eared owl *Asio otus*	SSC	Resident and visitor in the region. Nests in a variety of woodland habitats, including oak and riparian. Requires adjacent open land with rodents for foraging, and the presence of old nests of crows, hawks, magpies etc. for breeding.	Moderate Potential. The plan area provides mixed woodland with relatively open habitat, including agricultural fields, in close proximity. Western Solano County is within this species' breeding range as recently described (Hunting 2008).
Western burrowing owl *Athene cunicularia hypugaea*	SSC, BCC	Resident and winter visitor in open, dry annual or perennial grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Nests and roosts in old mammal burrows, generally those of ground squirrels.	Moderate Potential. The plan area provides suitable grassland habitat for this species, particularly the southwest portion. Ground squirrels were observed in this area during the site visit, though the number of burrows appeared limited. There are numerous documented occurrences within 10.0 miles of the plan area (CDFG 2009).
Northern spotted owl *Strix occidentalis caurina*	FT, SC	Resident in old-growth forests or mixed stands of old-growth and mature trees. Occasionally occurs in younger forests with patches of big trees. Prefers high, dense, multistory canopy dominated by trees with cavities or broken tops, woody debris and space under canopy. Often forages along ravines or canyons where flying corridors exist. Young generally disperse though contiguous mature forest habitat.	Unlikely. The plan area does not provide old-growth forest or any analogous habitat suitable for this species. There are no documented CNDDB occurrences within 15.0 miles of the Project Area (CDFG 2009).

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Vaux's swift *Chaetura vauxi*	SSC	Summer resident and migrant in the region. Nests in cavities, principally within large conifers. Forages high in the air over most terrain and habitats but prefers rivers/lakes.	Unlikely. The plan area has few conifers, and Solano County is outside of this species' breeding range as recently described (Hunter 2008). Probably occurs within the plan area during migration.
Black swift *Cypseloides niger*	SSC, BCC	Summer resident. Breeds in small colonies on cliffs behind or adjacent to waterfalls, in deep canyons and sea-bluffs above surf. Forages widely.	Unlikely. The plan area does not provide waterfalls or canyon habitats. May pass over the Project Area during migration.
Rufous hummingbird *Selasphorus rufus*	BCC	Migrant in the region, generally not nesting south of northernmost California. Winters in Mexico and Central America.	Unlikely. The plan area is outside of this species known breeding range. Probably occurs within the plan area during migration.
Lewis's woodpecker *Melanerpes lewis*	BCC	Uncommon migrant and winter visitor to open coniferous and woodland habitats in the region. Often associated with dead or dying trees.	Present. Although at least two individuals were observed within the plan area during the site visit, this species does not typically nest west of the Sierra Nevada.
Olive-sided flycatcher *Contopus cooperi*	SSC, BCC	Summer resident. Typical breeding habitat is montane coniferous forests. At lower elevations, also occurs in wooded canyons and mixed woods.	Moderate Potential. The Project Area provides potentially suitable mixed woodland habitat with edges, and it at the margin of this species' breeding range as recently described (Widdowson 2008).
Little willow flycatcher *Empidonax traillii brewsteri*	SE, BCC	Summer resident, with breeding currently restricted to the Sierra Nevada and adjacent foothills. Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters.	Unlikely. This subspecies is not currently known to breed outside of the Sierra Nevada, and the plan area does not provide suitably dense willow thickets. Possibly occurs within the plan area during migration.
Loggerhead shrike *Lanius ludovicianus*	SSC, BCC	Resident in open woodland, grassland, savannah and scrub. Prefers open areas with sparse shrubs, trees, posts, and other suitable perches which to forage for large insects and small vertebrates. Nests are well-concealed above ground in densely- foliaged shrub or tree.	Present. This species was observed during the site visit in the southwestern portion of the plan area Valley. The Valley and southernmost portion of the plan area hills provide suitable nesting and foraging habitat.
Purple martin *Progne subis*	SSC	Summer resident, breeding in woodland and low-elevation coniferous forests. Nests in cavities, of trees and also anthropogenic	Unlikely. The plan area is just outside of this species' breeding range as recently described (Airola and Williams 2008), and suitable nesting trees (i.e., tall, isolated) were not observed during the site visit. This

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
		structures. Woodland and forest nest sites typically in located in tall, isolated trees or snags.	species has disappeared as a breeder from most oak and riparian dominated foothills in the region (Airola and Williams 2008).
Bank swallow *Riparia riparia*	ST	Summer resident, nesting colonially in riparian areas with vertical cliffs and bands of fine-textured or sandy soils in which to create nest holes. Also nests on sandy, coastal cliffs. Migrant in riparian and other lowland habitats in western California.	Unlikely. No riparian areas with vertical cliffs were noted within the plan area and thus suitable nesting habitat is not present. May occur in the vicinity of the plan area during migration.
Yellow warbler *Setophaga petechia*	SSC	Summer resident. Nests in riparian stands of willows, cottonwoods, aspens, sycamores, and alders. Also nests in montane shrubbery in open coniferous forests. Breeding range has been reduced throughout much of the state.	Unlikely. Suitable riparian habitat (for nesting) within the plan area is likely limited to Green Valley Creek, and Solano County is not within the recently described breeding range for this species (Heath 2008). Possibly occurs within the plan area during migration.
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Endemic to the San Francisco Bay Area. Frequents low, dense vegetation near water, including salt and freshwater marshes. Requires thick, continuous cover down to water surface for foraging, and tall grasses, tule patches, or willows for nesting.	Unlikely. The plan area provides some potentially suitable emergent marsh habitat, but is outside of this subspecies' recently described year-round range (Gardali and Evens 2008). Hence, Common Yellowthroats nesting within the plan area are unlikely to be of this subspecies. The nearest documented occurrence is approximately 5.5 miles southeast of the plan area (CDFG 2009).
Yellow-breasted chat *Icteria virens*	SSC	Summer resident, utilizing riparian areas with an open canopy, dense understory, and trees for song perches. Nests in thickets of willow, blackberry, and wild grape.	Unlikely. The dense understory and open canopy habitat favored for as nesting by this species was not observed in the plan area, and it is outside of this species' breeding range as recently described (Comrack 2008). May occur occasionally during migration.
Bell's sage sparrow *Artemisiospiza belli belli*	BCC	Uncommon resident of semi-open, dry chaparral and coastal scrub.	Unlikely. The plan area provides only very limited chaparral habitat for this species, and there are no recent Solano County breeding records.
Bryant's savannah sparrow *Passerculus sandwichensis alaudinus*	SSC	Resident of coastal and estuarine marshes and adjacent pastures and grasslands.	Unlikely. The plan area provides potentially suitable grassland and pastures, but is outside of this subspecies' range as recently described (Fitton 2008).

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident in the region. Breeds in open grassland habitats, generally with low- to moderate-height grasses and scattered shrubs.	Present. Open grasslands within the plan area provide suitable habitat. At least two territorial males were observed singing in the southwestern portion of the plan area during the site visit, and were presumed to be nesting.
Samuels (San Pablo) song sparrow *Melospiza melodia samuelis*	SSC, BCC	Endemic to the north sides of San Francisco and San Pablo Bays, restricted to salt marshes and immediately adjacent vegetated habitats. Nests in low marsh vegetation, high enough to avoid flooding during high tides.	No Potential. The plan area does not provide tidal marsh habitat, and it outside of the subspecies' range as recently described (Spautz and Nur 2008a). The nearest documented location is approximately 7.1 miles west of the plan area (CDFG 2009).
Suisun song sparrow *Melospiza melodia maxillaris*	SSC, BCC	Endemic to Suisun Bay and associated marshland to the north, restricted to salt marshes and immediately adjacent vegetated habitats. Nests in low marsh vegetation, high enough to avoid flooding during high tides.	No Potential. The plan area does not provide tidal marsh habitat, and it outside of the subspecies' range as recently described (Spautz and Nur 2008b). The nearest documented occurrence is 1.8 miles southeast of the Project Area.
Tricolored blackbird *Agelaius tricolor*	SC, BCC	A highly colonial species, most numerous in the Central Valley and vicinity. Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Requires breeding habitat sufficient to support 30 nesting pairs. Colonies can be highly ephemeral.	Moderate Potential. Dense emergent marsh habitats within the plan area are relatively limited in area, and hence sub- optimal for this species. However, there are several documented nesting occurrences within 10.0 miles west and south of the plan area (CDFG 2009). This species also likely occurs with other blackbird species during the non-breeding season.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	SSC	Migrant and local summer resident. Nests colonially in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or larger ponds. Forages primarily on large aquatic insects during the breeding period.	Unlikely. The plan area lacks dense emergent marsh habitat over relatively deep water, and is marginally outside of this species' breeding range as recently described (Jaramillo 2008). May occur uncommonly with other blackbird species during the non-breeding season.
Lawrence's goldfinch *Carduelis lawrencei*	BCC	Uncommon summer resident and sporadic visitor in northern California, typically found in oak savannah and open woodlands.	Unlikely. The plan area is out of this species' typical breeding range. May occasionally occur in the vicinity of the plan area during the non-breeding season.

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Reptiles and Amphibians			
Western pond turtle Emys *marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs), submerged shelter and terrestrial nest sites. Requires friable soil for breeding. Documented to disperse and wander over upland habitats.	Present. Numerous individuals (including one juvenile) were observed in the higher-elevation ponds of the plan area hills. Suitable breeding habitat was also noted there. May also occur in Green Valley Creek, and disperse through upland portions of the plan area.
Alameda whipsnake (Alameda striped racer) *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings, where shrubs form a vegetative mosaic with oak trees, and grasses and small mammal burrows provide refuge.	Unlikely. Solano County is outside of this subspecies' known range, and the plan area provides only very limited potential habitat.
Giant garter snake *Thamnophis gigas*	FT, ST, RP	Endemic to the Central Valley. Inhabits wetlands, and cultivated land and associated ditches and irrigation channels. Highly aquatic and very wary.	Unlikely. Potentially suitable habitat is limited to small areas in the eastern portion of the plan area (i.e. agricultural land), and it is outside of this species' known range.
California tiger salamander *Ambystoma californiense*	FT, ST	Inhabits annual grassland habitats with mammal burrows to provide refugia. Vernal pools and other ephemeral water features are critical for breeding. Survival of juveniles to maturity in upland refugia is the most important factor for population persistence.	Unlikely. Although it provides suitable aquatic breeding and terrestrial grassland habitat, the plan area is outside this species' recognized range. The nearest documented occurrence is at Travis Air Force Base, southeast of the plan area (CNDDB 2009). This species is not anticipated to be present in the plan area. However, it is recommended that the status of this species be reviewed as part of project specific development proposed under the Specific Plan.
California red-legged frog *Rana draytonii*	FT, SSC	Associated with quiet, perennial to intermittent ponds, stream pools and wetlands. Generally prefers relatively deep water for breeding, and shorelines with extensive marsh and/or riparian vegetation. Aquatic, but documented to disperse through upland habitats after rains.	High Potential. Both the higher-elevation ponds in the plan area hills and Green Valley Creek and surrounding irrigation channels in the plan area Valley provide moderate to high quality habitat (varying between specific sites). There are two recent documented occurrences (including breeding) approximately 0.7 and 0.8 miles south of the plan area, respectively.

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Foothill yellow-legged frog *Rana boylii*	SSC	Found in or near high-gradient, rocky streams in a variety of habitats. Feeds on both aquatic and terrestrial invertebrates. Prefers open canopy, river or creek habitats with shallow riffles, emergent vegetation and rocks or cobble substrate. Strongly associated with water.	Unlikely. Creeks within the plan area hills lack riffle habitats (with cobble substrate) and appeared to be of poor quality for this species. Green Valley Creek provides the most suitable habitat but also apparently lacks riffle habitat within the plan area. The nearest documented occurrence is approximately 5.6 miles northeast of the plan area (CDFG 2009).
Fish			
Green sturgeon *Acipenser medirostris*	FT, SSC	Anadromous, spending most of life cycle in the ocean. Spawns in the Sacramento and Klamath River systems. Immatures can be lingering transients in San Francisco Bay.	No Potential. The Green Valley Creek watershed provides anadromous habitat but is outside of this species' range.
Steelhead - central CA coast DPS *Oncorhynchus mykiss irideus*	FT	Anadromous, spending most of life cycle in the ocean. Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	Present. Green Valley Creek in the plan area Valley provides anadromous habitat and supports a run of this population per Leidy et al. (2005a).
Steelhead - Central Valley DPS *Oncorhynchus mykiss irideus*	FT	Anadromous, spending most of life cycle in the ocean. Occurs in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Adults migrate upstream to spawn in cool, clear, well- oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	No Potential. The plan area is outside of the recognized range of this population. Unlikely. The Green Valley Creek Watershed provides anadromous habitat but does not support any runs of this species per Leidy et al. (1996).
Chinook Salmon -Central Valley spring-run *Oncorhynchus tshawytscha*	FT, ST	Anadromous, spending most of life cycle in the ocean. Federal listing includes populations spawning in the Sacramento River & its tributaries. Adults migrate upstream to spawn in cool, clear, well- oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	Unlikely. The Green Valley Creek Watershed provides anadromous habitat but does not support any runs of this species per Leidy et al. (1996).

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Chinook Salmon – Central Valley fall/late fall-run ESU *Oncorhynchus tshawytscha*	FC, SSC, RP,	Anadromous, spending most of life cycle in the ocean. Populations of this ESU spawn in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well- oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean	Unlikely. The Green Valley Creek Watershed provides anadromous habitat but does not support any runs of this species per Leidy et al. (1996).
Longfin smelt *Spirinchus thaleichthys*	FC, ST, SCC	Longfin smelt in California are primarily an anadromous estuarine species that can tolerate salinities ranging from freshwater to nearly pure seawater. Generally, longfin smelt are found closer to the ocean during summer and move upstream in the cool seasons. Found in the Coyote Watershed, Lower Eel Watershed, Lower Klamath Watershed, Lower Sacramento Watershed, Mad-Redwood Watershed, Russian Watershed, San Francisco Bay Watershed, San Joaquin Delta Watershed, San Pablo Bay Watershed, and the Suisun Bay Watershed.	No Potential. The plan area does not provide the required salt/freshwater habitat and is outside of this species' restricted range.
Delta smelt *Hypomesus transpacificus*	FT, ST	Endemic to the Sacramento-San Joaquin estuary and adjacent Suisun Bay marshes, in areas where salt and freshwater systems meet. Spawn in late winter and early spring. Weakly anadromous.	No Potential. The plan area does not provide the required salt/freshwater habitat and is outside of this species' restricted range.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	Typically found in estuarine environments. Spawning occurs in flooded, tidal, freshwater vegetation; peak reproduction occurs in March and April.	No Potential. The plan area does not provide estuarine aquatic habitat, and is outside of this species' known range. The nearest documented occurrence is approximately 6.9 miles east of the plan area in Suisun Bay (CDFG 2009).
Hardhead *Mylopharodon conocephalus*	SSC	Found in the Sacramento-San Joaquin and Russian River systems, typically inhabiting undisturbed areas of larger low- to mid- elevation streams. Prefers clear, deep pools and runs with sand-gravel-boulder substrates and slow velocities.	No Potential. This species is absent from San Francisco Bay streams save the Napa River (Moyle 2002).

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Tidewater goby *Eucyclogobius newberryi*	FE, SSC	Found in brackish water habitats along the California coast from Agua Hedionda Lagoon (San Diego County) to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, requiring fairly still but not stagnant water and high oxygen levels.	No Potential. The plan area and its immediate vicinity do not contain shallow lagoon or lower stream reach habitat. This species is likely extirpated from the San Francisco Bay Estuary (Moyle 2002).
Invertebrates			
California freshwater shrimp *Syncaris pacifica*	FE, SE	Endemic to Marin, Napa, and Sonoma Counties. Found in shallow pools in low gradient streams where riparian cover is moderate to heavy.	Unlikely. Green Valley Creek provides potentially suitable habitat for this species, but the plan area is outside of this species' known range. The nearest documented occurrence is approximately 10.5 miles west of the plan area (CDFG 2009).
Vernal pool fairy shrimp *Branchinecta lynchi*	FT, RP	Endemic to the grasslands of the Central Valley, and central to south coast mountains. Found in small, clear-water sandstone-depression astatic pools and grassed swale, earth slump, or basalt-flow depression pools.	Unlikely. Although the plan area is within the general range of this species (Erikson and Belk 1999), it does not provide vernal/astatic pool habitat. Furthermore, the nearest CNDDB occurrence is 6.1 miles west of the plan area, suggesting that no source population for the plan area exists.
Conservancy fairy shrimp *Branchinecta conservatio*	FE, RP	Endemic to the grasslands of the northern two-thirds of the Central Valley. Found in large, turbid astatic pools located in swales formed by old, braided alluvium.	No Potential. The plan area does not provide vernal/astatic pool habitat, and western Solano County is not within this species' currently recognized range (Erikson and Belk 1999). There are no documented occurrences within 10.0 miles of the plan area (CDFG 2009).
Vernal pool tadpole shrimp *Lepidurus packardi*	FE, RP	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands; some pools are mud-bottomed and highly turbid.	No Potential. The plan area does not provide vernal/astatic pool habitat, and western Solano County is not within this species' currently recognized range. There are no documented occurrences within 10.0 miles of the plan area (CDFG 2009).
Delta green ground beetle *Elaphrus viridis*	FT, RP	Restricted to the margins of vernal pools in the grassland area between Jepson Prairie and Travis Air Force Base. Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25 to100% cover.	No Potential. The plan area is outside the very restricted known range of this species.

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT, RP	Endemic to the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberry plants that are 2 to 8 inches in diameter; some preference shown for "stressed" elderberry.	Unlikely. USFWS 2014 revised range map for the species does not include western Solano County.
Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Occurs in grasslands. As generally recognized, currently restricted to two populations in San Mateo and Alameda Counties respectively; however, the taxonomy of *S. callippe* in Solano Co. is unsettled. Adults fly in late spring to early summer. Larval host plant is Johnny jump- up (*Viola pedunculata*).	Moderate Potential. USFWS (1997, as cited in SCWA 2007) currently treats *S. callippe* occurring in Solano County as *S.c. callippe*. Grassland and oak woodland savannah in the plan area hills are suitable for this butterfly, and the host plant was observed there during the site visit.
Monarch butterfly *Danaus plexippus*	None; roost sites protected by CDFG	Winter roost sites extend along the coast from northern Mendocino County to Baja California, Mexico. Roosts located in wind- protected tree groves (usually of eucalyptus, Monterey pine or Monterey cypress), with nectar and water sources nearby.	Present. Individual monarchs were observed within the plan area hills during the site visit. However, the plan area does not provide the dense coastal groves of non-native trees that provide typical winter roosting habitat for this species. The nearest documented roost site is approximately 4.9 miles east of the plan area.

* Key to status codes:
BCC USFWS Birds of Conservation Concern
CFP California Fish and Game Code Fully Protected
DPS Distinct Population Segment
ESU Evolutionary Significant Unit
FE Federal Endangered
FC Federal Candidate
FT Federal Threatened
RP Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SC State Candidate
SE State Endangered
SSC CDFW Species of Special Concern
ST State Threatened
WBWG Western Bat Working Group High Priority Species
Source: CNDDB 2016, CNDDB 2009, USFWS 2016

chapter contains a complete list of special-status wildlife species that were reviewed as part of this evaluation, including habitat requirements and an evaluation of habitat suitability in the plan area. The table was created based on available information from the CNDDB, HCP, USFWS list for Solano County and the Cordelia USGS 7.5' quad, and species habitat requirements as noted in available literature. Figure 6.3 shows recorded (CNDDB) occurrences of special-status wildlife species within 5 miles of the plan area. Figure 6.4 shows specialized habitats within the plan area that may support special-status species, as discussed below.

(1) Special-Status Wildlife Species Observed or with Known Occurrences in the Plan Area.
The following wildlife species have been observed or documented in the plan area.

- Loggerhead Shrike (*Lanius ludovicianus*), CDFW Species of Special Concern (SSC), USFWS Bird of Conservation Concern (BCC), and a Secondary Special Management Species as outlined in the HCP. Loggerhead shrike is resident in lowlands and foothills throughout much of California. This species prefers open, habitats with short vegetation, areas of bare ground, and appropriate perches for foraging (i.e., trees, taller shrubs, fences), and dense, often relatively isolated bushes and small trees in which to place nests (Yosef 1996, Humple 2008). Shrikes are predatory songbirds, preying upon a variety of insects and small vertebrates. One Loggerhead shrike was observed during the site visit in the southwestern corner of the plan area valley. The plan area valley and relatively open oak woodland habitats in the hills provide suitable habitat for this species, including grassland and agricultural land for foraging, and small, relatively isolated trees and bushes for nesting.

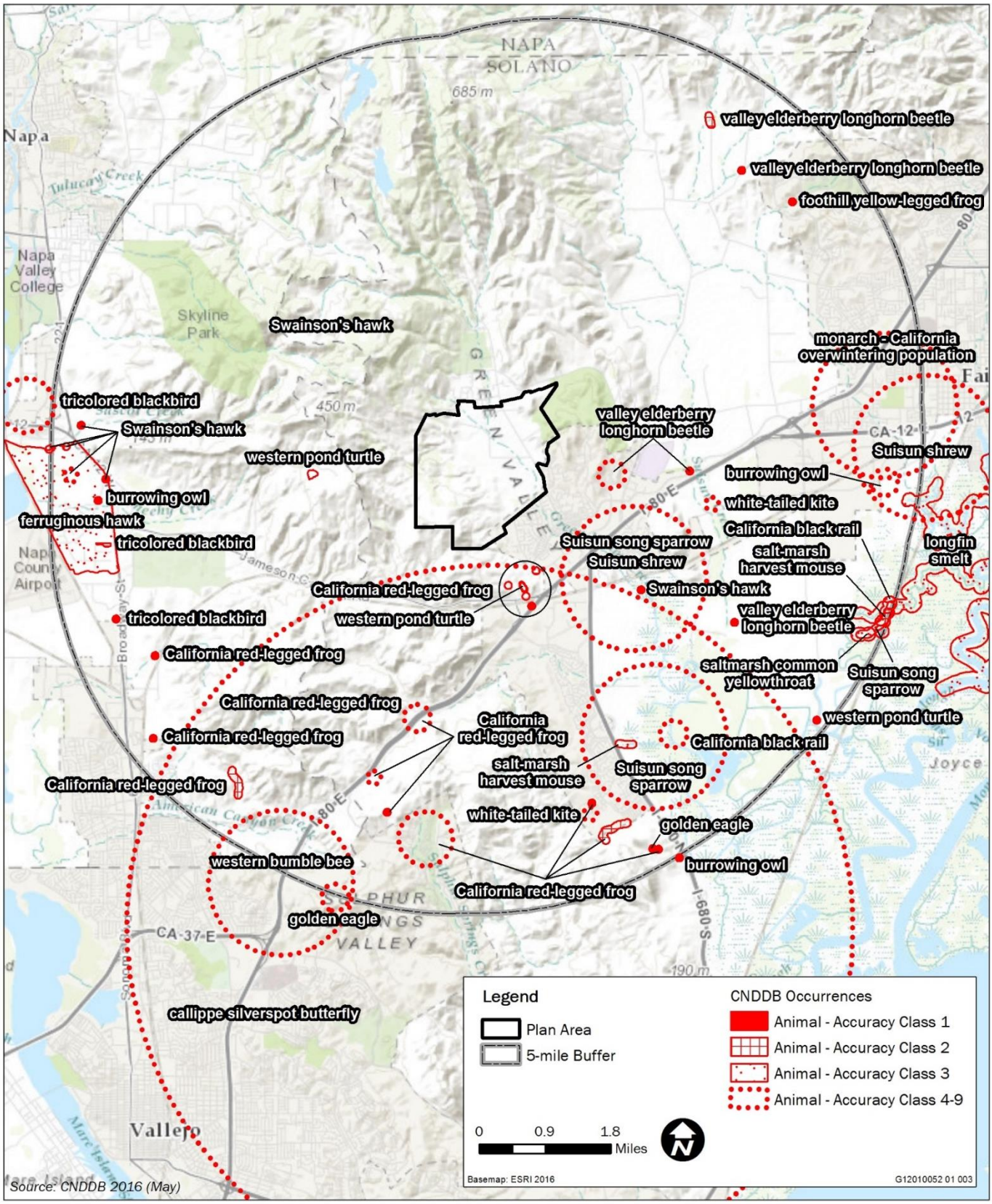
- Lewis' Woodpecker (*Melanerpes lewis*)—USFWS Bird of Conservation Concern (BCC). Lewis's woodpecker is an uncommon resident and winter visitor in northern California. Preferred habitats are open and dry, and include pine-oak woodlands, ponderosa pine woodland, and oak woodlands. This species is often found in association with recently burned, logged, or otherwise disturbed areas. Nesting occurs in tree cavities, often in loose colonies.

  At least two Lewis' woodpeckers were observed foraging near the large stock pond in the northwest portion of the plan area during the initial site visit. The inner Coast Ranges of northern California support some resident breeding populations of this species.

- Grasshopper Sparrow (*Ammodramus savannarum*), CDFW Species of Special Concern (SSC) and a Primary Special Management Species as outlined in the HCP. Grasshopper sparrow is a summer resident in California, wintering principally in Mexico and Central America. This species breeds in grassland habitats with short- to moderate-height vegetation, and often scattered shrubs. Nests are on the ground, well- concealed, and often adjacent to grass clumps. Grasshopper sparrow is secretive and generally detected by voice. Two grasshopper sparrows were observed singing in the hills in the southwest portion of the plan area during the site visit, and each was presumed to represent a respective nesting pair.

  Areas of grassland in the hills of the plan area, including both non-native annual grassland and areas identified as purple needlegrass grassland, may support this species. The plan area valley and oak woodlands do not provide suitable breeding habitat for this species and it has little potential to occur in those areas except when briefly passing through during migration.

- Western Pond Turtle (*Emys marmorata*), CDFW Species of Special Concern (SSC) and a Secondary Special Management Species as outlined in the HCP. Western pond turtle (WPT) is the only freshwater turtle native to northern California, and is associated with rivers, streams, lakes, and ponds throughout much of the state. Typical aquatic habitat features include stagnant or low-gradient water containing aquatic vegetation, and aerial basking sites such as logs, rocks, and mud



Source: CNDDB 2016 (May)

FIGURE 6.3
RECORDED (CNDDB) OCCURRENCES OF SPECIAL-STATUS WILDLIFE SPECIES IN THE PLAN AREA VICINITY

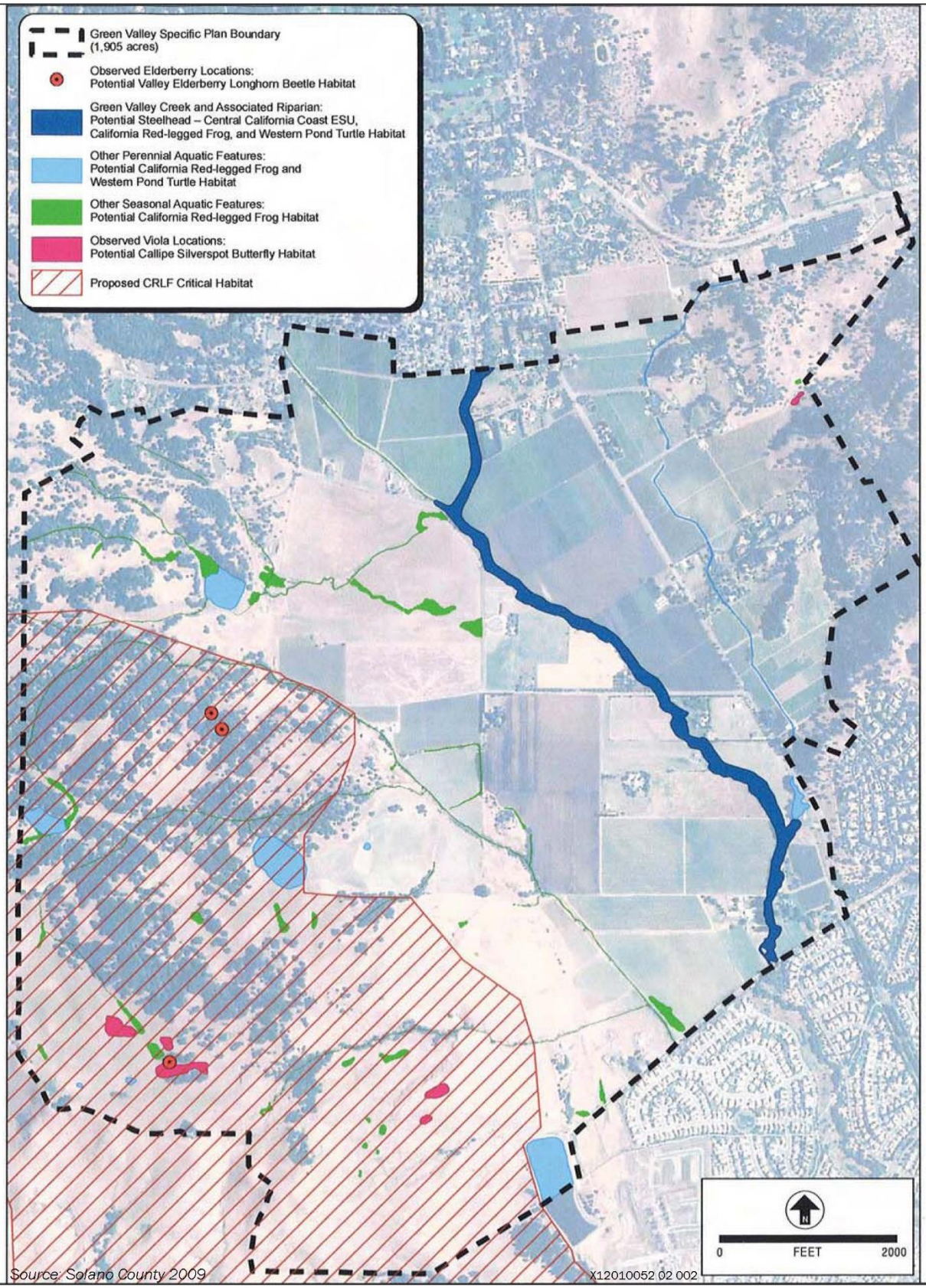


FIGURE 6.4
SPECIALIZED WILDLIFE HABITATS IN THE PLAN AREA

banks. Adult females excavate nests in riparian and upland areas in the spring or early summer. Nest sites are generally located on unshaded slopes, and require friable soil that is sufficiently dry to promote successful egg development. The young generally hatch and overwinter in the nest. At least under some ecological conditions, WPT may regularly use terrestrial habitats. While some populations are active principally in the spring and aestivate during the rest of the year, turtles along the central California coast may be active year-round. WPT is a dietary generalist, subsisting principally on invertebrates as well as plant material and carrion.

WPT (including one immature turtle less than two years old) was observed within the two large, perennial ponds in the middle portion of the plan area's hills during the site visit. The plan area provides high-quality aquatic habitat for WPT, including several ponds with aquatic vegetation and aerial basking sites (Figure 6.4). Nesting habitat is provided by vegetated areas with friable soil in the vicinity of the occupied ponds. Aquatic habitats in the plan area valley may also support WPT, though no turtles were noted there during the site visits. Green Valley Creek (and associated drainages) as well as irrigation canals in the plan area valley may support this species.

- Steelhead (*Oncorhynchus mykiss irideus*) Central California Coast DPS, Federal Threatened (FT), Essential Fish Habitat (EFH), and a Primary Covered Species as outlined in the HCP. The Central California Coast Distinct Population Segment (DPS) includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco, San Pablo, and Suisun bays eastward to Chipps Island at the confluence of the Sacramento-San Joaquin rivers.

  Steelhead is an anadromous salmonid, typically migrating to marine waters after spending two years in fresh water. Following out-migration to the ocean, individual steelhead remain there for two to three years (though some individuals may remain in the ocean for up to seven years) before returning to their natal stream to spawn. Adults typically spawn between December and June; females typically spawn two times before they die. Preferred spawning is found in perennial streams with cooler-temperature water, high dissolved oxygen levels, and substantial flow. Abundant riffles (shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful reproduction.

  Steelhead has been documented in Green Valley Creek and its tributaries.[12] Suitable spawning habitat is assumed to exist in the mid- to upper reaches of the Green Valley Creek watershed outside of the plan area. Within the plan area, Green Valley Creek provides migration habitat and may provide spawning and/or rearing habitat. Ephemeral and intermittent tributaries in the plan area hills did not contain sufficient water during the site visits to be suitable for steelhead rearing, migration, or breeding. The HCP designates conservation areas for Priority Drainages and Watersheds (including Green Valley Creek) as well as for Steelhead.

- Monarch Butterfly (*Danaus plexippus*) No special status; roost sites protected by CDFW. The monarch butterfly is a relatively common species in the region known for the long-range migration of adults and subsequent wintering along the California coast. Over-wintering roost habitat for monarchs is defined as that which supports long term (i.e., November to early March) hibernal clusters of butterflies. Such habitat typically consists of sheltered groves of tall trees near the coast that provide 1) vertical density and 2) a multi-tiered canopy to provide protection from the elements. Winter roost habitat is typically composed of stands of native or non-native conifers, or non-native bluegum eucalyptus.

[12] Leidy, R.A., G.S. Becker, and B.N. Harvey. 2005. See list of references in Appendix 23.3 of the 2009 DEIR.

Although individual monarchs were observed within the plan area during the initial site visit, suitable winter roost habitat as typically defined above was not observed during the site visits. Nevertheless, there is the potential for suitable roost habitat within the plan area.

(2) Special-Status Wildlife Species with Potential Habitat in the Plan Area.
The plan area also contains potential habitat for the following species although none were observed during the site surveys.

- Pallid Bat (*Antrozous pallidus*) CDFW Species of Special Concern (SSC), Western Bat Working Group High Priority (WBWG). Pallid bat is found in a variety of low-elevation habitats throughout California. It selects a variety of day roosts including rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are usually found under bridges, but also in caves, mines, and buildings. This species is sensitive to roost disturbance. Unlike most bats, pallid bats primarily feed on large ground-dwelling arthropods, and prey is often taken on the ground (Zeiner et al. 1990). Both rock outcrops and woodland tree cavities in the plan area hills provide potential roost habitat for this species, and there are there are several documented occurrences within 10.0 miles to the west (CDFG 2009).[13] Bridges and buildings in the plan area valley may also provide suitable roosting habitat for this species.

- Western Red Bat (*Lasiurus blossevillii*) CDFW Species of Special Concern (SSC), Western Bat Working Group High Priority (WBWG). Western red bat is considered highly migratory and broadly distributed, reaching from southern Canada through much of the western United States. It is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats (including riparian areas), often adjacent to streams or open fields, or in orchards. Woodlands of the plan area hills provide potential roost habitat. Though perhaps lower in quality, riparian habitats of Green Valley Creek and associated features in the plan area valley also provide potential roost habitat. Most of the plan area provides suitable foraging habitat.

- Fringed Myotis (*Myotis thysanodes*), Western Bat Working Group High Priority (WBWG). This bat is associated with a wide variety of habitats including coniferous/coniferous- deciduous forest, woodlands, and shrublands. Buildings, mines, and tree cavities are important day and night roosts. This species forages over aquatic habitats, scrub, and woodland habitats. Woodlands of the plan area hills and older buildings in both the plan area hills and valley provide potential roost habitat. Most of the plan area provides suitable foraging habitat.

- Long-Legged Myotis (*Myotis volans*), Western Bat Working Group High Priority (WBWG). The long-legged myotis is generally associated with woodlands and forested habitats. Large hollow trees, rock crevices, and buildings are important day roosts. Other roosts include caves and mines. Foraging habitat is variable and includes both aquatic features and terrestrial habitats such as scrublands and woodland. Woodlands of the plan area hills and older buildings in both the hills and valley provide potential roost habitat. Most of the plan area provides suitable foraging habitat.

- American Badger (*Taxidea taxus*) CDFW Species of Special Concern (SSC). American badger is a large, semi-fossorial member of the Mustelidae (weasel family). It is found uncommonly within the region in drier open stages of most scrub, forest, and herbaceous habitats where friable soils and prey populations are present. Badgers are typically solitary and nocturnal, digging burrows to provide refuge during daylight hours. Burrow entrances are usually elliptical (rather than round); each burrow generally has only one entrance. Young are born in the spring and are independent by

[13] See CNDDB 2016on list of references in Appendix 23.3 of the 2009 DEIR.

the end of summer. Badgers are carnivores, preying on a variety of mammals (especially ground squirrels) and occasionally other vertebrates and eggs.

Grassland and woodland habitats of the plan area hills provide at least moderate-quality denning habitat for this species, and prey (e.g., ground squirrels) were also observed within the southern portion of the plan area hills. Although no burrows observed within the plan area during the site showed obvious badger characteristics, this species has the potential to occur in the hills of the plan area. The plan area valley is generally too disturbed to support this species. Therefore, there is the potential that it may exist in the plan area, although unlikely.

- Golden Eagle (*Aquila chrysaetos*) CDFW Fully Protected Species (CFP), USFWS Bird of Conservation Concern (BCC). Golden eagle is resident to semi-resident in open and semi- open areas from sea level to high altitude. Occupied habitats include tundra, shrublands, grasslands, mixed woodlands, and coniferous forests. Golden eagle usually occurs in mountainous areas but also nests at lower elevations. Nests are typically located on cliffs or in large, isolated trees. This species forages over large areas. Its diet consists primarily of small mammals but includes a variety of other vertebrates, along with carrion.

  The plan area hills provide moderate-quality breeding habitat for this species and a forage base including ground squirrels and rabbits. There is also some potential for this species to breed in larger trees in the plan area valley, though the habitat there is of lower quality than the hills. The nearest documented nesting occurrence is approximately 7.2 miles west of the plan area (CDFG 2009).

- Northern Harrier (*Circus cyaneus*) CDFW Species of Special Concern (SSC) and a Secondary Special Management Species as outlined in the HCP. Northern harrier is found in open habitats throughout most of California, including freshwater and brackish marshes, fields, grasslands, agricultural areas, and desert habitats. Harriers typically nest on the ground in open (i.e., treeless) habitats in dense, relatively tall vegetation, the composition of which is highly variable. Harriers subsist on a variety of small mammals and other vertebrates.

  Open grassland and shrub habitats within the plan area provide suitable foraging habitat for harriers. Agricultural land and wetland marsh habitats close to agricultural areas within the plan area valley as well as the vicinities of the larger ponds in the plan area hills provide potential breeding habitat.

- White-Tailed Kite (*Elanus leucurus*) Fully Protected (CFP). White-tailed kite is resident in agricultural areas, grasslands, scrub habitats, wet 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. This species preys upon a variety of small mammals and other vertebrates.

  The plan area valley provides high-quality habitat for this species, including grassland and agricultural land for foraging and suitable nest trees. The nearest documented nesting occurrence is approximately 2.5 miles southeast of the plan area (CNDDB 2016). This species is unlikely to nest in the plan area hills due to its preference for low elevations and flat lands, but it may forage at the margins of the hill areas.

- Swainson's Hawk (*Buteo swainsonii*) State Threatened (ST), USFWS Bird of Conservation Concern (BCC) and a Secondary Covered Species as outlined in the HCP. Swainson's hawk is a summer resident in the region, wintering principally in South America. Nearly the entire California population breeds in or adjacent to the Central Valley. Swainson's hawk nests in medium to large trees, typically located within narrow bands of riparian vegetation or isolated oak woodlands, or in

association with windbreaks and isolated trees. This species forages in open habitats such as grasslands, sparse shrub-lands and agricultural areas (especially with row, grain and/or hay crops). Its diet consists mostly of insects but also includes a variety of small vertebrates.

The grassland and agricultural areas of the plan area valley provide suitable breeding and foraging habitat for Swainson's hawk. The nearest documented nesting occurrence is approximately 2.0 miles southeast of the plan area (CDFG 2009). Breeding within the plan area hills by this species is unlikely given denser vegetation and less edge habitat. Suitable foraging habitat is present throughout the plan area, but foraging is more likely in the valley. The plan area lies primarily within the HCP's Swainson's hawk irrigated agricultural conservation area, valley floor grassland conservation area, and inner coast range conservation area.

- Ferruginous Hawk (*Buteo regalis*) USFWS Bird of Conservation Concern (BCC). Ferruginous hawk is a winter visitor to northern California, favoring open terrain, from grasslands to deserts, with abundant prey, particularly mammals. The plan area valley as well as the grasslands and more open woodlands of the plan area hills provide suitable foraging habitat for wintering ferruginous hawks. However, this species does not breed in the area.

- Long-Eared Owl (*Asio otus*) CDFW Species of Special Concern (SSC). Long-eared owl is resident throughout much of California outside of the Central Valley, breeding in a variety of woodland habitats, including oak and riparian. This species requires adjacent open land with rodents for foraging, and the presence of old nests of crows, hawks, magpies and similar species for breeding. This species often roosts communally in the winter. Western Solano County is within this species' breeding range as recently described. The plan area hills and valley collectively provide mixed oak woodland and riparian habitat for breeding, and open areas such as grasslands and agricultural land for foraging.

- Burrowing Owl (*Athene cunicularia*) CDFW Species of Special Concern (SSC), USFWS Bird of Conservation Concern (BCC), and a Secondary Covered Species as outlined in the HCP. Burrowing owl is year-round resident in grasslands, desert floors and other dry, open habitats with sparse to nonexistent tree or shrub canopies. In California, this species is generally found in close association with California ground squirrels (*Spermophilus beecheyi*). Burrowing owls use vacant ground squirrel burrows for shelter and nesting, and exhibit high site fidelity. They also may colonize disturbed, human-modified habitats, using debris, old pipes, or other anthropogenic structures. Prey for this species includes invertebrates and small vertebrates.

  While no burrowing owls or owl signs (e.g., feces stains, regurgitated pellets) were observed during the site visit, open grasslands in the plan area hills and uncultivated areas as well as the margins of agricultural fields in the plan area valley provide suitable open habitat, with ground squirrels present. There are also numerous CNDDB occurrences within 10.0 miles of the plan area (CNDDB 2016). Hence, burrowing owl has a moderate potential to occur within the plan area. The plan area lies primarily within the HCP's burrowing owl irrigated agricultural conservation area, valley floor grassland conservation area, and inner coast range conservation area.

- Olive-Sided Flycatcher (*Contopus cooperi*) CDFW Species of Special Concern (SSC), USFWS Bird of Conservation Concern (BCC). Olive-sided flycatcher is a summer resident in the region, found in a variety forested habitats. This species typically nests in coniferous forest at higher elevations, but also nests in mixed forest and woodlands at lower elevations. The species winters in Central and South America. Breeding habitat is often associated with forest openings and edges, both natural (e.g., meadows, canyons, rivers) and human-made (e.g., logged areas). The plan area hills provide potentially suitable mixed woodland habitat with edges, and the plan area is at the margin of this species' breeding range as recently described. The plan area valley does not provide any typical

breeding habitat for this species because trees within the valley occur principally in isolated groves or narrow, riparian bands.

- Tricolored Blackbird (*Agelaius tricolor*) Candidate for listing under CESA), USFWS Bird of Conservation Concern (BCC) and a Secondary Covered Species as outlined in the HCP. Tricolored blackbird is nearly endemic to California, occurring principally in the Central Valley and also within coastal portions of the state. This species breeds colonially near or over fresh water, preferably in tall, dense emergent vegetation (e.g., cattails and tules) but also in thickets of willow and blackberry as well as grain fields. Nesting habitat must be large enough to support a minimum of 30 pairs; breeding colonies of this species are tied to food abundance and can be highly ephemeral. Tricolored blackbird joins large, mixed-species blackbird flocks during the non-breeding season.

  Cultivated agricultural fields involved in grain production, as well as emergent marsh along watercourses in the plan area valley, and within stock ponds in the hills, provide suitable habitat for this species. However, the smaller size of these areas limits the quality of breeding habitat for this species. Given there are several CNDDB nesting occurrences within 10.0 miles west and south of the plan area (CNDDB 2016), there is a moderate potential for this species to breed within the plan area. This species also may be present with other blackbirds during the non-breeding season.

- California Red-Legged Frog (*Rana draytonii*) Federal Threatened (FT), CDFW Species of Special Concern (SSC), and a Primary Covered Species as outlined in the HCP. California red-legged frog (CRLF), formerly considered a subspecies of the red-legged Frog (R. aurora), is the only native "pond frog" found throughout much of California. It was listed as Threatened by USFWS in 1996.

  Typical CRLF breeding habitat is characterized by deep and still or slow-moving water associated with emergent marsh and/or riparian vegetation. Suitable aquatic habitats include ponds (ephemeral and permanent), streams/creeks (ephemeral and permanent), seasonal wetlands, springs, seeps, human-made features (e.g. stock ponds, roadside ditches), marshes, dune ponds, and lagoons. Depending on local conditions, CRLF may complete its entire life cycle in a particular patch of habitat (i.e., a pond suitable for all life stages), or use multiple habitat types. CRLF often undergoes estivation (i.e., a period of inactivity) during the dry months, over-summering in small mammal burrows, moist leaf litter, incised stream channels, or large cracks in the bottom of dried ponds. Adult and sub-adult (i.e., newly metamorphosed) CRLF may disperse from breeding habitats to nearby riparian and/or estivation habitats in the summer. Conversely, during the rainy season CRLF may disperse from estivation sites to suitable breeding habitat. During such dispersals, frogs can travel up to one mile over a variety of topographic and habitat types. Upland dispersal habitats include riparian corridors, non-native annual grasslands, and oak savannas.

  Although CRLF was not observed during the site visit, both the ponds (with associated wetlands) in the plan area hills and the aquatic features of the plan area valley (Green Valley Creek and associated drainages, irrigation ditches, and wetlands) provide suitable aquatic habitat for CRLF (see Figure 6.4). Upland portions of the plan area may also provide suitable dispersal habitat. Given the two recent CNDDB occurrences (including breeding) approximately 0.7 and 0.8 mile south of the plan area respectively (CNDDB 2016), there is a high potential for CRLF to occur within the plan area.

  As outlined by the HCP, most of the plan area hills lies within the Jameson Canyon–Lower Napa River CRLF Frog Recovery Area (Recovery Area). Additionally, much of the plan area hills are within a proposed CRLF Critical Habitat Unit Sol-2 (Federal Register 2009).

- Callippe silverspot butterfly (*Speyeria callippe callippe*) Federal Endangered (FE) and a Primary Covered Species as outlined in the HCP. Callippe silverspot butterfly (CSB), a subspecies of the callippe fritillary (S. callippe), is endemic to the San Francisco Bay Area with the largest remaining

population found on San Bruno Mountain south of San Francisco. This butterfly occurs in grassland habitats, including oak woodland savannah. The larval food plant is Johnny jump-up (*Viola pedunculata*), and adults fly from late spring to early summer. Only one brood is produced annually.

The local taxonomy and biogeography of S. calllippe is unsettled, with differing opinions from authorities regarding to which subspecies certain populations belong, including those of Solano County (SWCA 2007). For the purposes of the plan area, any S. callippe found within the plan area is assumed to be as CSB (i.e., S. c. callippe). V. pedunculata was observed within the plan area hills during the site visit (Figure 6.4), and thus this butterfly has a moderate potential to occur there. There is no potential for occurrence in the plan area valley, as suitable habitat for this species is not present there.

Most of the plan area lies within the CSB Conservation Area as outlined in the HCP.

(3) Special-Status Wildlife Species Unlikely to Occur in the Plan Area.
The following species are considered unlikely to occur in the plan area due to the lack of suitable habitat.

- California Tiger Salamander (*Ambystoma californiense*) Federal Threatened Species, Candidate for State Listing, and a Primary Covered Species as outlined in the HCP. The California tiger salamander (CTS) is restricted to grasslands and low-elevation foothill regions in California (generally under 1,500 feet) where it uses seasonal aquatic habitats for breeding. The salamander breeds in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry), and occupy substantial areas surrounding the breeding pool as adults. CTS spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by estivating (going through a dormant period) in refugia (such as burrows created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands. CTS may move up to 1.2 miles (1.9 kilometers) away from breeding ponds, but most salamanders (95 percent) remain within 0.4 mile (2,200 feet; 670 meters) of breeding ponds (USFWS 2004).

  CTS is considered unlikely to be present in the plan area based on current known information.

  The nearest CTS record to the plan area is located approximately 10 miles to the southeast. Interstate 80 is a major barrier to dispersal for this population. Previous surveys conducted in the vicinity of the plan area have failed to discover California Tiger Salamander in the area. According to the Solano Multispecies Habitat Conservation Plan, no records for CTS occur north of I-80 on the west side of the Central Valley except for one area in the Dunnigan Hills in Yolo County (approximately 35 miles to the north of the plan area). Figure 4-6 of the 2012 HCP indicates the plan area is to the west of the known range of the species. In addition, perennial water features in the plan area generally do not provide good habitat for CTS as they usually harbor potential predators such as crayfish, fish, bullfrog and newts. Potential CTS predators were observed in two of the three perennial ponds during site visits by WRA biologists.

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) Federal Threatened (FT) and a Secondary Covered Species as outlined in the HCP. Valley elderberry longhorn beetle (VELB) is endemic to California's Central Valley. This beetle is completely dependent on elderberry (*Sambucus* spp.), particularly blue elderberry (*S. mexicana*) for larval development, and to a lesser degree, adult feeding. Typical habitat is characterized as large stands of mature elderberry shrubs in riparian or floodplain areas. Elderberry plants with stems that are greater than one inch in diameter at ground level are generally considered to be suitable habitat for VELB (USFWS 1999).

Blue elderberry appeared to be relatively widespread in the plan area during the site visit, observed in the hills and valley. However, in 2014, USFWS withdrew a petition to delist the species and published a revised historical distribution of the species (USFWS 2014b)[14]. Based on the revised distribution of the species, VELB are not expected to occur in western Solano County and is not expected in the Plan Area.

6.2 PERTINENT PLANS AND POLICIES

Many plans and programs have been enacted by federal, state, and local legislation to protect biological resource values. CEQA requires an EIR to identify the plan and policy setting within which the project is proposed and discuss any inconsistencies between the proposed project and these applicable plans and policies (CEQA Guidelines Section 15125(d)). CEQA also indicates that this plan and policy consistency discussion should be limited to the context of evaluation and review of environmental impacts (CEQA Guidelines Section 15124(b)).

6.2.1 Pertinent Solano County Plans

(a) Solano County General Plan.

Chapter 4, Resources, of the 2008 Solano County General Plan describes goals, policies, and implementation programs specific to biological resources. Goals and policies that are pertinent to consideration of the proposed Specific Plan and its potential impacts on biological resources include:

- Repair environmental degradation that has occurred, and seek an optimum balance between the economic and social benefits of the county's natural resources. (Goal RS.G- 3)

- Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety. (Goal RS.G-4)

- Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections. (Policy RS.P-1)

- Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna. (Policy RS.P-2)

- Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources. (Policy RS.P-4)

- Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs. (Policy RS.P-5)

- Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way. (Policy RS.P-6)

The General Plan also contains implementation programs, such as a defined program for oak woodland mitigation, mapping of critical wildlife movement corridors, and development of conservation programs, such as through transfer of development rights. These programs are considered in Section 6.3, Impacts and Mitigation Measures, of this SRRDEIR chapter in the context of habitat and species-specific impacts and appropriate mitigation measures.

[14] P:\2012\12010052.02 - Solano Co – MGVSP Bio\3_Project library\Administrative Record\USFWS 2014_VELB

(b) Solano Multispecies Habitat Conservation Plan.

The following plan participants have agreed to implement conservation measures to ensure the protection of threatened and endangered species and habitat within the Solano County Water Agency (SCWA) service area:

- Solano County Water Agency*
- City of Vacaville*
- City of Fairfield*
- Suisun City*
- City of Vallejo *
- Solano Irrigation District*
- Maine Prairie Water District*
- City of Rio Vista
- City of Dixon
- Reclamation District No. 2068
- Dixon Resource Conservation District
- Dixon Regional Watershed Joint Power's Authority
- Vallejo Sanitation and Flood Control District
- Fairfield-Suisun Sewer District
- Solano Project Member Agencies

The SCWA and member agencies are developing the Solano Habitat Conservation Plan (HCP) for use within the SCWA contract service area and other participating areas of the county. As noted in Subsection 6.1.1(c) above, at the time of preparation of this SRRDEIR (May 2016), the October 2012 Public Draft HCP (HCP) was available for reference.

The HCP, once approved, will establish a framework for complying with federal and state regulations for endangered species while accommodating ongoing urban activities and future urban growth. The data used in the General Plan to delineate priority habitat areas for conservation and preservation are derived from the HCP.

The Specific Plan area is included within HCP-designated "Zone 2 – SCWA and Irrigation and Reclamation District Zone" and "Zone 3 - Remainder of County." Activities covered by the HCP in these zones include maintenance and new construction of water district facilities, and conservation activities. Portions of the Specific Plan-proposed development areas are HCP-designated conservation areas for Priority Drainages and Watersheds (Green Valley Creek), callippe silverspot, California red-legged frog, steelhead and Chinook salmon, Swainson's hawk, and California burrowing owl. The plan area also contains two HCP-designated "Key Corridors," referred to as the Vallejo Lakes and Rockville Hills corridors.

Solano County is not included as a participant in the HCP. However, it may be possible for projects located in unincorporated County areas to participate in the HCP if they receive water supply from the City of Fairfield, SCWA, or SID.

6.2.2 Pertinent Federal Regulations

(a) Federal Endangered Species Act.

The federal Endangered Species Act (FESA) protects certain animal and plant species. Under the FESA, species are put on lists and categorized as endangered, threatened, proposed, or candidate species. "Endangered species" are defined as those that are in imminent danger of extinction, while threatened species are those likely to be in danger of extinction. The FESA lists are maintained by, and protection of the listed species is enforced by the USFWS and the National Marine Fisheries Service (NMFS). Actions that may result in a "take" of a FESA-listed species are subject to USFWS or NMFS permit issuance and monitoring. Under Section 9 of the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot,

wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take. Federally listed plant species are protected when a take occurs on federal land or by federal action.

(b) Migratory Bird Treaty Act of 1918 (MBTA).
The Migratory Bird Treaty Act (MBTA) protects nesting migratory bird species, including common species. Under the MBTA, destroying active nests, eggs, and young of migratory bird species is prohibited (16 U.S.C. § 703-712). The MBTA is enforced by regulations of USFWS (50 CFR 10) and through California Fish and Game Code Section 3513. Introduced bird species are not protected by the MBTA, as described in 50 CFR 10.

(c) Bald and Golden Eagle Protection Act.
The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) protects bald and golden eagles by prohibiting disturbance of these birds. The most recent regulatory revision (June 2007) defines "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

(d) Section 404 of the Clean Water Act.
USACE regulates "Waters of the United States" under Section 404 of the Clean Water Act. "Waters of the U.S." are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the U.S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into "Waters of the U.S." (including wetlands) generally requires an individual or nationwide permit from USACE under Section 404 of the Clean Water Act.

6.2.3 Pertinent State of California Regulations

California Endangered Species Act. The California Endangered Species Act (CESA) prohibits "take" of any species that the California Fish and Game Commission determines to be an endangered or threatened species or a candidate for listing. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include "harm" or "harass," like the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

(a) Porter-Cologne Water Quality Control Act.
The term "Waters of the State" is defined by the State's Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." Under the Act, the San Francisco Regional Water Quality Control Board protects all waters in its regulatory scope but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have been identified as of high resource value and vulnerable to filling, and are not systematically protected by other programs. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan has been adopted and approved by the State Water Resources Control Board and U.S. EPA.

Water Board jurisdiction includes "isolated" wetlands and waters that may not be regulated by USACE under Section 404. "Waters of the State" are regulated by the Water Board under the State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Department of the Army permit, or fall under other federal jurisdiction, and have the potential to affect "Waters of the State," are required to comply with the terms of the Water Board's Water Quality Certification determination. If a proposed project does not require a federal permit but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the Water Board has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

(b) Sections 1600-1616 of California Fish and Game Code.
Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under sections 1600–1616 of California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term "stream," which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."[15] "Riparian" is defined as "on, or pertaining to, the banks of a stream"; therefore, riparian vegetation is defined as "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself."[16] Removal of riparian vegetation may also require a Section 1602 Lake and Streambed Alteration Agreement from CDFW if activities would be a substantially adversely affect fish and wildlife resources.

(c) Oak Woodlands Conservation Act.
California Public Resources Code Section 21083.4 (Oak Woodlands) requires counties to determine if a project within their jurisdiction may result in conversion of oak woodlands that would have a significant adverse effect on the environment. If the lead agency determines that a project would result in a significant adverse effect on oak woodlands, mitigation measures to reduce the significant adverse effect of converting oak woodlands to other land uses are required.

6.3 IMPACTS AND MITIGATION MEASURES

6.3.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines,[17] the extraction of groundwater to serve the proposed Specific Plan under water supply Option B or Option C1 would have a significant adverse impact on biological resources if it would:

(a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

(b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

[15] 14 CCR 1.72

[16] CDFG ESD 1994

[17] CEQA Guidelines, Appendix G, Items IV(a) through (f) and XVIII(a).

(c) 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;

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

(e) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

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

(g) have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community or reduce the number or restrict the range of a rare or endangered plant or animal.

For riparian vegetation, the threshold for assessing whether potential impacts from groundwater pumping would be significant is defined as the point where the groundwater levels decline to an elevation below the lowest root depth of a given species during the season when surface flows are no longer present that infiltrate down to the roots. There is an extinction depth elevation (i.e., water table elevation below which the roots are unable to obtain water) at which transpiration is zero. Values of the extinction depth can be approximated by the maximum rooting depth of the species as determined through field studies or literature research (Baird et al. 2005). Table 6.4 presents Facultative Wetland and Facultative species (see footnote to Table 6.4 for definitions) occurring in the riparian corridors of the Specific Plan area, and lists the maximum depth to water table of the species that require root contact with the water table.

Table 6.4
WATER TABLE REQUIREMENTS OF FACULTATIVE WETLAND PLANTS AND FACULTATIVE PLANTS OCCURRING IN THE RIPARIAN CORRIDORS OF GREEN VALLEY CREEK AND TRIBUTARIES, SOLANO COUNTY, CA

Common Name	Scientific Name	Indicator Status	Water Table Required	Maximum Depth to Water Table (feet)[3]
White alder	*Alnus rhombifolia*	FACW[1]	Yes	3
Narrow-leafed willow	*Salix exigua*	FACW	Yes	6
Goodding's black willow	*Salix gooddingii*	FACW	Yes	10
Arroyo willow	*Salix lasiolepis*	FACW	Yes	10
Red willow	*Salix laevigata*	FACW	Yes	25
Blue elderberry	*Sambucus nigra* ssp. *caerulea*	FAC[2]	No	N/A
Northern California black walnut	*Juglans hindsii*	FAC	No	N/A
California bay	*Umbellularia californica*	FAC	No	N/A
Oregon ash	*Fraxinus latifolia*	FACW	No	N/A
California Rose	*Rosa californica*	FAC	No	N/A

[1] FACW – Facultative Wetland Plants [usually occurs in wetlands (estimated probability 67-99%), occasionally found in non-wetlands]
[2] FAC – Facultative Plants [equally likely to occur in wetlands (estimated probability 34-66%), or non-wetlands]
[3] California Riparian Restoration Handbook (Griggs 2009)

The threshold for assessing whether potential impacts to Central California Coast steelhead, CRLF, and WPT from groundwater pumping would be significant is defined as the point at which induced recharge begins, and Green Valley Creek begins to lose water to the groundwater aquifer (Figure 6.5). Green Valley Creek stream gauge data 0.6 miles downstream of the project area demonstrates that flow depth annually drops to approximately 1 foot in depth during the dry season from May – October (Figure 6.6) (for additional information about this stream gauge data, see Appendix A of this SRRDEIR). Induced recharge could begin if the radial extent of any cone of depression within the unconfined aquifer resulting from groundwater pumping extended to the stream channel.

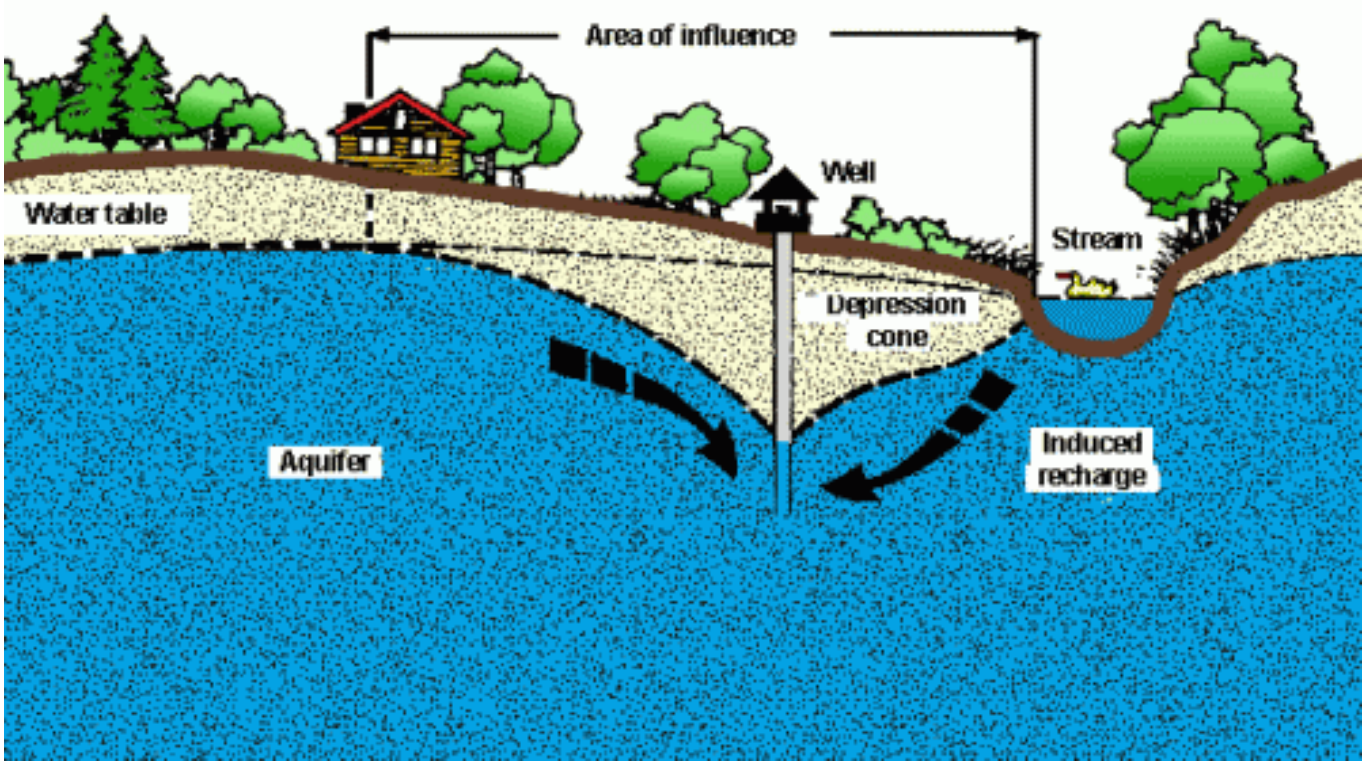


FIGURE 6.5
INDUCED RECHARGE OCCURS WHEN CONE OF DEPRESSION EXTENDS TO STREAM CORRIDOR

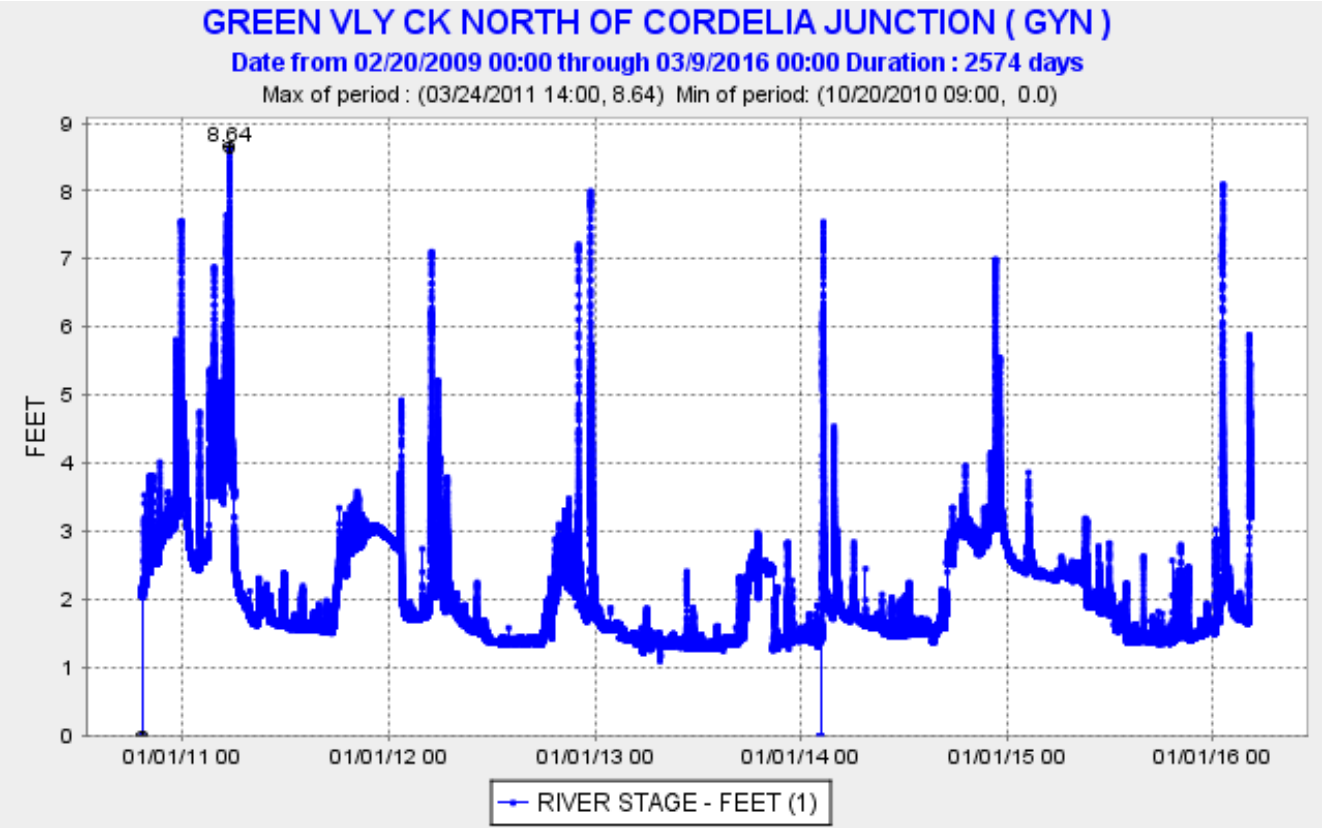


FIGURE 6.6
GREEN VALLEY CREEK AT MAGELS BOULEVARD STREAM GAUGE STAGE DATA, FAIRFIELD, CA.

6.3.2 Relevant Project Characteristics

The proposed Specific Plan includes the following provisions relevant to biological resources (see Chapter 2, Project Description, of the 2009 DEIR for details):

(a) Transfer of Development Rights Program.
The Specific Plan proposes use of a transfer of development rights (TDR) program that would help to preserve approximately 78 percent of land in the plan area as permanent open land with agricultural and habitat value. The proposed TDR program would allow property owners to sell development rights in exchange for placing grazing and other agricultural lands under a conservation easement. Additional lands that would be protected and managed under conservation easements include wetlands, streams, riparian woodland, and other habitats used by special-status species. Conservation easements required to meet federal and/or state permit requirements would need to conform to the requirements for mitigation conservation easements established by CDFW and USFWS.

(b) Establishment of the Green Valley Conservancy.
The Specific Plan proposes establishment of the Green Valley Conservancy, a non-profit, tax-exempt, legally independent conservation trust that would oversee (1) the preservation, monitoring, and management of natural resources; (2) the ongoing viability and sustainability of agricultural and grazing

operations; (3) the promotion of educational, interpretive, and research opportunities; and (4) the establishment of a comprehensive community design review process.

The Specific Plan proposes that the Green Valley Conservancy be established prior to recordation of the first final subdivision map in the plan area. Funding for the Green Valley Conservancy would be generated through transfer tax from the sale and resale of property within the plan area, and through grant and other funding as outlined in the Specific Plan.

(c) Middle Green Valley Specific Plan Water Supply Option B.

Water supply Option B would use local groundwater for domestic supply in the Plan Area. The wells would draw groundwater from the Suisun-Fairfield Valley Groundwater Basin, which has an estimated saturated thickness in excess of 400 feet. The groundwater resources available to the Specific Plan derive from two water bearing subsurface layers: the Alluvial Deposits (approximately 0-150 feet below the surface), and the Sonoma Volcanics (approximately 150-500+ feet below the surface). The water would be treated at each wellhead by a small treatment facility to CCR Title 22 Waterworks standards prior to being pumped to an onsite storage facility. Project groundwater use would be solely for domestic purposes. Similar to Option A, SID water would continue to serve existing and proposed agricultural uses and recycled water would be used for landscaping purposes (see 2014 RRDEIR Table 16.6). Water treatment is anticipated to consist of mixed media filtration and disinfection unless measured chemical constituents indicate a need for further treatment. Under Option B, the proposed onsite groundwater system would consist of at least three groundwater wells at a sustained flow of potentially 100 gallons per minute (gpm) each, approximately 4.5 miles of onsite pipelines, and 500,000 gallons of storage (for fire hydrants and sprinklers) in two water storage tanks preferably located at elevation (see Figure 16.1). The proposed wells and distribution system would provide the estimated total annual water requirement for the potable domestic supply of approximately 186 afy.

(d) Middle Green Valley Specific Plan Water Supply Option C1.

As noted above, water supply Option C would utilize SID water as the primary source of water, either in its entirety or to be combined with City of Fairfield municipal water or groundwater (see Appendix F of the 2014 RRDEIR). Under water supply Option C1, the County would supplement SID surface water with groundwater. Option C1 would therefore also involve one or more new wells drawing groundwater for Specific Plan use. However, Option C1 would require a lesser amount of groundwater than Option B, because it would only be used to supplement the SID surface water supply and would not be the sole source of Specific Plan domestic water supply. Therefore, the drawdown of groundwater under Option C1 is fully encompassed within the evaluation of groundwater drawdown under Option B.

6.3.3 Impacts and Mitigation Measures

(a) 2009 DEIR and 2014 RRDEIR Impacts Not Altered by this 2016 SRRDEIR

The 2009 DEIR evaluated the potential biological resources impacts from construction and operation of development under the Specific Plan, including construction and operation of infrastructure to serve Specific Plan buildout. The additional information known about the extraction of groundwater under water supply Option B or C1 (per the 2014 RRDEIR) would not alter the 2009 DEIR general biological resource impacts and non-riparian impacts listed in Table 6.5. These impacts and mitigation measures remain valid.

Table 6.5
SUMMARY OF 2009 DEIR BIOLOGICAL RESOURCES IMPACTS AND MITIGATION MEASURES NOT ALTERED BY THIS SRRDEIR

Impact Number[1]	Impact Title	Conclusion	Mitigation Measures	Conclusion after Mitigation
6-1	General Areawide Impacts on Biological Resources	PS	6-1	LTS
6-2	Potential Conflict with Solano County Multispecies Habitat Conservation Plan	PS	6-2	LTS
--	Impacts on Non-Sensitive Vegetation and Aquatic Communities	LTS	No mitigation is required	LTS
6-3	Impact on Oak Woodlands	PS	6-3	LTS
6-6	Impact on Special-Status Plant Species Observed or Known to Occur in the Plan Area	PS	6-6	LTS
6-7	Impacts on Special-Status Plant Species with Potential Habitat in the Plan Area	PS	6-7	LTS
6-8	Impacts on Special-Status Wildlife Species Observed or Known to Occur in the Plan Area	PS	6-8	LTS
6-9	Impacts on Special-Status Wildlife Species with Potential Habitat in the Plan Area	PS	6-9	LTS
6-10	Impact on Loggerhead Shrike, Lewis's Woodpecker, Grasshopper Sparrow and Other Protected Bird Species	PS	6-10	LTS
6-13	Impact on Wildlife Habitat Corridors and Linkages	PS	6-13	LTS
6-14	Cumulative Impact on Biological Resources	PS	6-1 through 6-13	LTS
2014 RRDEIR				
16-2	Project Domestic Water Facilities Impacts on Existing Wells and Stream Habitats – Option B (Onsite Groundwater) and Option C1 (SID Surface Water and Onsite Groundwater)	PS	16-1, 16-2a, and 16-2b (as revised herein)	LTS

Notes: LTS = less than significant; PS = potentially significant
[1] Only those impacts requiring mitigation are numbered, as are the corresponding mitigation measures.
Source: Solano County 2009 DEIR and 2014 RRDEIR, summarized by Ascent Environmental in 2016

As described in Chapter 1, "Introduction," of this SRRDEIR, the 2009 DEIR evaluated two domestic (potable) water supply options: Option A proposed connection to the City of Fairfield municipal water system (which is contracted through the Solano County Water Agency) via an existing water main in Green Valley Road; and Option B proposed three or more new groundwater wells providing sustained flow of 100 gpm each. The 2009 DEIR documented a domestic water demand for Specific Plan buildout of 186 afy (see page 16-13 and Table 16-1). Furthermore, Chapter 6, "Biological Resources," of the 2009 DEIR considered infrastructure to serve the Specific Plan, including water supply. Specifically, 2009 DEIR Impact 6-1 states,

Future site-specific development activities that could result in impacts on biological resources include:

…

- Construction of new utility infrastructure and improvements to existing utility infrastructure, such as sewer and water supply facilities

… and

- Changes in habitat function as a result of indirect impacts from changes in land use. Common examples of indirect impacts include changes in hydrology as a result of topographical changes and increases in impervious surface, introduction of non-native invasive species, nighttime lighting, and pet presence/predation for wildlife species.

Mitigation Measure 6-1 of the 2009 DEIR states that the County shall avoid, minimize, and compensate identified biological resource impacts. There shall be careful consideration by prospective individual project applicants of the biological resource constraint information provided in the Specific Plan EIR during the pre-application project design phase. In addition, prior to County approval of any future plan area subdivision or other discretionary development application, the project proponent shall submit a biological resources assessment report prepared by a qualified biologist for County review and approval. The biological resources assessment report shall contain a focused evaluation of project-specific impacts on biological resources, including temporary and indirect impacts, as well as all related biological impact avoidance, minimization, and compensatory mitigation measures included in the project. If the assessment results in a determination that: (a) no oak woodland area, potentially jurisdictional wetland area, or riparian habitat or other stream features would be affected; and (b) no special-status plant or animal species habitat known to occur or potentially occur on or in the vicinity of the project would be affected; no further mitigation would be necessary. If the assessment results in a determination that one or more of these features would be affected, the assessment shall identify associated avoidance, minimization, and/or compensatory mitigation measures consistent with the requirements of corresponding Mitigation Measures 6-2 through 6-13 in the 2009 DEIR, as well as all other applicable state and federal laws and regulations. Furthermore, prior to approval of any discretionary development project, the County shall also confirm that project-level development has received the necessary permits, approvals, and determinations from applicable biological resources agencies as identified under 2009 DEIR Mitigation Measures 6-2 through 6-13. Implementation of these measures would reduce the potential impact to a **less-than-significant** level.

Consistency with the HCP (Impact 6-2), impacts on non-sensitive habitats, impacts to oak woodlands (Impact 6-3), impacts to special status plant and animal species known to occur or with potential to occur in the plan area (Impacts 6-6 through 6-9), and impacts to protected bird species (Impact 6-10) would not be altered by the additional information known about water supply Option B and Option C1, as the 2009 DEIR considered buildout of the Specific Plan and water service including a 186 afy domestic water supply, which would come entirely or partially from new groundwater wells under water supply Options B and C1.

Specifically, as explained above, blue elderberry shrubs appeared to be relatively widespread in the plan area during the field visits conducted by WRA, Inc. on March 2 and April 23 and 24, 2009 (see Appendix 23.2 of the 2009 DEIR), including along the Green Valley Creek and Hennessey Creek riparian corridors. However, in 2014, USFWS withdrew a petition to delist VELB, the species dependent upon blue elderberry shrubs, and published a revised historical distribution of the species (USFWS 2014b). Based on the revised distribution of the species, VELB are not expected to occur in western Solano County and are not expected in the plan area. Therefore, impacts to VELB are considered to be **less than significant** and are not evaluated further in this SRRDEIR.

In addition, Swainson's hawk was evaluated in 2009 DEIR Impact 6-10. Several species of the tall trees along Green Valley Creek and Hennessey Creek riparian corridor provide suitable nesting habitat for Swainson's hawk, and the cropland in the project area provides suitable foraging habitat. Of the more shallow-rooted, water dependent riparian species in Green Valley Creek (white alder, narrow-leafed willow, arroyo willow, and Goodding's black willow), Goodding's black willow is the only species that

grows tall enough and is of the appropriate species for potential Swainson's hawk nesting (see Section 4.5.4 of Appendix A of this SRRDEIR). Direct impacts on nesting Swainson's hawk and avoidance and preservation of foraging habitat would be avoided or minimized through the implementation of Mitigation Measure 6-10. Potential indirect effects of groundwater pumping proposed by Option B to nesting habitat in Goodding's black willow would occur slowly over multiple breeding seasons and as a result would not negate the ability of Swainson's hawk to successfully nest. Therefore, indirect impacts to Swainson's hawk nesting in the Green Valley Creek riparian corridor by the groundwater pumping proposed in Option B would be less than significant. Furthermore, potential indirect impacts to Swainson's hawk nesting habitat in the Green Valley Creek riparian corridor from groundwater pumping in water supply Option B are addressed in Impact and Mitigation Measure 6-4, discussed below. As discussed therein, indirect impacts to riparian vegetation due to groundwater drawdown would be mitigated by the implementation of Mitigation Measure 16-1 (Water Master Plan that identifies well locations and depths), Mitigation Measure 16-2a (well design process to avoid interference between new wells and surface waters), Mitigation Measure 16-2b (adaptive management of groundwater wells), and Mitigation Measure 6-4 (preservation of riparian habitat). Implementation of these measures would avoid potential interference between new plan wells and surface streams and associated riparian vegetation. Therefore, Swainson's hawk nesting habitat would not be adversely affected and the 2009 DEIR Impact 6-10 and Mitigation Measure 6-10 remain valid. Impacts to Swainson's hawk would be mitigated to a **less-than-significant** level and are not discussed further in this SRRDEIR.

(b) 2009 DEIR and 2014 RRDEIR Impacts Revised by this SRRDEIR

Table 6.6 provides a summary of the 2009 DEIR impacts and mitigation measures that are described in more detail below.

Table 6.6
SUMMARY OF 2009 DEIR IMPACTS AND MITIGATION MEASURES EVALUATED IN THE SRRDEIR

Impact Number[1]	Impact Title	Conclusion	Mitigation Measures	Conclusion after Mitigation
6-4	Impact on Riparian Communities	PS	6-4, 16-1, 16-2a, and 16-2b (as revised herein)	LTS
6-5	Impact on Wetlands, Streams, and Ponds	PS	6-5	LTS
6-11	Impact on California Red-Legged Frog and Western Pond Turtle	PS	6-11	LTS
6-12	Impact on Steelhead	PS	6-12	LTS
6-15 (new)	Cumulative Impact on Riparian and Aquatic Biological Resources due to Groundwater Extraction under Water Supply Option B or Option C1.	PS	6-4, 6-5, 6-11, 6-12, 16-1, 16-2a, and 16-2b (as revised herein)	LTS

Notes: LTS = less than significant; PS = potentially significant
[1] Only those impacts requiring mitigation are numbered, as are the corresponding mitigation measures.
Source: Solano County 2009 DEIR, summarized by Ascent Environmental in 2016

Impact 6-4: Impact on Riparian Communities. The Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential impacts on Green Valley Creek and Hennessey Creek riparian communities. Nevertheless, future, individual project-level development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on riparian communities in the plan area, representing a **potentially significant** impact (see criterion [b] under Subsection 6.3.1, "Significance Criteria," above).

Development in accordance with the Specific Plan may directly affect riparian vegetation (Great Valley Mixed Riparian Forest, Central Coast Arroyo Willow Riparian Forest) due to future, individual project-level construction activities within Specific Plan-proposed development areas. There are four riparian "reaches" within the project area: Green Valley Creek, Northwest Tributary to Green Valley Creek, West Tributary to Green Valley Creek, and Hennessey Creek. Of these, Green Valley Creek is perennial while the other three are seasonal. As shown in Table 6-4, above, riparian plant species identified in the riparian corridor of Green Valley Creek have root systems that require continuous contact with water at varying maximum depth below the surface (3-25 feet). The other three reaches of drainages within the project area (Northwest Tributary, West Tributary, and Hennessey Creek) support minimal water-dependent riparian tree species, indicating the seasonal nature of these creeks.

Based on the currently proposed land use diagram, the Specific Plan would place roughly 1.4 acres of riparian vegetation within land use designations in which some form of development might occur. This preliminary estimate would need to be confirmed through review of project-level development plans. Potential temporary impacts on riparian communities may result from construction access and staging and infrastructure development, depending on project-specific construction plans. Potential indirect impacts may include trimming of riparian vegetation, such as during routine road and utility maintenance, potential introduction of invasive species, and potential streambank erosion due to increased stormwater runoff.

In addition, there could be potential indirect effects from groundwater pumping under water supply Options B or C1, if such pumping results in drawdown of groundwater. The Revised Recirculated Draft EIR (RRDEIR) (June 2014) further described groundwater supply Option B, the sufficiency of the water supply, and associated groundwater drawdown impacts. Specifically, Impact 16-2 of the June 2014 RRDEIR disclosed that implementation of water supply Option B or Option C1 would involve the extraction of groundwater from the aquifer system in the Suisun-Fairfield Valley Groundwater Basin via the use of at least three new groundwater wells (or at least one well under Option C1). Under water supply Options B or C1, placement and use of one or more new groundwater wells could, if improperly placed, have adverse effects on stream hydrology or riparian habitat. Until the proposed well locations are identified and tested, analyzed, and monitored, this impact would be potentially significant. As described therein, steps would be implemented to design, place, and monitor the project wells. A well design planning process is standard industry practice and would include the following components: test hole and test well drilling in several locations to obtain further site-specific aquifer data, which would be used to determine appropriate well design and placement; placement of public supply wells in appropriate locations; spacing of plan wells to avoid interference with each other, with nearby private wells (agricultural or domestic), and surface streams; and ongoing monitoring.

Given the relatively high water table (see RRDEIR Section 16.1.1[a]), high soil permeability, and large aquifer volume in the plan area, it is expected that groundwater levels would remain stable and there is no evidence to suggest that groundwater pumping from new deep wells would result in significant water table fluctuations. Furthermore, at full buildout, project water demand would remain substantially below the available groundwater supply so that there would continue to be a surplus of groundwater available (see RRDEIR Table 16.10). As discussed above, under water supply Option B, the project would use approximately 186 afy of groundwater to meet domestic water demands. Historically, approximately

525 afy of agricultural water demand within the plan area has been met through groundwater supply with no adverse effects (i.e., groundwater levels remained stable and showed spring to fall recovery) (see Appendix B of the 2014 RRDEIR). Because available records indicate that groundwater supplies have remained stable through past dry periods (back to 1950), project implementation is not expected to affect hydrogeology such that stream habitat would be adversely affected, even in dry years.

Also, the water levels shown in the WSA for current conditions reflect water levels from the time of the Thomasson study (1960), which describes that the water levels in April 1950 throughout Green Valley were so close to the land surface that the contours are considered to represent essentially the native pattern of movement (i.e., pre-dating impacts caused by humans) (see Appendix B of the 2014 RRDEIR). Therefore, it can be concluded that there would be no cumulative impact on streams from project-related groundwater extraction because current water levels are reflective of the natural regimen.

Although there is presently no evidence that the proposed project wells would interfere with surface waters, until Option B or Option C1 well locations, depths, and equipment have been specifically identified and adequately tested, analyzed, and monitored, it may be conservatively assumed that one or more of the project wells could possibly have adverse effects on stream hydrology or riparian habitat, due to water level fluctuations resulting from well interference. This is a potentially significant impact.

Analysis of Potential Effects to Project Area Stream Reaches due to Water Supply Option B (or C1)

Analysis of the riparian plant species in the project area stream reaches was completed to assess the potential impacts due to groundwater extraction associated with water supply Option B and C1 (see Appendix A of this SRRDEIR for further details). The following analysis assumes that groundwater well placement would occur, at minimum, outside the buffer zones proposed in the Middle Green Valley Specific Plan (Green Valley Creek and Lower Hennessey Creek: minimum 200 foot wide corridor; Northwest Tributary and West Tributary corridors: minimum 100 foot wide corridor).

Green Valley Creek

Riparian plant species that require root contact with the water table could be affected if the depth to groundwater fell below the depth that their roots could access (Table 6-3). If the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed Option B or C1 groundwater pumping well extended to the edge of the riparian corridor, the quantity of additional groundwater pumping could adversely affect the more shallow-rooted water dependent riparian species in Green Valley Creek: white alder (3 foot maximum depth to water table for survival), narrow-leafed willow (6 foot maximum depth to water table for survival), and arroyo willow and Goodding's black willow (10 foot maximum depth to water table for survival). This is a **potentially significant** impact. The analysis of all available well completion records from existing and past wells in Green Valley demonstrate a general surplus of groundwater in the project area that limits the depth that groundwater could decline based the scale of the proposed pumping in Option B (Luhdorff & Scalmanini 2013; Section 3.5, see Appendix B of the 2014 RRDEIR). Due to perennial surface flow and the general surplus of groundwater in the project area, a **less-than-significant** impact would occur to red willow (25-foot maximum depth to water table for survival). There would also be **less-than-significant** impacts to the other riparian plant species that do not require root contact with the water table in Green Valley Creek (Table 6-4) by the groundwater pumping proposed in Option B (or C1).

Northwest Tributary, West Tributary, and Hennessey Creek

The Northwest Tributary, West Tributary, and Hennessey Creek differ from the main stem of Green Valley Creek in that they lack perennial flows, contain habitat for the three water-dependent special-

status species that is only appropriate for wet season (November – April) foraging and/or migration, and overall have little high quality or intact riparian tree and shrub habitat. Riparian plant species that require root contact with the water table could be affected if the depth to groundwater fell below the depth that their roots could access (Table 6-3). If the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed Option B or C1 groundwater pumping well extended to the edge of the riparian corridor, the quantity of additional groundwater pumping could result in impacts to the more shallow-rooted water dependent riparian species in in the Northwest Tributary, West Tributary, or Hennessey Creek: arroyo willow and Goodding's black willow (10 foot maximum depth to water table for survival). This is a **potentially significant** impact. Impacts to red willow would be **less than significant** due to the 25-foot maximum rooting depth to the water table for this species and the general surplus of groundwater in the project area. The impact to the other riparian plant species that do not require root contact with the water table in Green Valley Creek (Table 6-4) due the groundwater pumping proposed in Option B or C1 would be **less than significant**.

Mitigation Measure 6-4. Proponents of projects that have been determined through Mitigation Measure 6-1 (biological resource assessment report) to involve potential impacts on riparian vegetation communities shall:

(a) contact the California Department of Fish and Wildlife (CDFW) to determine whether a Lake and Streambed Alteration Agreement is necessary; and

(b) provide a detailed description of the potential riparian habitat impacts and proposed mitigation program to the Regional Water Quality Control Board (Water Board) as part of the project's Water Quality Certification application.

Final mitigation for direct and permanent impacts on riparian vegetation/habitat would be subject to jurisdictional agency approval--i.e., approval by the CDFW and Water Board. (The term "jurisdictional agency" as used throughout the mitigation program description in this EIR chapter refers to the federal and state resource agencies with authority pertaining to the subject impact--i.e., the applicable combination of USFWS, USACE, CDFW and/or Water Board, based on the jurisdictional authorities described in Sections 6.2.2 and 6.2.3 herein.)

Mitigation shall include: (a) no net loss of riparian habitat, measured by acreage, either onsite or at an approved mitigation bank; and (b) replanting riparian vegetation in preserved riparian areas at the jurisdictional agency-established minimum ratio as measured by acreage, either onsite or at an approved mitigation bank. Temporary impacts on riparian habitat may be mitigated by replanting of riparian vegetation at the jurisdictional agency-established minimum ratio. Preserved riparian habitat areas shall be protected in perpetuity by a conservation easement.

New development lot lines, the edges of cultivated agricultural fields in preserved lands, and all new groundwater wells shall be set back from preserved riparian corridors by a minimum of 50 feet from tributaries and a minimum of 100 feet from Green Valley Creek and lower Hennessey Creek.

The potential for introduction of invasive species into riparian communities shall be minimized through use of the planting palettes recommended in the Specific Plan, or a comparable palette approved by the authorized jurisdictional agencies. The use of native plants shall be encouraged.

To provide additional direct mitigation for project impacts on Hennessey Creek riparian vegetation, and potential indirect, in-kind mitigation for riparian impacts elsewhere in the plan area, a Hennessey Creek conceptual restoration plan shall be prepared. This conceptual restoration plan shall be prepared to jurisdictional agency satisfaction prior to final approval of any future plan area subdivision map or other

discretionary approval involving direct impacts on Hennessey Creek riparian communities, or impacts on riparian communities elsewhere in the plan area that may be subject to in-kind mitigation.

2014 RRDEIR Mitigation Measure 16-1 (Water Master Plan that identifies well locations and depths) and *Mitigation Measure 16-2a* (well design process to avoid interference between new wells and surface waters) shall be implemented to provide for avoidance of any potential interference between new plan wells and surface streams.

Mitigation Measure 16-2b shall also be required, as updated herein, if monitoring required in *Mitigation Measure 16-2a* identified drawdown of surface water in Green Valley Creek.

Mitigation Measure 16-2b: If, in the unlikely event that ongoing monitoring conducted as part of the well design plan or water supply Option B or Option C1 operation reveals potentially significant drawdown may be occurring in surface waters or existing wells in the vicinity of the new project wells, some or all of the following measures to mitigate those impacts will be implemented by the CSA or SID until subsequent monitoring shows that drawdown is not adversely affecting surface waters or operations of existing wells to the satisfaction of the County Division of Environmental Health:

- lowering existing pumping equipment within the well structure in affected well(s),
- deepening or replacing the affected well(s),
- altering the amount or timing of pumping from the project well (i.e., shifting some pumpage to another project well and/or drilling a supplemental project well) to eliminate the adverse impact,
- providing replacement project well(s), and/or
- providing a water supply connection for the property/uses served by the affected well(s) to the Option B or Option C1 water supply system, sufficient to provide the property/uses with a substantially similar quality of water and the ability to use water in substantially the same manner that they were accustomed to doing if the project had not existed and caused a decline in water levels of their wells.

These measures would reduce the potential impacts to riparian communities to a **less-than-significant** level.

Regulatory approval for project-level impacts on riparian vegetation communities must be obtained from CDFW and Water Board. CDFW approval is obtained through the Lake and Streambed Alteration Agreement process under Sections 1600-1616 of California Fish and Game Code. Project-level applicants proposing projects with impacts on riparian vegetation would be required to contact CDFW to determine if a Lake and Streambed Alteration Agreement is required. Water Board approval is obtained through the Water Quality Certification process. Final project-level avoidance, minimization, and mitigation measures would be subject to the permitting processes of these agencies.

Mitigation for riparian vegetation impacts would include preservation of existing riparian vegetation as well as planting of native riparian vegetation in preserved riparian communities. The preservation component requires preservation of affected riparian vegetation at a minimum of a 1:1 ratio, as measured by acreage. Preserved riparian vegetation would be protected in perpetuity by a conservation easement and managed by the Green Valley Conservancy proposed by the Specific Plan. In addition, native riparian vegetation would be planted in preserved riparian areas at a jurisdictional agency-established minimum ratio, as measured by acreage. Mitigation for riparian habitat may be accomplished onsite or at an approved mitigation bank.

Project-level development shall maintain the recommended riparian corridor widths to avoid indirect impacts on riparian vegetation. In addition, the Hennessey Creek conceptual restoration plan shall provide additional area for riparian vegetation mitigation through planting and preservation.

Indirect stormwater impacts to riparian vegetation would be mitigated by the implementation of measures recommended for stormwater and water quality impacts, as described in Chapter 11, Hydrology and Water Quality, of the 2009 DEIR.

Indirect groundwater drawdown impacts to riparian vegetation would be mitigated by the implementation of Mitigation Measure 16-1 (Water Master Plan that identifies well locations and depths), Mitigation Measure 16-2a (well design process to avoid interference between new wells and surface waters), Mitigation Measure 16-2b (adaptive management of groundwater wells), and Mitigation Measure 6-4 (preservation of riparian habitat). Implementation of these measures would provide for avoidance of any potential interference between new plan wells and surface streams and associated riparian vegetation.

Impact 6-5: Impact on Wetlands, Streams, and Ponds. The Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential impacts on existing wetlands, streams and ponds.

Nevertheless, future, individual project-level development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on wetlands, streams, and ponds in the plan area, representing a **potentially significant** impact (see criteria [b] and [c] under Subsection 6.3.1, “Significance Criteria,” above).

Development in accordance with the Specific Plan may directly affect wetlands, streams, and ponds due to construction activities within the Specific Plan-proposed development areas.

Based on the currently proposed land use diagram, the Specific Plan would place roughly 1.4 acres of wetlands, streams, and ponds within land use designations in which some form of development might occur (see Table 6.4). This preliminary estimate would be confirmed through review of project-level development plans. Temporary impacts on wetlands, streams, and ponds may also occur, depending on project-specific construction plans. Potential indirect impacts on these communities include introduction of invasive species, and hydrology and water quality impacts as a result of changes in stormwater and runoff.

Water supply Option B and C1, which would involve new groundwater wells drawing up to 186 afy to meet Specific Plan domestic water demands, could result in indirect effects to surface waters. This potentially significant impact was evaluated in RRDEIR Impact 16-2 and Impact 6-4, above.

These habitats are regulated by USACE under Section 404 of the Clean Water Act and by the Water Board under Section 401 of the Clean Water Act and the State of California Porter- Cologne Act. A precise determination of impacts is not possible until a jurisdictional wetland delineation has been performed and approved by USACE and project-level plans have been developed.

Mitigation Measure 6-5. Proponents of projects that have been determined through Mitigation Measure 6-1 (biological resources assessment report) to involve potential impacts on wetlands, streams and ponds shall:

(a) contact the California Department of Fish and Game (CDFW) to determine whether a Lake and Streambed Alteration Agreement is necessary; and

(b) submit a Section 404 permit application to the U.S. Army Corps of Engineers (USACE) and a Water Quality Certification application to the Regional Water Quality Control Board (Water Board). A jurisdictional Section 404 delineation must be approved by USACE before permits can be issued by the above-listed agencies.

Final mitigation for direct and temporary impacts on wetlands, streams, and ponds shall be subject to the approval of the CDFW and Water Board. Mitigation for direct impacts shall include a minimum of (a) preservation of wetland, stream, and/or pond habitat at the jurisdiction agency-established minimum ratio, measured by acreage, either onsite or at an approved mitigation bank; and (b) creation of wetland, stream, and/or pond habitat in preserved areas at the jurisdiction agency-established minimum ratio, either onsite or at an approved mitigation bank. Onsite preserved habitat areas shall be protected in perpetuity by a conservation easement.

New development lot lines and the edges of cultivated agricultural fields in preserved lands shall be set back from preserved wetlands, streams, and ponds by a minimum of 50 feet from tributaries and a minimum of 100 feet from Green Valley Creek and lower Hennessey Creek.

New and expanded road crossings over streams shall be designed and constructed to minimize disturbance to the stream channel by the use of measures such as clear span bridges or arch span culverts when feasible, and minimizing the number and area of footings placed in and at the margins of stream channels.

The Hennessey Creek conceptual restoration area (see Mitigation Measure 6-4) shall be made available to provide for mitigation of direct impacts on Hennessey Creek riparian communities, or potential in-kind mitigation for riparian impacts elsewhere in the plan area.

As indicated in Mitigation Measure 6-4, the potential for introduction of invasive species shall be minimized through use of the planting palettes recommended in the Specific Plan, or a comparable palette approved by the authorized jurisdictional agencies. The use of native plants shall be encouraged.

2014 RRDEIR Mitigation Measure 16-1 (Water Master Plan that identifies well locations and depths), *Mitigation Measure 16-2a* (well design process to avoid interference between new wells and surface waters), and *Mitigation Measure 16-2b* (adaptive management of groundwater wells), shall be implemented to provide for avoidance of any potential interference between new Plan wells and surface streams.

These measures would reduce the potential impact to a **less-than-significant** level.

Regulatory approval for project-level impacts on wetlands, streams, and ponds must be obtained from USACE, CDFW, and Water Board. USACE approval for impacts on wetlands, streams, and ponds is obtained through application for a Section 404 permit. To obtain a Section 404 permit, applicants must first conduct a jurisdictional delineation using USACE methodology to identify and map the boundaries of USACE jurisdictional areas. The extent of Water Board and CDFW jurisdiction in wetlands, streams, and ponds is based on the results of the Section 404 jurisdictional delineation. For streams, however, the limit of CDFW and Water Board jurisdiction is the top of bank or edge of riparian vegetation, whichever is farther.

CDFW regulatory approval is obtained through the Lake and Streambed Alteration Agreement process under Sections 1600-1616 of California Fish and Game Code. Project-level applicants proposing projects with impacts on streams and ponds must contact CDFW to determine if a Lake and Streambed Alteration Agreement is required. Water Board approval for impacts on wetlands, streams and ponds is obtained through the Water Quality Certification process. Final project-level avoidance, minimization, and mitigation measures for wetlands, streams, and ponds are subject to the permitting approval of the above-listed agencies.

Mitigation for wetlands, streams, and ponds would include preservation of existing habitat as well as creation of wetland and/or pond habitat within preserved areas. Purchase of wetland mitigation credits at an approved mitigation bank can be used as an alternative to preservation and creation within the plan area. The preservation component requires preservation of affected wetlands, streams, and ponds at a jurisdiction agency-established minimum ratio, as measured by acreage. Wetlands, streams, and ponds preserved onsite would be protected in perpetuity by a conservation easement. In addition, wetland and/or pond habitat would be created in preserved areas at a minimum jurisdiction agency-established ratio, as measured by acreage. Alternatively, impacts on wetlands, streams, and ponds may be mitigated through the purchase of wetland preservation and wetland creation/mitigation credits at a minimum jurisdiction agency-established ratio as measured by acreage.

The Hennessey Creek conceptual restoration plan (see Mitigation Measure 6-4) would provide additional area for riparian vegetation mitigation through planting and preservation.

Project-level development shall maintain the recommended riparian corridor widths (see Mitigation Measure 6-4) as mitigation for indirect impacts on wetlands, streams, and ponds due to changes in water quality runoff. Development lots lines shall maintain a buffer of at least 50 feet from wetlands, ponds, and tributaries and 100 feet from Green Valley Creek and the lower reach of Hennessey Creek.

Potential indirect impacts to surface waters from potential drawdown of groundwater from groundwater extraction under water supply Option B or C1 would be mitigated by proper well design, as required by the Specific Plan and 2014 RRDEIR Mitigation Measure 16-2a, as well as adaptive well management measures in Mitigation Measure 16-2b. The well design process shall precede, and under industry practice would precede, determination of the engineering specifications for well locations and depths. The engineering specifications for well locations and depths are required to be identified as part of the Water Master Plan specified under 2014 RRDEIR Mitigation Measure 16-1. The Water Master Plan is required to be prepared prior to subdivision map approval (a discretionary approval subject to CEQA). These measures would provide for avoidance of any potential interface between new plan wells and surface streams.

Indirect stormwater impacts on wetlands, streams, and ponds would be mitigated by the implementation of mitigation measures identified in this Draft EIR for stormwater and water quality impacts, as described in Chapter 11, Hydrology and Water Quality, of the 2009 DEIR.

Impact 6-11: Impact on California Red-legged Frog and Western Pond Turtle. Future individual discretionary project-specific development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on California red-legged frog and western pond turtle and suitable habitat for this species, representing a **potentially significant** impact (see criterion [a] under Subsection 6.3.1, "Significance Criteria," above).

In the spring of 2010, biologists completed a survey for CRLF in the plan area. One adult CRLF was observed in an upland pond approximately 0.3 mile from the Hennessey Creek riparian habitat zone. CRLF is known to occur in other areas in in the project vicinity (see Figure 6.3), including two occurrences within 1 mile. Based on habitat assessment, CRLF is likely to occur (but not breed) in the main stem of Green Valley Creek. The species may also occur along the riparian habitat zones of Northwest Tributary, West Tributary, and Hennessey Creek as migrating or sheltering individuals. WPT was observed in several ponds within the plan area hills during the site visit. Some of the aquatic features within the plan area valley (e.g., Green Valley Creek) provide suitable habitat and may also be occupied by WPT (see Figures 6.7 and 6.8).

Development or other land conversion practices in the plan area may affect potential CRLF and WPT aquatic habitat (e.g., ponds and other aquatic features) and/or terrestrial breeding and dispersal habitat. Construction of roads in the plan area may also result in the creation of barriers to potential CRLF and WPT movement between patches of aquatic habitat and/or between aquatic habitat and upland breeding habitat. If CRLF and WPT is present, such alterations may also result in the incidental take of eggs, young, and/or adults (e.g., via use of construction equipment). Similar impacts may also occur in areas of potential CRLF and WPT habitat that are temporarily affected, depending on project-specific construction plans. Alteration of hydrology and water quality during construction and following development may indirectly affect CRLF and WPT by influencing habitat characteristics. Other potential indirect impacts on CRLF and WPT include increased traffic, potential introduction of predatory non-native species, increased lighting from streets, and increased harassment by people and pets. Operation and maintenance of any open air stormwater and wastewater facilities may result in failed breeding attempts or incidental take of WPT individuals.

CRLF and WPT in Green Valley Creek could be affected by the drawdown of groundwater, if it were to result from groundwater pumping, under water supply Option B or C1, if the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed groundwater well extended to the edge of the stream channel, where a hydraulic connection was already present between the stream and the unconfined aquifer, causing induced recharge. This could result in a small reduction in surface flow. However, due to perennial surface flow in Green Valley Creek, and the general surplus of groundwater in the Project Area (Luhdorff & Scalmanini 2013; Section 3.5; see Appendix B of the 2014 RRDEIR) that limits the depth that groundwater could decline based on the scale of the proposed pumping in Option B, ponded riparian refugia would not dry up entirely. Therefore, impacts to CRLF and WPT in Green Valley Creek due to the groundwater pumping proposed in Option B would be less than significant.

CRLF and WPT would only use the Northwest Tributary, West Tributary, and Hennessey Creek for foraging and migration when moisture levels are adequate. During the wet season (November – April), groundwater levels are naturally high and would not be affected by the additional proposed groundwater pumping in water supply Option B or C1. If the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed groundwater well extended to the stream channel of the Northwest Tributary, West Tributary, or Hennessey Creek in the dry season, impacts would be less than significant for CRLF and WPT because there is no surface flow in these creeks. Therefore, impacts to CRLF and WPT in the Northwest Tributary, West Tributary, and Hennessey Creek due to the groundwater pumping proposed in Option B would be less than significant.

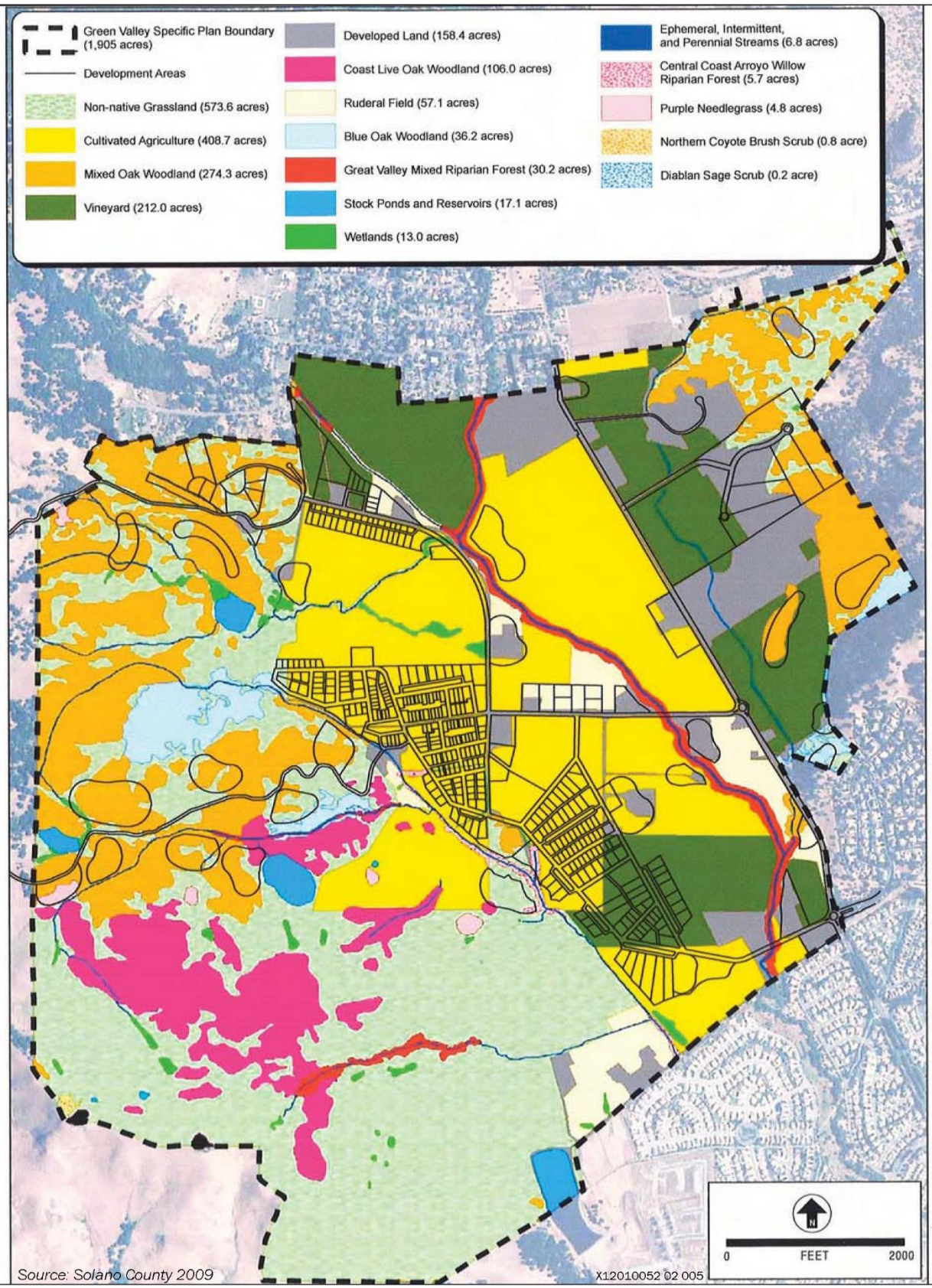


FIGURE 6.7
VEGETATION AND AQUATIC COMMUNITIES IN SPECIFIC PLAN-PROPOSED DEVELOPMENT

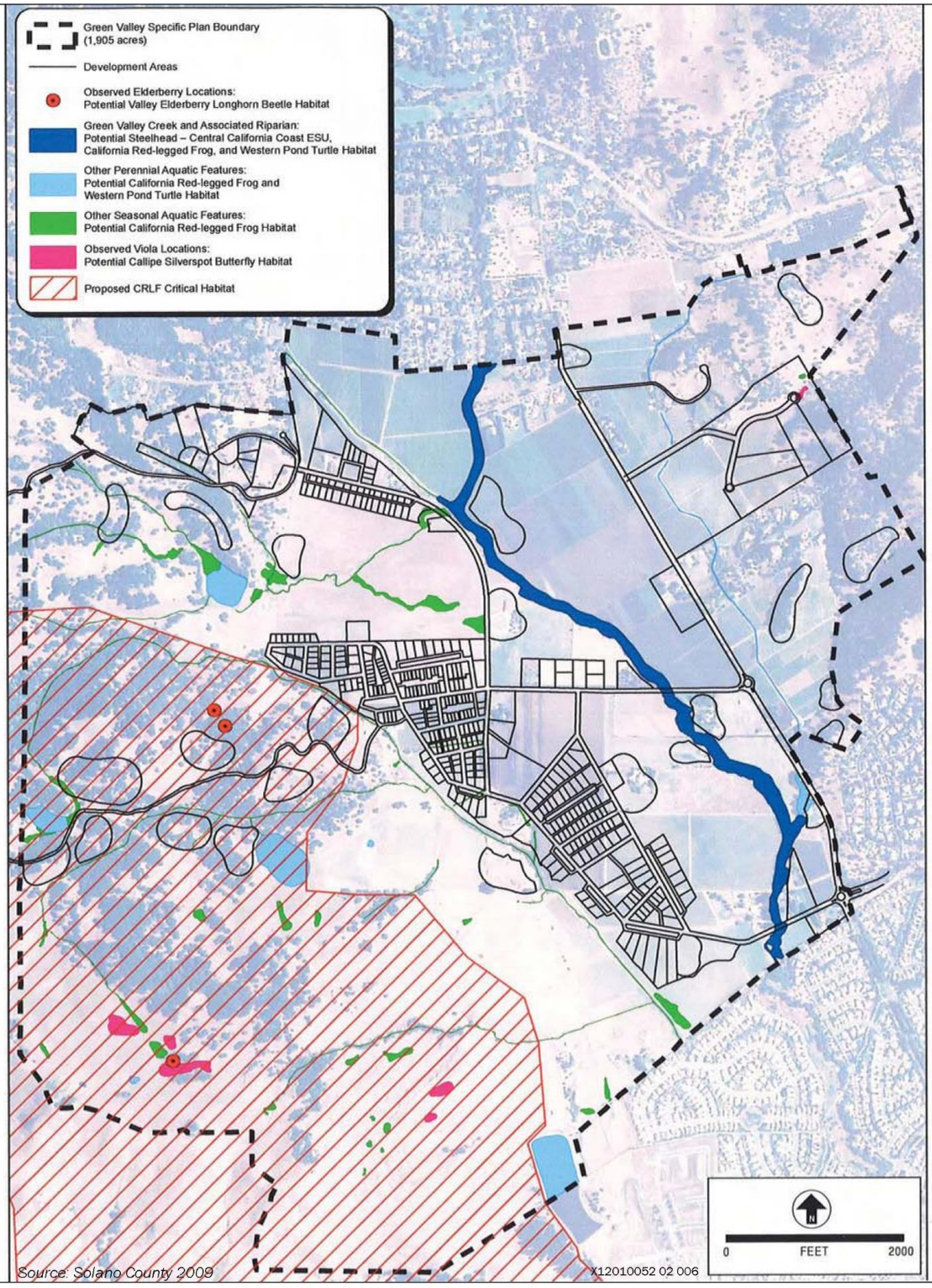


FIGURE 6.8
SPECIALIZED WILDLIFE HABITATS IN SPECIFIC PLAN-PROPOSED DEVELOPMENT AREAS

Mitigation Measure 6-11. The presence of suitable aquatic and dispersal habitat for CRLF and WPT shall be evaluated by a qualified biologist as part of the biological resources assessment report required under Mitigation Measure 6-1. Projects containing suitable aquatic habitat for CRLF and WPT shall provide an analysis of potential impacts, along with avoidance, minimization, and mitigation measures for potential impacts on CRLF and WPT.

If take of CRLF would occur, the project may seek take coverage through the Solano HCP if approved, and implement avoidance, minimization, and mitigation measures consistent with the Solano HCP. If the Solano HCP is not yet approved, projects shall consult with USFWS in accordance with ESA. Avoidance, minimization, and mitigation measures, consistent with the draft Solano HCP, shall be imposed to ensure no net loss of habitat or individuals. Measures may include protection of habitat to be retained on site during construction, worker awareness training, timing of project activities to avoid destruction of egg masses, and purchase of conservation credits at a USFWS-approved conservation bank to compensate for the loss of habitat or individuals.

Direct impacts on WPT habitat shall be mitigated through implementation of the mitigation measures described above for wetlands, streams, and ponds (Mitigation Measure 6-5). Indirect hydrology and water quality impacts on WPT shall be mitigated through implementation of mitigation measures recommended in chapter 11, Hydrology and Water Quality, of the 2009 DEIR. It is recommended that final avoidance, minimization, and mitigation measures be developed in consultation with CDFG and/or be consistent with the measures outlined in the anticipated Solano HCP.

Project-level development shall maintain the recommended riparian corridor widths (see Mitigation Measure 6-4) as mitigation for indirect impacts on wetlands, streams, and ponds due to changes in water quality runoff as well as groundwater drawdown.

2014 RRDEIR Mitigation Measure 16-1 (Water Master Plan that identifies well locations and depths), *Mitigation Measure 16-2a* (well design process to avoid interference between new wells and surface waters), and *Mitigation Measure 16-2b* (adaptive management of groundwater wells), shall be implemented to provide for avoidance of any potential interference between new plan wells and surface streams.

These measures would reduce the potential impact to a **less-than-significant** level.

The presence of suitable aquatic and dispersal habitat for CRLF and WPT shall be evaluated by a qualified biologist as part of the biological resources assessment report required under Mitigation Measure 6-1. Projects containing suitable aquatic habitat for CRLF and WPT shall provide an analysis of potential impacts, along with avoidance, minimization, and mitigation measures for potential impacts on CRLF and WPT. It is recommended that final avoidance, minimization, and mitigation measures be developed in consultation with CDFW and USFWS and/or be consistent with the measures outlined in the Solano HCP. If take of CRLF would occur, the project may seek take coverage through the Solano HCP if approved, and implement avoidance, minimization, and mitigation measures consistent with the Solano HCP. If the Solano HCP is not yet approved, projects shall consult with USFWS in accordance with ESA. Avoidance, minimization, and mitigation measures, consistent with the draft Solano HCP, shall be imposed to ensure no net loss of habitat or individuals. Direct impacts on CRLF and WPT habitat shall be mitigated through implementation of the mitigation measures described above for wetlands, streams, and ponds (Mitigation Measure 6-5). Examples of avoidance, minimization, and mitigation measures that may be incorporated into the project-specific approval process and final design include:

- Pre-construction surveys and passive exclusion or relocation of CRLF and WPT individuals present in suitable habitat conducted by a trained qualified biologist that has been approved by CDFW and USFWS.

- Provide compensation for loss of CRLF habitat and individuals by purchase of conservation credits at a USFWS-approved conservation bank.

- Use of biological monitors and construction operator training sessions.

- For work conducted in aquatic habitat, scheduling as much work as possible between June 15 and October 15.

- Restoration of temporarily disturbed areas of aquatic habitat to pre-construction conditions as much as feasible.

- Adequate signage, fencing, and leash laws in areas of public access in CRLF and WPT habitat to minimize potential harassment by people and pets.

- Educational initiatives on the potential effects of releasing fish, lizards, and other potentially predatory invasive species into the aquatic environment.

- Development of fishing restrictions, such as restrictions on use of live bait, to reduce potential for introduction of predatory species.

- Fencing of any open air stormwater and wastewater facilities, if feasible. Operation and maintenance of any open water stormwater and wastewater facilities to minimize ponding, scheduling of maintenance activities during the non-breeding season, and similar measures to prevent impacts on WPT.

In addition to these species-specific measures, proposed projects would also be required to implement stormwater and water quality mitigation measures outlined in Chapter 11, Hydrology and Water Quality, of the 2009 DEIR, as well as Mitigation Measure 6-4 and Mitigation Measures 16-2a and 16-2b, described above.

Impact 6-12: Impact on Steelhead. The Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential direct and indirect impacts on plan area streams and stream habitats.

Nevertheless, future individual project-specific discretionary development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on steelhead, a Federal Threatened Species, in Green Valley Creek, representing a **potentially significant** impact (see criterion [a] under Subsection 6.3.1, “Significance Criteria,” above).

Steelhead (Central California Coast DPS) are known to migrate, spawn, and rear in Green Valley Creek (see Figures 6.7 and 6.8), but cannot use the other three reaches for spawning because they are intermittent streams that lack surface flow during the dry season. Central California Coast steelhead could use these other three reaches for foraging and movement during the wet season.

Potential direct impacts on steelhead within the plan area valley may result from direct alterations (such as from utility and road crossings) to Green Valley Creek, or potential creek restoration activities, that

permanently affect the hydrology, water quality, substrate condition, prey community, and/or vegetative cover in a manner that is detrimental to steelhead use of the creek. Such alterations may also result in the incidental take of individual steelhead. The Specific Plan indicates that one new road crossing would be installed across Green Valley Creek, and one existing crossing may need to be widened to accommodate access and egress for developed areas. Potential utility crossings would use the footprint of this new road, as well as existing roads. No other direct impacts on Green Valley Creek are proposed by the Specific Plan.

Potential temporary impacts on steelhead within the plan area would include removal of riparian vegetation and dewatering of Green Valley Creek for maintenance and/or construction activities. Potential indirect impacts on steelhead may occur from changes in hydrology and water quality that could occur as a result of project-level development, both along Green Valley Creek and along tributaries to Green Valley Creek. These changes may affect the temperature and turbidity of the water, as well as bottom substrate composition. In addition, artificial lighting placed near Green Valley Creek may affect steelhead.

Green Valley Creek stream gauge data 0.6 miles downstream of the Project Area demonstrates that flow depth annually drops to approximately 1 foot in depth during the dry season from May – October (Figure 6.6) (for additional information about this stream gauge data, see Appendix A of this SRRDEIR). This time period overlaps with the freshwater rearing period for juvenile steelhead of various potential age classes that require at least intermittently fairly fast-moving water to maintain the food supplies necessary for growth (see Section 4.5.1). Small changes in dry season stream depth could adversely affect critical juvenile rearing aquatic habitat, when juvenile steelhead of various potential age classes require at least intermittently fairly fast-moving water to maintain the food supplies necessary for growth. Any reduction in current Green Valley Creek dry season flow that this species requires for juvenile rearing could potentially have impacts. The threshold for assessing whether potential impacts to Central California Coast steelhead from groundwater pumping would be significant is defined as the point at which induced recharge begins, and Green Valley Creek begins to lose water to the groundwater aquifer. Induced recharge would begin if the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed Option B groundwater pumping well extended to the stream channel of Green Valley Creek, where a hydraulic connection was already present between the creek and the unconfined aquifer (as in Figure 6.5). If this occurs and stream depth is reduced, it would represent a significant impact to Central California Coast steelhead.

Mitigation Measure 6-12. Utility crossings and new and expanded road crossings over streams shall be designed and constructed to minimize disturbance to the stream channel by using measures such as clear span bridges or arch span culverts when feasible, and by minimizing the number and area of footings placed in and at the margins of stream channels. Appropriate construction Best Management Practices (BMPs) such as those recommended in this EIR or in the anticipated Solano HCP to minimize impacts on steelhead shall also be implemented. Design and minimization measures are subject to approval, and may change, based on consultation with the NMFS.

Riparian vegetation mitigation measures outlined in Mitigation Measure 6-4 shall also be implemented to reduce impacts on riparian vegetation that may affect steelhead. Mitigation measures for stormwater quality and quantity identified recommended in Chapter 11, Hydrology and Water Quality, of this EIR shall be implemented to minimize indirect impacts on steelhead from stormwater and water quality changes due to construction.

Project-level development shall maintain the recommended riparian corridor widths (see Mitigation Measure 6-4) as mitigation for indirect impacts on wetlands, streams, and ponds due to changes in water quality runoff as well as groundwater drawdown.

2014 RRDEIR Mitigation Measure 16-1 (Water Master Plan that identifies well locations and depths), *Mitigation Measure 16-2a* (well design process to avoid interference between new wells and surface waters), and *Mitigation Measure 16-2b* (adaptive management of groundwater wells), shall be implemented to provide for avoidance of any potential interference between new plan wells and surface streams.

Implementation of these measures would reduce the potential impact to a **less-than-significant** level.

Regulatory approval for potential impacts on steelhead and steelhead habitat is obtained through consultation with the NMFS. This consultation is typically initiated as part of USACE Section 404 permitting process described above for wetlands, streams, and ponds. However, project applicants are encouraged to contact NMFS personnel during the design phase to inquire about design recommendations and avoidance measures for a specific type of project. Potential impacts on steelhead and other fish species are typically avoided and minimized through design measures and construction avoidance measures. Examples of such measures include:

- Restricting in-stream work to specified work windows during low-flow conditions (typically June 15 to October 15).
- Minimizing channel disturbance through project design, such as use of clear span bridges, arch span or non-embedded culverts, use of natural material and maintaining original channel elevation as much as feasible.
- Using non-toxic materials in design and construction, and preventing fill material such as concrete from coming into contact with waterways until it has been allowed to cure completely.
- Refueling and maintaining equipment in areas away from the creek channel.
- Completely removing old portions of bridge structure, to the extent that such removal does not result in extensive damage to the stream channel.
- Minimizing dewatering and allowing turbid water pumped out of coffer dams to settle before release back into the stream channel.
- Using a biological monitor to ensure that salmonids are not harmed by construction and dewatering.
- Using appropriate night lighting design measures such as prismatic glass coverings, cutoff shields, embedded road lights, narrow spectrum bulbs, or other appropriate lighting technology.

Final determination of BMPs and avoidance and minimization measures may be subject to change based on project-specific design and consultation with NMFS. If a project or infrastructure element would result in direct impacts on the creek channel that could affect steelhead or steelhead habitat, mitigation in the form of stream preservation and/or restoration may also be required, such as removal of any barriers to fish passage or existing artificial stream channel segments present within the plan area.

For riparian vegetation removed during construction, Mitigation Measure 6-4 shall be implemented. Mitigation Measure 6-4 includes the provision that new development lot lines and preserved cultivated agricultural fields maintain a setback of at least 50 feet from tributaries and 100 feet from lower Hennessey Creek and Green Valley Creek.

Potential indirect impacts to surface waters due to drawdown of groundwater under water supply Option B (or C1) would be mitigated by proper well design, as required by the Specific Plan and 2014 RRDEIR Mitigation Measure 16-2a, as well as adaptive well management required by Mitigation Measure 16-2b. The well design process shall precede, and under industry practice would precede, determination of the engineering specifications for well locations and depths. The engineering specifications for well locations and depths are required to be identified as part of the Water Master Plan specified under 2014 RRDEIR Mitigation Measure 16-1. The Water Master Plan is required to be prepared prior to subdivision map approval (a discretionary approval subject to CEQA). These measures would provide for avoidance of any potential interface between new plan wells and surface streams.

To mitigate and minimize potential indirect impacts due to changes in hydrology and water quality as a result of development, mitigation measures to control stormwater quality and quantity recommended in Chapter 11, Hydrology and Water Quality, of the 2009 DEIR shall be implemented.

Impact 6-15: Cumulative Impact on Riparian and Aquatic Biological Resources due to Groundwater Extraction under Water Supply Option B or Option C1. Cumulative impacts on biological resources were addressed in the original 2009 DEIR in Impact 6-14. With regard to such impacts from groundwater use, specifically, extraction of groundwater to serve the Specific Plan under Water Supply Option B or Option C1, in combination with groundwater pumping from existing and future development in Middle Green Valley, could contribute to cumulative indirect effects from groundwater pumping on riparian and aquatic biological resources. If pumping from multiple wells were to combine to create substantial drawdown such that the water table were to drop below levels sufficient to support riparian vegetation, or below levels sufficient to maintain surface water flows that support fish and aquatic species, this would represent a ***potentially significant cumulative impact*** (see criteria [a] through [f] under Subsection 6.3.1, “Significance Criteria,” above).

As described in Impact 6-4, above, as well as Impact 16-2 of the June 2014 RRDEIR, implementation of water supply Option B or Option C1 would involve the extraction of groundwater from the aquifer system in the Suisun-Fairfield Valley Groundwater Basin via the use of at least three new groundwater wells (or at least one well under Option C1). Under water supply Options B or C1, placement and use of one or more new groundwater wells could, if improperly placed, have adverse effects on stream hydrology or riparian habitat. Until the proposed well locations are identified and tested, analyzed, and monitored, this impact would be potentially significant. As described therein, steps would be implemented to design, place, and monitor the project wells. A well design planning process is standard industry practice for all projects involving new groundwater wells and would include the following components: test hole and test well drilling in several locations to obtain further site-specific aquifer data, which would be used to determine appropriate well design and placement; placement of public supply wells in appropriate locations; spacing of plan wells to avoid interference with each other, with nearby private wells (agricultural or domestic), and surface streams; and ongoing monitoring.

Given the relatively high water table (see RRDEIR Section 16.1.1[a]), high soil permeability, and large aquifer volume in the plan area, it is expected that groundwater levels would remain stable and there is no evidence to suggest that groundwater pumping from new deep wells would result in significant water table fluctuations. Furthermore, at full buildout, project water demand would remain substantially below the available groundwater supply so that there would continue to be a surplus of groundwater available (see RRDEIR Table 16.10). As discussed above, the project would use approximately 186 afy of groundwater to meet domestic water demands. Historically, approximately 525 afy of agricultural water demand within the plan area has been met through groundwater supply with no adverse effects (i.e., groundwater levels remained stable and showed spring to fall recovery) (see Appendix B of the 2014

RRDEIR). Because available records indicate that groundwater supplies have remained stable through past dry periods (back to 1950), project implementation is not expected to affect hydrogeology such that on stream hydrology or riparian habitat would be adversely affected, even in dry years.

Also, the water levels shown in the WSA for current conditions reflect water levels from the time of the Thomasson study (1960), which describes that the water levels in April 1950 throughout Green Valley were so close to the land surface that the contours are considered to represent essentially the native pattern of movement (i.e., pre-dating impacts caused by humans) (see Appendix B of the 2014 RRDEIR). Current water levels are reflective of the natural regimen. Therefore, it is likely that the cumulative impact on streams, and any resulting cumulative impacts on riparian and aquatic biological resources, from project-related groundwater extraction in combination with groundwater pumping from existing and future development in Middle Green Valley would be less than significant.

Although there is presently no evidence that cumulative groundwater drawdown would have a significant impact on stream hydrology or riparian habitat, until Option B or Option C1 well locations, depths, and equipment have been specifically identified and adequately tested, analyzed, and monitored, it may be conservatively assumed that the incremental effect of one or more of the project wells on stream hydrology or riparian and aquatic biological resources due to water level fluctuations resulting from well interference, could be cumulatively considerable.

Mitigation Measure 6-15. The County shall ensure that Mitigation Measures 6-4, 6-5, 6-11, 6-12, 16-1, 16-2a, and 16-2b, above, are implemented. With successful implementation of these measures, the Specific Plan's contribution to the cumulative riparian and aquatic biological resource impacts would be ***less than cumulatively considerable***.

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17. LIST OF PREPARERS

Resumes for technical staff involved in the preparation of the Second Revised Recirculated EIR and Biological Resources Report are included as Appendix C.

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